The University is committed to basing judgments concerning the admission, education, and employment of individuals upon their qualifications and abilities and affirmatively seeks to attract to its faculty, staff, and student body qualified persons of diverse backgrounds. In accordance with this policy and as delineated by federal and Connecticut law, Yale does not discriminate in admissions, educational programs, or employment against any individual on account of that individual's sex, race, color, religion, age, disability, status as a special disabled veteran, veteran of the Vietnam era, or other covered veteran, or national or ethnic origin; nor does Yale discriminate on the basis of sexual orientation or gender identity or expression.

University policy is committed to affirmative action under law in employment of women, minority group members, individuals with disabilities, special disabled veterans, veterans of the Vietnam era, and other covered veterans.

Inquiries concerning these policies may be referred to the Office for Equal Opportunity Programs, 104 William L. Harkness Hall, 203.432.0849.

In accordance with both federal and state law, the University maintains information concerning current security policies and procedures and prepares an annual crime report concerning crimes committed within the geographical limits of the University. Upon request to the Office of the Secretary of the University, PO Box 208230, New Haven CT 06520-8230, 203.432.2310, the University will provide such information to any applicant for admission.

In accordance with federal law, the University prepares an annual report on participation rates, financial support, and other information regarding men's and women's intercollegiate athletic programs. Upon request to the Director of Athletics, PO Box 208216, New Haven CT 06520-8216, 203.432.1414, the University will provide its annual report to any student or prospective student.

For all other matters related to admission to Yale College, please write to the Office of Undergraduate Admissions, Yale University, PO Box 208234, New Haven CT 06520-8234; telephone, 203.432.9300; e-mail, undergraduate.admissions@yale.edu; Web site, www.yale.edu/admit.

Yale University's Web site is www.yale.edu; the Yale College Programs of Study is online at www.yale.edu/yalecollege/publications/ycps.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Building Name</th>
<th>Abbreviation</th>
<th>Building Name</th>
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<tbody>
<tr>
<td>AKW</td>
<td>Arthur K. Watson Hall</td>
<td>LOM</td>
<td>Leet Oliver Memorial Hall</td>
</tr>
<tr>
<td>BASS</td>
<td>Bass Center for Molecular and Structural Biology</td>
<td>LUCE</td>
<td>Henry R. Luce Hall</td>
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<td>BASSLB</td>
<td>Bass Library</td>
<td>LWR</td>
<td>Lanman-Wright Memorial Hall</td>
</tr>
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<td>BCMM</td>
<td>Boyer Center for Molecular Medicine</td>
<td>MARSH</td>
<td>Marsh Hall</td>
</tr>
<tr>
<td>BCT</td>
<td>Becton Engineering and Applied Science Center</td>
<td>MEC</td>
<td>Malone Engineering Center</td>
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<td>Branford College</td>
<td>MG</td>
<td>Morse College</td>
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<td>BRBL</td>
<td>Beinecke Rare Book and Manuscript Library</td>
<td>MCL</td>
<td>Mason Laboratory</td>
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<tr>
<td>C</td>
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<td>MUDD</td>
<td>Seeley Mudd Library</td>
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<tr>
<td>CC</td>
<td>Calhoun College</td>
<td>OAG</td>
<td>Old Art Gallery</td>
</tr>
<tr>
<td>CRB</td>
<td>Class of 1954 Chemistry Research Building</td>
<td>OML</td>
<td>Osborn Memorial Laboratories</td>
</tr>
<tr>
<td>CSC</td>
<td>Child Study Center</td>
<td>PC</td>
<td>Pierson College</td>
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<tr>
<td>D</td>
<td>Durfee Hall</td>
<td>PH</td>
<td>Phelps Hall</td>
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<tr>
<td>DAVIES</td>
<td>Davies Auditorium, Becton Center</td>
<td>PM</td>
<td>Peabody Museum</td>
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<tr>
<td>DC</td>
<td>Davenport College</td>
<td>PWG</td>
<td>Payne Whitney Gymnasium</td>
</tr>
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<td>DL</td>
<td>Dunham Laboratory</td>
<td>RTH</td>
<td>Ray Tompkins House</td>
</tr>
<tr>
<td>EAL</td>
<td>Electron Accelerator Laboratory</td>
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<td>Sage Hall</td>
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<td>SCL</td>
<td>Sterling Chemistry Laboratory</td>
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<td>SDLQ</td>
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<td>GML</td>
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<td>SHM</td>
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<td>Hall of Graduate Studies</td>
<td>SMH</td>
<td>Sprague Memorial Hall</td>
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<tr>
<td>HH</td>
<td>Hammond Hall</td>
<td>SML</td>
<td>Sterling Memorial Library</td>
</tr>
<tr>
<td>JE</td>
<td>Jonathan Edwards College</td>
<td>SPL</td>
<td>Sloane Physics Laboratory</td>
</tr>
<tr>
<td>JWG</td>
<td>Josiah Willard Gibbs Research Laboratories</td>
<td>SSS</td>
<td>Sheffield-Sterling-Strathcona Hall</td>
</tr>
<tr>
<td>F</td>
<td>Kirtland Hall</td>
<td>ST</td>
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<td>The Anlyan Center</td>
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<td>JE</td>
<td>Jonathan Edwards College</td>
<td>TD</td>
<td>Timothy Dwight College</td>
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<td>JWG</td>
<td>Josiah Willard Gibbs Research Laboratories</td>
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<td>Vanderbilt Hall</td>
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<td>Kirtland Hall</td>
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<td>Weir Hall</td>
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<td>Kline Biology Tower</td>
<td>WILH</td>
<td>William L. Harkness Hall</td>
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<td>WNSL</td>
<td>Wright Laboratory</td>
</tr>
<tr>
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<td>Kline Geology Laboratory</td>
<td>WNSL-W</td>
<td>Wright Laboratory West</td>
</tr>
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<td>L</td>
<td>Lawrance Hall</td>
<td>WOOD</td>
<td>Woodbridge Hall</td>
</tr>
<tr>
<td>LC</td>
<td>Linsly-Chittenden Hall</td>
<td>WOOL</td>
<td>Woolsey Hall</td>
</tr>
<tr>
<td>LEIGH</td>
<td>Abby and Mitch Leigh Hall</td>
<td>YCBA</td>
<td>Yale Center for British Art</td>
</tr>
<tr>
<td>LETTOBS</td>
<td>Leitner Observatory</td>
<td>YUAG</td>
<td>Yale University Art Gallery</td>
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**KEY TO COURSE LISTINGS**

1. Subjects are listed by three- or four-letter abbreviations in small capitals. A list of subject abbreviations precedes chapter IV.

2. Fall-term courses are indicated by the letter “a,” spring-term courses by the letter “b.” A course designated “a or b” (e.g., econ 150a or b) is the same course given in both fall and spring terms.

3. Days and times the course meets.

4. Foreign language courses are designated L1 (first term of language study), L2 (second term), L3 (third term), L4 (fourth term), or L5 (beyond the fourth term). Other distributional designations are QR, WR, Hu, Sc, and So, representing quantitative reasoning, writing, humanities and arts, science, and social science, respectively. (See chapter I and section A of chapter III.)

5. The course earns the specified amount of course credit. Most courses earn one course credit per term; variations are noted.

6. Classes or other meetings are held during reading period. (See chapter III, section G.) The absence of the phrase means that classes or other meetings will not be held during reading period.

7. Examination group number. Final examination times are given on page 10.

8. Prerequisites and recommendations are italicized.

---

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Credits</th>
<th>Corequisites</th>
<th>Meeting Times</th>
<th>Textbook(s)</th>
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<td>ROMN 120b</td>
<td>Introductory Romanian II</td>
<td>Staff</td>
<td>1.5 C</td>
<td>Meets RP</td>
<td>MTWHF 9:25-10:15</td>
<td>* Introductory Romanian II *</td>
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<td>ROMN 130a</td>
<td>Intermediate Romanian I</td>
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<td>Romanian Literature</td>
<td>John Smith</td>
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</tr>
<tr>
<td>ROMN 200a</td>
<td>History and Literature of Modern Romania</td>
<td>Jane Jones</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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5. The course earns the specified amount of course credit. Most courses earn one course credit per term; variations are noted.

6. Classes or other meetings are held during reading period. (See chapter III, section G.) The absence of the phrase means that classes or other meetings will not be held during reading period.

7. Examination group number. Final examination times are given on page 10.

8. Prerequisites and recommendations are italicized.
9. Courses in brackets are not offered during the current year but are expected to be given in the succeeding academic year.

10. The instructor must grant permission to take a course marked by a star. All seminars are starred.

11. Yearlong courses are designated by the Arabic number alone, without “a” or “b.”

12. Open to both undergraduate and graduate students. Undergraduates electing these courses, unless already accepted into the Program for the Simultaneous Award of the Bachelor’s and Master’s Degrees, must enroll under the undergraduate number.

13. A course with multiple titles, i.e., with two or more departments in the title line (such as ITAL 310a/LITR 183a), counts toward the major in each department where it appears. The meeting time and course description appear under only one department. Students indicate on the course schedule which department should appear on their transcripts. Cross-listed courses appear in departments other than their own (e.g., SPAN 223b is listed in Latin American Studies). Such courses may count toward the major of the cross-listing department.

14. Hour or hours to be arranged. 1 HTBA after a meeting time usually denotes a discussion section.

15. A student must complete the full year satisfactorily to receive credit. (See chapter III, section C.)

16. Literature course with readings in translation.

17. The abbreviations Junior sem, Senior sem, Fr sem, Amer, Core, Libr, Pre-1800, Pre-1900, and PreInd indicate Junior seminar, Senior seminar, Freshman seminar, American, Core course, Library course, Pre-1800 course, Pre-1900 course, and Preindustrial, respectively. Courses with these designations are applied toward the requirements of certain majors; descriptions of such requirements are included in program descriptions in chapter IV.

18. A course number in angle brackets indicates a course that is not currently listed or bracketed but that has been offered within the past three years.

19. A capital J or L following the course number denotes a History junior seminar or a science laboratory, respectively.

20. “For description see under” refers the reader to the department in which full course information appears. The line is used when the location of the full listing is not apparent from the course abbreviation, as, for example, with a multiple-titled course.

Changes in course information after May 6, 2008, appear on line at www.yale.edu/courseinfo.
A Message from the Dean of Yale College

This catalog presents the 2,000 courses offered to students in Yale College. Taken together they provide a remarkable opportunity to study a wide array of subjects taught by some of the finest scholars in the world. Along with the vibrant community of your residential college and the extracurricular activities in which you engage, these courses are designed to help you to develop the intellectual knowledge, skills, and sense of citizenship that will serve you throughout your lives.

Of course, a collection of individual courses does not constitute an education. We count on you, our students, with the counsel of faculty and deans, Yale’s distributional requirements, and your own interests and passions, to shape your liberal education in ways that will help you to become cultivated citizens of the world. Our expectation is that when you leave Yale, you will not only have acquired a trained mind, broadened knowledge, and a greater sense of citizenship; you also will have come to a deeper understanding of the continuing joy of disciplined learning.

We hope that perusing the pages of this bulletin will stir you to consider courses of study that you had never before imagined, and lead you deeper into intellectual worlds you already have explored. This book represents the heart and soul of what the Yale faculty holds in promise for you. It comes to you with our best wishes for a successful year.

Peter Salovey
Dean of Yale College
Chris Argyris Professor of Psychology
Yale College Calendar with Pertinent Deadlines

This calendar includes a partial summary of deadlines given in chapters I and III, along with those in the Yale College publication *Undergraduate Regulations*. Unless otherwise specified, references are to sections in chapter III of this bulletin, and deadlines fall at 5 P.M.

**2008 FALL TERM**

**August**

27 Wed. Residences open to upperclassmen, 9 A.M.

29 Fri. Residences open to freshmen, 9 A.M.

Required registration meetings for freshmen, 8 P.M.

**September**

1 Mon. Labor Day

2 Tues. Required registration meetings for upperclassmen.

3 Wed. Fall-term classes begin.

12 Fri. Final deadline to apply for a fall-term Leave of Absence (section J). Withdrawal from Yale College on or before this date entitles a student to a full rebate of fall-term tuition (*Undergraduate Regulations*, chapter 7).

15 Mon. Course schedules due for the Class of 2012.*

16 Tues. Course schedules due for the Classes of 2010 and 2011.*

17 Wed. Course schedules due for the Class of 2009.*

*All* students planning to complete degree requirements at the end of the fall term must file a petition by this date. (See section K for penalties resulting from failure to meet this deadline.)

27 Sat. Withdrawal from Yale College on or before this date entitles a student to a rebate of one-half of fall-term tuition (*Undergraduate Regulations*, chapter 7).

**October**

15 Wed. Deadline to apply for a spring-term 2009 Term Abroad (section K).

17 Fri. Deadline to complete applications for financial aid for the spring term, for students not enrolled in the 2008–2009 fall term (*Undergraduate Regulations*, chapter 8).

24 Fri. Midterm.

Last day to withdraw from a fall-term course without having the course appear on the transcript (sections F and B).

Deadline to apply for double credit in a single-credit course (section K).

Withdrawal from Yale College on or before this date entitles a student to a rebate of one-quarter of the term’s tuition (*Undergraduate Regulations*, chapter 7).

*RLate schedules from all classes are fined and may not include the Credit/D/Fail option. See chapter III, sections B and E.*
November

7 Fri.  Last day to convert from the Credit/D/Fail option in a fall-term course to a letter grade (section B).
21 Fri.  Fall recess begins, 5:20 P.M.
30 Sun.  Last day to relinquish on-campus housing for the spring term without charge (Undergraduate Regulations, chapter 7).

December

1 Mon.  Classes resume.
5 Fri.  Classes end; reading period begins.
Last day to withdraw from a fall-term course (sections F and B).
12 Fri.  Reading period ends.
Deadline for all course assignments, including term papers. This deadline can be extended only by a Temporary Incomplete authorized by the student’s residential college dean.
13 Sat.  Final examinations begin, 9 A.M.†
20 Sat.  Examinations end, 5:30 P.M.; winter recess begins.
21 Sun.  Residences close, 12 noon.

2009 SPRING TERM

January

7 Wed.  Residences open, 9 A.M.
11 Sun.  Required freshman registration meetings, 9 P.M.
12 Mon.  Spring-term classes begin.
Registration for sophomores, juniors, and seniors.
16 Fri.  Friday classes do not meet. Monday classes meet instead.
19 Mon.  Martin Luther King, Jr., Day; classes do not meet.
21 Wed.  Course schedules due for the Class of 2012.*
Final deadline to apply for a spring-term Leave of Absence (section J).
Withdrawal from Yale College on or before this date entitles a student to a full rebate of spring-term tuition (Undergraduate Regulations, chapter 7).
22 Thurs.  Course schedules due for the Classes of 2010 and 2011.*
23 Fri.  Course schedules due for the Class of 2009.*
Last day for students in the Class of 2009 to petition for permission to complete the requirements of two majors.

† Please note that examinations will be held on Saturday and Sunday, December 13, 14, and 20, 2008.
* Late schedules from all classes are fined and may not include the Credit/D/Fail option. See chapter III, sections B and E.
February

6 Fri. Withdrawal from Yale College on or before this date entitles a student to a rebate of one-half of spring-term tuition (*Undergraduate Regulations*, chapter 7).

March

6 Fri. Midterm.

Spring recess begins, 5.20 P.M.

Last day to withdraw from a spring-term course without having the course appear on the transcript (sections F and B).

Deadline to apply for double credit in a single-credit course (section K).

Withdrawal from Yale College on or before this date entitles a student to a rebate of one-quarter of the term's tuition (*Undergraduate Regulations*, chapter 7).

Deadline to apply for a fall-term 2009 Term Abroad or a 2009–2010 Year Abroad (section K).

23 Mon. Classes resume.

30 Mon. Last day to convert from the Credit/D/Fail option in a spring-term course to a letter grade (section B).

April

27 Mon. Classes end; reading period begins.

Monday classes do not meet; Friday classes meet instead.

Last day to withdraw from a spring-term course (sections F and B).

May

1 Fri. Applications for fall-term Leaves of Absence due (section J).

4 Mon. Reading period ends.

Deadline for all course assignments, including term papers. This deadline can be extended only by a Temporary Incomplete authorized by the student’s residential college dean.

5 Tues. Final examinations begin, 9 A.M.†

12 Tues. Examinations end, 5.30 P.M.

13 Wed. Residences close for underclassmen, 12 noon.

15 Fri. Deadline to complete applications for financial aid for the fall and spring terms, 2009–2010 (*Undergraduate Regulations*, chapter 8).

25 Mon. University Commencement.

26 Tues. Residences close for seniors, 12 noon.

† Please note that examinations will be held on Saturday and Sunday, May 9 and 10, 2009.
Rules governing the conduct of final examinations are given in section G of chapter III. (See “Reading Period” and “Final Examinations.”)

An examination group number appears in the data line for each course in chapter IV. Examination group assignments are based on course meeting times, according to the following scheme. Hours shown are the times at which courses begin:

- (31) M, W, or F, 8.20 a.m.
- (32) M, W, or F, 9 or 9.25 A.M.
- (33) M, W, or F, 10.30 A.M.
- (34) M, W, or F, 11.35 A.M.
- (36) M, W, or F, 1 or 1.30 P.M.
- (37) M, W, or F, after 2 P.M.

(22) T or Th, 9 or 9.25 A.M.
(23) T or Th, 10.30 A.M.
(24) T or Th, 11.35 A.M.
(26) T or Th, 1 or 1.30 P.M.
(27) T or Th, after 2 P.M.

Note: With the exception of courses assigned to common examination groups, a change in class meeting time will alter the examination time.

Courses with multiple sections but a common examination are assigned to an examination group from (61) to (69). Typical assignments include (but are not limited to): (61) foreign languages; (63) introductory-level English; (64) introductory economics; (69) introductory mathematics.

The examination group (50) is assigned to courses whose times are published elsewhere, or whose times belong to more than one of the groups listed above.

Courses in group (0) usually have no regular final examination, concluding instead with a term essay or other final exercise. Instructors of such courses may schedule a regular final examination based on the course starting time.

Final examination dates and times for 2008–2009 are:

<table>
<thead>
<tr>
<th>2008</th>
<th>9 A.M.</th>
<th>2 P.M.</th>
<th>7 P.M.</th>
<th>2009</th>
<th>9 A.M.</th>
<th>2 P.M.</th>
<th>7 P.M.</th>
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</table>
| 13 Dec. Sa | (22) | (64) | 5 May Tu | (61) | (37) |)
| 14 Dec. Su | (63) | 6 May W | (24) | (27) |)
| 15 Dec. M | (24) | (37) | 7 May Th | (23) | (33) |)
| 16 Dec. Tu | (61) | (27) | 8 May F | (26) | (34) | (31) |
| 17 Dec. W | (33) | (23) | (31) | 9 May Sa | (64) | (32) |)
| 18 Dec. Th | (69) | (32) | 10 May Su | (63) | |)
| 19 Dec. F | (34) | (26) | 11 May M | (69) | (36) |)
| 20 Dec. Sa | (36) | 12 May Tu | (22) | | | |

A student who in a given term elects two courses with the same examination group number will be charged $35 for a makeup examination. (See section H of chapter III, “Postponement of Final Examinations.”)
Yale College

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To be announced, Provost of the University
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W. Marichal Gentry, M.S.W., Associate Dean; Dean of Student Affairs
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William Whobrey, PH.D., Assistant Dean; Dean of Yale Summer Session and Special Programs
To be announced, Assistant Dean for Alcohol and Drug Initiatives
To be announced, Assistant Dean for Freshman Affairs
Alfred E. Guy, Jr., PH.D., Director of Yale College Writing Center
Laurie H. Ongley, PH.D., Managing Editor of Yale College Publications
Jill Carlton, PH.D., Registrar
Diane Rodrigues, B.S., Deputy Registrar
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BRANFORD COLLEGE, Daniel Tauss, M.Phil.
CALHOUN COLLEGE, Leslie Woodard, M.A.
DAVENPORT COLLEGE, Craig Harwood, Ph.D.
TIMOTHY DWIGHT COLLEGE, John Loge, M.A.
JONATHAN EDWARDS COLLEGE, Kyle Farley, Ph.D.
MORSE COLLEGE, Joel Silverman, Ph.D.
PIERSON COLLEGE, Amerigo Fabbri, Ph.D.
SAYBROOK COLLEGE, Paul S. McKinley, M.F.A.
SILLIMAN COLLEGE, Hugh M. Flick, Jr., Ph.D.
EZRA STILES COLLEGE, Jennifer Wood, M.Phil.
TRUMBULL COLLEGE, Jasmina Beširević-Regan, Ph.D.

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Christopher T. B. Murphy, B.A., Associate Director of Undergraduate Admissions
Patricia Wei, B.A., Associate Director of Undergraduate Admissions
Ernst Huff, M.S., Associate Vice President of Student Financial and Administrative Services
Caesar Storlazzi, M.M., Director of Student Financial Services and Chief Financial Aid Officer
Susan Gerber, M.B.A., Director of Student Financial Services Operations
Diane Frey, Director of Student Financial Services Center
Yale College, founded in 1701, is a coeducational undergraduate institution offering instruction in the liberal arts and sciences to about 5,200 students. The College is the oldest and the largest school of the University, which also comprises the Graduate School of Arts and Sciences and ten professional schools.

THE UNDERGRADUATE CURRICULUM

Yale College offers a liberal arts education, one that aims to cultivate a broadly informed, highly disciplined intellect without specifying in advance how that intellect will be used. Such an approach to learning regards college as a phase of exploration, a place for the exercise of curiosity and an opportunity for the discovery of new interests and abilities. The College does not seek primarily to train students in the particulars of a given career, although some students may elect to receive more of that preparation than others. Instead, its main goal is to instill knowledge and skills that students can bring to bear in whatever work they eventually choose. This philosophy of education corresponds with that expressed in the Yale Report of 1828, which draws a distinction between “expanding [the mind’s] powers, and storing it with knowledge.” Acquiring facts is important, but learning how to think critically and creatively in a variety of ways takes precedence.

To ensure that study is neither too narrowly focused nor too diffuse, the College stands behind the principle of distribution of studies as strongly as it supports the principle of concentration. It requires that study be characterized, particularly in the earlier years, by a reasonable diversity of subject matter and approach, and in the later years by concentration in one of the major programs or departments. In addition, the College requires that all students take courses in certain foundational skills—writing, quantitative reasoning, and foreign language—that hold the key to opportunities in later study and later life. People who fail to develop these skills at an early stage unknowingly limit their futures. In each skill, students are required to travel some further distance from where they were in high school for the reason that these competences mature and deepen. The best high school writer is still not the writer he or she could be; students who do not use their mathematics or foreign language skills in college commonly lose abilities they once had, and can graduate knowing less than when they arrived.

In a time of increasing globalization, both academic study of the international world and firsthand experience of foreign cultures are crucial. No Yale College student can afford to remain ignorant of the forces that shape our world. Yale College urges all of its students to consider a summer, a term, or a year abroad sometime during their college careers. A student working toward a bachelor’s degree takes four or five courses each term, and normally receives the B.A. or B.S. degree after completing thirty-six term courses or their equivalent in eight terms of enrollment. To
balance structure with latitude, and to achieve a balance of breadth and depth, a candidate for the bachelor’s degree is required, in completing the thirty-six term courses, to fulfill the distributorial requirements described in this bulletin as well as the requirements of a major program.

**ADVISING**

What students ultimately derive from four years at Yale depends in large measure on careful planning of a program of study. It would be imprudent for beginning students to map out a firm schedule of courses for the next eight terms. Yet it is important that they think ahead, and make their plans while keeping in mind the principles outlined in this bulletin.

Yale College does not prescribe a program of study, believing that students who select their courses are inevitably more engaged in them—a first precondition for serious learning. As students shape their educational goals, they should seek informed advice. The best advising comes when students and faculty members develop relationships out of shared intellectual interests. For incoming students, who have not yet formed such relationships, Yale College furnishes a special constellation of advising revolving around the residential college dean. Representatives from academic departments, the Health Professions Advisory Board, Undergraduate Career Services, and International Education and Fellowship Programs offer presentations to freshmen during their first days at college. Incoming students also confer with individual faculty advisers, who can listen to students’ interests, aims, and concerns and offer general guidance. Advisers do not mandate a particular set of courses, as the responsibility for choosing a program is the student’s, but each student should make use of all the advice available in order to plan the most effective program.

**DISTRIBUTIONAL REQUIREMENTS**

The distributional requirements, described below, are intended to assure that all graduates of Yale College have an acquaintance with a broad variety of fields of inquiry and approaches to knowledge. These requirements are the only specific rules limiting the selection of courses outside a student’s major program. By themselves, the distributional requirements constitute a minimal education, not a complete one, and represent the least that an educated person should seek to know. They are to be embraced as starting points, not goals.

**DISTRIBUTIONAL REQUIREMENTS FOR THE BACHELOR’S DEGREE**

Students must fulfill disciplinary area requirements by taking no fewer than two course credits in the humanities and arts, two in the sciences, and two in the social sciences. Students must also fulfill skills requirements by taking at least two course credits in quantitative reasoning, two course credits in writing, and courses to further their foreign language proficiency. Depending on their level of accomplishment in foreign languages at matriculation, students may fulfill this last requirement with one, two, or three courses or by certain combinations of course work and approved study abroad.
Distributions requirements for the freshman, sophomore, and junior years. Students benefit most from fulfilling the distributional requirements early in their college careers and then building on their new knowledge and capabilities. For this reason, Yale College requires partial fulfillment of the distributional requirements during the freshman, sophomore, and junior years, as detailed in chapter III of this bulletin.

Area requirement in the humanities and arts (two course credits). Study of the humanities and arts—those subjects that explore the broad range of human thought, expression, and endeavor—cultivates an educated recognition of the greatest accomplishments of the past and enriches the capacity to participate fully in the life of our time. Exploration of other civilizations, ancient and modern, gives students insight into the experiences of others and informs critical examination of their own culture. Those who create or perform works of art experience firsthand the joy and discipline of artistic expression. By rigorously and systematically examining the value and purpose of all that surrounds them, students of the humanities and arts can acquire essential preparation for many different kinds of careers. But independently of any particular application, study of these subjects fosters understanding of, and delight in, the reach and sweep of the human spirit.

Area requirement in the sciences (two course credits). Acquiring a broad view of what science is, what it has achieved, and what it might continue to achieve is an essential component of a college education. Close study of a science develops critical faculties that educated citizens need. These include an ability to evaluate the opinions of experts, to distinguish special pleading and demagoguery from responsible science, and to realize which things are known and which unknown—which are knowable and which unknowable—to science. The theoretical inquiry, experimental analysis, and firsthand problem solving inseparable from studying a science give rise to new modes of thought. To know science is to appreciate a thousand intricacies in nature and the universe, which are hidden from casual observation but which, once revealed, lend richness to everyday life.

Area requirement in the social sciences (two course credits). Insights attained through the social sciences take on a critical significance at a time when the world’s population is increasing rapidly and diverse cultures are coming into closer contact and sometimes into conflict. A major field of inquiry in the social sciences is international and area studies. Those who have been educated in the United States ought especially to acquire knowledge of cultures outside North America and western Europe, as well as broaden their understanding of the societies they know. Questions of class, gender, and identity are also central to work in the social sciences, whose methods test for connections between the familiar and the exotic, the traditional and the contemporary, the individual and the group, the predicted result and the anomalous outcome. Social science theories propose explanations for the entire range of human phenomena, from governments and economies to social organizations, communicative systems, cultural practices, and individual psychology.

Skills requirement in foreign language (at least one course, depending on preparation). The study of languages has long been one of the distinctive and defining features of a liberal arts education, and in the world of the twenty-first century, knowledge of more than one language is increasingly important. The benefits of language study include enhanced understanding of
how languages work, often resulting in heightened sophistication in the use of one's own language; unmediated access to texts otherwise available only in translation, or not at all; and the ability to recognize and cross cultural barriers.

All Yale College students are required to engage in study of a foreign language, regardless of the level of proficiency at the time of matriculation. Depending on their preparation, students take one, two, or three terms of foreign language study to fulfill the distributional requirement. Students may complete an approved study abroad program in lieu of intermediate or advanced language study at Yale. Details of the foreign language distributional requirement are listed under “Distributional Requirements” in chapter III, section A.

Skills requirement in quantitative reasoning (two course credits). The mental rigor resulting from quantitative study has been celebrated since ancient times, and applications of quantitative methods have proven critical to many different disciplines. Mathematics and statistics are basic tools for the natural and the social sciences, and they have become useful in many of the humanities as well. Information technology and the rigorous dissection of logical arguments in any discipline depend on algorithms and formal logical constructs. An educated person must be able to use quantitative information to make, understand, and evaluate arguments.

Many quantitative reasoning courses are taught through the departments of Mathematics, Statistics, and Computer Science. Such courses may also be found in Astronomy, Biology, Chemistry, Economics, Engineering, Environmental Studies, Geology and Geophysics, Philosophy, Physics, and Psychology.

Skills requirement in writing (two course credits). The ability to write well is one of the hallmarks of a liberal education and is indispensable to advanced research in most disciplines. As students strengthen their writing skills, they develop intellectual practices that distinguish active from passive learners.

The English department in particular offers many courses that focus on writing clearly and cogently, and courses in other departments stress writing skills within the context of their disciplines. Over 150 courses, spanning more than 25 different academic programs, give special attention to writing. Such courses, designated WR in this bulletin, do not necessarily require more writing than other courses; rather, they provide more help with writing assignments. Some characteristics of WR courses include writing to discover ideas, learning from model essays, detailed feedback, and reviewing writing in small groups.

MAJOR PROGRAMS

All candidates for a bachelor’s degree in Yale College must elect one of the major programs listed at the beginning of chapter IV. The requirements for a major are described in general terms in the sections below, and in more detail preceding the course listings of each department or program in chapter IV. Students plan a schedule of courses in their major in consultation with a representative of the department or program concerned, and must secure the consultant’s written approval. Students should acquaint themselves fully with all the requirements of the major they plan to enter, considering not only the choice of courses in the current term but also the plan of their entire work in the last two or three years in college.
Students seeking the B.S. or the B.A. degree with a major in science are expected to declare their majors at the beginning of sophomore year, although a student who has completed the prerequisites may elect a science major later. Sophomores interested in majoring in science should have their schedules approved by the director of undergraduate studies or the adviser designated by the department. Students seeking the B.A. degree with a major in a field other than a science typically declare their major at the beginning of the junior year. In the sophomore year these students’ schedules are signed by a sophomore adviser, chosen by the student, with whom the program has been discussed.

**SELECTION OF A MAJOR**

In designing a program of study, the student ought to plan for depth of concentration as well as breadth of scope. To study a subject in depth can be one of the most rewarding and energizing of human experiences, and can form the basis of the interests and occupations of a lifetime. Knowledge advances by specialization, and one can gain some of the excitement of discovery by pressing toward the outer limits of what is known in a particular field. Intense study of a seemingly narrow area of investigation may disclose ramifications and connections that alter perspectives on other subjects. Such study also sharpens judgment and acquaints a person with processes by which new truths can be found.

In order to gain exposure to this kind of experience, students must elect and complete a major, that is, the subject in which they will work more intensively than in any other. A list of the more than seventy possible majors in Yale College is given at the beginning of chapter IV. The department or program concerned sets the requirements for each major, which are explained in chapter IV.

Some students will have made a tentative choice of a major before entering college. Others will have settled on a general area—for example, the natural sciences or the humanities—without being certain of the specific department or program of their major. Still others will be completely undecided. Many students who arrive with their minds made up change them after a year or two. Even students who feel certain of their choices should keep open the possibility of a change. In selecting courses during their first two years, students should bear in mind not only the distributional requirements described above, but also the need for some exploration of the subjects to which they feel drawn.

**THE MAJOR (B.A. OR B.S.)**

A major program usually includes twelve term courses in the same area, progressing from introductory to advanced work, which become the focus of a student’s program in the junior and senior years. Majors are offered by departments, interdepartmental programs, or interdisciplinary programs. In many departments and programs, a limited number of courses in related fields may be offered in fulfillment of the requirements for the major. Many majors have prerequisites of two or more term courses taken in the freshman and sophomore years.

In all majors, the student must satisfy a senior requirement, usually a senior essay, senior project, or senior departmental examination. In an intensive
major, the student must fulfill additional requirements, such as taking a prescribed seminar, tutorial, or graduate course, or completing some other project in the senior year.

SPECIAL DIVISIONAL MAJORS

A Special Divisional Major affords an alternative for the student whose academic interests cannot be met within one of the existing major programs. Such students may, with the approval of the Committee on Honors and Academic Standing, design special majors of their own in consultation with members of the faculty and in accordance with the procedures outlined in chapter IV. A Special Divisional Major may not be offered as one of two majors.

THE RESIDENTIAL COLLEGES

The most conspicuous advantage of a university is that it presents students with a great breadth of learning and gives them access to scholars who are engaged not only in communicating knowledge but also in discovering it. But the potential disadvantages of a large university are that its size and complexity may discourage communication, and that teachers and students may become less of a challenge to each other. In such an event, the discovery of new knowledge suffers as much as do teaching and learning.

In order to mitigate such disadvantages as it grew from a small college into a modern research university, Yale established residential colleges. Initially made possible through gifts from Edward Stephen Harkness, B.A. 1897, the colleges are more than living quarters; they are small communities of men and women whose members know one another well and learn from one another. Each college has its own dining hall, library, common rooms, extracurricular activity spaces, and intramural athletic teams, and each college celebrates the progress of the academic year with various festivities, concerts, and dramatic presentations.

There are twelve colleges: Berkeley, Branford, Calhoun, Davenport, Timothy Dwight, Jonathan Edwards, Morse, Pierson, Saybrook, Silliman, Ezra Stiles, and Trumbull. At the head of each college is a resident master; and in each college a dean advises students on both academic and nonacademic matters. Associated with the master and the dean as fellows are about fifty additional members of the University drawn from different departments and schools. A few fellows reside in the college; others have offices there.

In the summer before arrival, each freshman is assigned to one of the twelve residential colleges. Most freshmen reside in a quadrangle known as the Old Campus. Whether freshmen live there or elsewhere on campus, they participate fully in the life of their residential college. All freshmen and sophomores are required to live on campus, and most juniors and seniors choose to do so. Whether they live on campus or off, students normally remain members of the same college throughout their undergraduate careers.

INTERNATIONAL EXPERIENCE

While students can be introduced to the dynamics of a globalizing world through the course offerings at Yale, experience abroad is an invaluable
complement to academic training. Such experience may include course work at foreign universities, intensive language training, directed research, independent projects, internships, laboratory work, and volunteer service. Yale College provides a variety of international opportunities during term time, summers, and post-graduation, as well as a large and growing number of fellowships to support students abroad.

Students may seek advice about summer or term-time study abroad and fellowship funding from the Office of International Education and Fellowship Programs, www.yale.edu/iefp. Summer courses abroad are offered by Yale Summer Session, www.yale.edu/summer. Advice about internships abroad is available from Undergraduate Career Services, www.yale.edu/career. Students may search for all grants and fellowships at Yale that support international activities at http://studentgrants.yale.edu/welcome.asp. Students on financial aid may be eligible for summer funding through the International Summer Award program, www.yale.edu/isa.

YEAR OR TERM ABROAD

In recognition of the special value of formal study abroad, Yale College allows juniors and second-term sophomores to earn a full year or term of credit toward the bachelor's degree through the Year or Term Abroad program. Participation in the program provides students the opportunity to approach academic study through a different cultural perspective and, most significantly, to speak, write, and learn in a foreign language. Students apply to the Yale College Committee on the Year or Term Abroad for approval of a program of study abroad. The pertinent application procedures and regulations are listed in chapter III, section K. Additional information is available from the Office of International Education and Fellowship Programs, www.yale.edu/iefp.

YALE-IN-LONDON

The Yale-in-London program offers spring-term courses in British culture and society at the Paul Mellon Centre for Studies in British Art, located in central London. The program is open to undergraduates, carries full Yale course credit, and counts as a term of enrollment. Instruction is designed to take advantage of the cultural resources of London and its environs, with regular field trips (including overnight stays) to museums, historic houses, and other sites of interest. Accommodations are provided for students in shared apartments. Further information is available on the Web at www.yale.edu/yaleinlondon and from the Yale-in-London office at the Yale Center for British Art.

YALE-IN-LONDON SUMMER PROGRAM

Yale-in-London offers two overlapping summer sessions at the Paul Mellon Centre for Studies in British Art, each lasting six weeks. There are two courses in each session, with topics in history, history of art, architecture, literature, and drama. The courses carry full Yale course credit, although enrollment in Yale-in-London summer session does not count as a term of enrollment in Yale College. Admission is open to a limited number of undergraduates. Instruction is primarily based on the study of art, architecture, and theater.
performances. Overnight field trips may be included. Accommodations are provided in University of London dormitories. Further information is available on the Web at www.yale.edu/yaleinlondon and from the Yale-in-London office at the Yale Center for British Art.

PEKING UNIVERSITY–YALE UNIVERSITY JOINT UNDERGRADUATE PROGRAM

Established in 2006, the Peking University–Yale University Joint Undergraduate Program in Beijing provides Yale students the unique opportunity to study and live with Chinese students on the Peking University campus. The program is open to Yale College sophomores, juniors, and, in some cases, first-term seniors, and to Peking University Yuanpei College students. The program accepts students from all majors for the fall or spring term or for the academic year. A term at Peking University carries full Yale course credit and counts as a term of enrollment. No prior Chinese language knowledge is necessary for Yale participants, although each student is required to take a Chinese language course at the appropriate level while in the program. All other courses, in a variety of disciplines, are taught in English by Yale and Peking University faculty members. Students from both universities live as roommates in a residence hall centrally located on the Peking University campus. Further information is available on the Web at www.yale.edu/iefp/pku-yale.

THE MACMILLAN CENTER

The Whitney and Betty MacMillan Center for International and Area Studies is the University’s principal institution for encouraging and coordinating teaching and research on international affairs and on societies and cultures around the world. The MacMillan Center brings together scholars from relevant schools and departments to provide comparative and problem-oriented teaching and research on regional, international, and global issues. It awards nearly 500 student fellowships and grants each year; brings visiting scholars to Yale; and sponsors lectures, conferences, workshops, seminars, and films.

The MacMillan Center oversees eight undergraduate majors: African Studies; East Asian Studies; Ethnicity, Race, and Migration; International Studies; Latin American Studies; Modern Middle East Studies; Russian and East European Studies; and South Asian Studies. For details about majors and programs, consult www.yale.edu/macmillan.

YALE SUMMER SESSION

Yale Summer Session offers courses in the humanities, social sciences, and sciences. Several summer courses, including language courses, are taught abroad. Courses in the Summer Session are in most cases similar to courses offered during the regular academic year, but in a more concentrated and intensive form. Yale College students may, if they wish, receive credit in Yale College for work successfully completed in Yale Summer Session. There are no auditing privileges in Yale Summer Session. Further information is available from the Yale Summer Session office or at www.yale.edu/summer.
SPECIAL PROGRAMS

DIRECTED STUDIES

Directed Studies is a selective freshman interdisciplinary program in Western civilization. Students in Directed Studies take three yearlong courses—literature, philosophy, and historical and political thought—in which they read central works of the Western tradition.

One hundred twenty-five freshmen are admitted to the program each year. The Freshman Handbook, mailed in May to all students who plan to matriculate at Yale, describes the program and explains the application procedure. Further information is available at www.yale.edu/directedstudies.

PERSPECTIVES ON SCIENCE

Perspectives on Science is a lecture and discussion course designed to supplement the standard academic program of a selected group of freshmen who have unusually strong backgrounds in science and mathematics. It explores a broad range of topics and exposes students to questions at the frontiers of science. It also highlights the interdependence of the various fields of science and raises issues about the relation between science and society. Participants attend biweekly lectures by distinguished members of the Yale science faculty. In the intervening weeks, groups of students and faculty participants discuss the previous lecture.

Enrollment is limited to about sixty freshmen who, having applied, are selected on the basis of outstanding records in mathematics and natural science. The Freshman Handbook, mailed in May to all students who plan to matriculate at Yale, describes the program and explains the application procedure. Further information is available on the Web at www.yale.edu/yalecollege/freshmen/welcome/special/ps.html.

FRESHMAN SEMINAR PROGRAM

The Freshman Seminar program offers first-year students the opportunity to enroll in small classes with some of Yale’s most eminent faculty members. Roughly thirty freshman seminars across a wide range of subjects are offered every year, in both fall and spring terms. Some seminars provide an introduction to a particular field of study; others take an interdisciplinary approach to a variety of topics. Whatever the subject and method of instruction, all seminars are designed with freshmen in mind and provide a context for developing relationships with faculty members and peers.

Current seminar offerings are listed in chapter IV. The Freshman Handbook, mailed in May to all students who plan to matriculate at Yale, describes the program and explains the application procedure. Further information is available at www.yale.edu/yalecollege/freshmen/welcome/special/fs/index.html.

RESIDENTIAL COLLEGE SEMINARS

The Residential College Seminar program, instituted in 1968, is devoted to the development within the residential colleges of innovative courses that fall outside departmental structures. Courses arise through the joint initiative of students and members of the faculty who are fellows of the residential colleges. The instructors for the seminar program are drawn in part from the faculty of Yale College, the professional schools, and other academic
institutions in the New York and New England areas. Individuals outside academic life may also serve as instructors: writers, artists, participants in government and the public sector, and experts from the arts and the media. The college seminars encourage innovation and experimentation within the framework of academic excellence that characterizes the Yale curriculum.

Most of the seminars in the Residential College Seminar program are supported by grants from the Old Dominion Foundation. Descriptions of the seminars are found on line at www.yale.edu/collegeseminar.

THE DEVANE LECTURES

The DeVane Lectures are a special series of lectures that are open to the general public as well as to students and to other members of the Yale community. They were established in 1969 in honor of William Clyde DeVane, Dean of Yale College from 1939 to 1963. Supplementary meetings are held for students taking the lectures for credit. The next set of DeVane Lectures will be offered in the 2009–2010 academic year.

FRANCIS WRITER-IN-RESIDENCE

The Francis Writer-in-Residence in Yale College is a distinguished writer of nonfiction who teaches either one or two term courses each academic year. He or she is actively engaged with undergraduate life and serves as an academic mentor through seminars, readings, open office hours, and other activities. The Francis Writer-in-Residence for 2008–2009 is Anne Fadiman.

ROSENKRANZ WRITER-IN-RESIDENCE

The Rosenkranz Writer-in-Residence in Yale College is a distinguished professional writer, chosen from fiction writers, playwrights, critics, journalists, screenwriters, essayists, poets, and social commentators. Both as a fellow of a residential college and as an instructor of one or two courses in each academic year, the Rosenkranz Writer-in-Residence meets formally and informally with students through classes and through readings and extracurricular activities. The Rosenkranz Writer-in-Residence, Louise Glück, is on leave in 2008–2009.

YALE JOURNALISM INITIATIVE

The Yale Journalism Initiative brings a distinguished writer to campus each term to teach an advanced journalism seminar, ENGL 467a or b. Students who complete the seminar may apply to become Yale Journalism Scholars, a distinction that provides access to summer support for internships, career counseling with a journalism specialist in the Writing Center, and invitations to meet professional journalists at events both on and off campus. The visiting journalists for 2008–2009 are Steven Brill (fall 2008) and Jill Abramson (spring 2009). For more information on the initiative or on becoming a Journalism Scholar, see www.yale.edu/writing/journalism.

UNDERGRADUATE PROGRAM FOR TEACHER PREPARATION

The Teacher Preparation and Education Studies program offers students an opportunity to explore educational issues while enabling them to meet the
requirements for certification to teach in early childhood settings or in public secondary schools. See under Teacher Preparation and Education Studies in chapter IV.

CENTER FOR LANGUAGE STUDY

The Center for Language Study (CLS), www.cls.yale.edu, provides guidance and support to students of foreign languages. The Center’s staff members can offer advice about placement, tutoring, opportunities for independent study, the use of computers and other technology in language study, and careers that require foreign language skills. Students may use foreign language video and audio materials in the CLS labs, as well as computers that support work with multimedia and foreign languages. The CLS facilities are open to all language learners at Yale, whether or not they are formally enrolled in language courses.

EXPOSITORY WRITING

To encourage the improvement of undergraduate writing, the Yale College Writing Center supports a range of courses and tutoring services. The English department offers several courses specifically designed to prepare students for expository writing assignments at the University, and other departments in the humanities, social sciences, and sciences complement this offering with courses (designated WR in chapter IV of this bulletin) that give special attention to the conventions and expectations of writing in particular disciplines.

Beyond the regular departmental offerings, the Yale College Writing Center provides several ways for students to get help with writing. The most important of these is the presence of a Writing Tutor in each residential college. Tutors usually meet with students on a one-to-one basis to discuss rough drafts of work in progress; they may also meet with small groups of students to discuss research techniques, revision strategies, or other matters relevant to effective writing. Tutors are available to help with any writing project: senior essays, course papers, graduate school and fellowship applications, or anything intended for publication. The Writing Partners, another resource, are undergraduate and graduate students who offer drop-in help to students at any stage of writing. Finally, the Writing Center offers occasional workshops and meetings on special topics, such as editing for crisper style or learning the conventions of American argument.

The Yale College Writing Center is maintained through the continuing support of the Bass family, the Newhouse Foundation, and other foundations. Its mission is to encourage excellence in writing and the use of writing for learning throughout the College. More detailed information is available from the Writing Center Web site at www.yale.edu/writing.

SCIENCE AND QUANTITATIVE REASONING

The Yale College Science and Quantitative Reasoning Center oversees programs for the enrichment of education in the sciences and quantitative disciplines. In addition to supporting faculty in the enhancement of teaching, the Center provides tutoring services and programs that enable students to participate in faculty-mentored research and engineering projects.

The Residential College Math and Science Tutoring program offers tutoring in the residential colleges to all Yale College students. Tutoring is available
at scheduled times and on a walk-in basis, and is provided in all areas of math and science as well as in economics. Information about tutoring can be found at each residential college dean’s office and on the Residential College Math and Science Tutoring Web site at www.yale.edu/mstutor.

To assist students who require more personalized or longer-term support than can be provided by the Residential College Math and Science Tutoring program, the Science and Quantitative Reasoning Center also administers a Science and QR Tutoring program. This program provides individual tutoring to undergraduates in the full range of science and quantitative disciplines, including economics. Any student enrolled in Yale College who is experiencing academic difficulty in a course, as confirmed by the instructor, is eligible for up to ten hours of tutoring per course each term free of charge. Further information is available at each residential college dean’s office, at the Science and Quantitative Reasoning Center, and at www.yale.edu/yalecollege/students/programs/tutoring/science.

RESOURCE OFFICE ON DISABILITIES

To ensure that all students have an equal opportunity to make the most of their Yale education, the Resource Office on Disabilities facilitates individual accommodations for students with disabilities, and works to remove physical and attitudinal barriers to their full participation in the University community. The Office provides technical assistance, information, and disability awareness training to any member of the Yale community.

Current and prospective students with disabilities are encouraged to contact the Resource Office on Disabilities in person at William L. Harkness Hall, 100 Wall St., room 103, or by mail at Resource Office on Disabilities, Yale University, P.O. Box 208305, New Haven, CT 06520-8305. Voice callers may reach staff at 432-2324 or 432-2325, and TTY/TDD callers at 432-8250. Further information is available on the Web at www.yale.edu/rod.

SIMULTANEOUS AWARD OF THE BACHELOR’S AND MASTER’S DEGREES

Yale College students with appropriate qualifications may enroll in courses in the Graduate School of Arts and Sciences. Such enrollment requires permission of the course’s instructor and of the director of graduate studies of the department in which the course is offered.

A limited number of students of demonstrated ability may undertake graduate work that will qualify them for the simultaneous award of the bachelor’s and master’s degrees at the end of their senior year. Students apply to this program through their director of undergraduate studies. Details of the requirements are listed in chapter III, section K.

COMBINED BACHELOR’S AND MASTER’S DEGREE PROGRAMS IN THE PROFESSIONAL SCHOOLS

Well-qualified students may be able to structure their undergraduate programs so as to become eligible for a master’s degree in Public Health, Forestry & Environmental Studies, or Music after one additional year of graduate study at Yale. For more information see under the respective headings in chapter IV.
ELI WHITNEY STUDENTS PROGRAM

The Eli Whitney Students program is designed for individuals with high academic potential who cannot regularly enroll for full-time study, but who seek to obtain a bachelor of arts or bachelor of science degree from Yale College. The program enrolls a small number of students who have demonstrated leadership and maturity and who enrich Yale College through their life experience, sense of purpose, and character.

A minimum of eighteen course credits from Yale as a matriculated student is required, and the degree must be completed within seven years. The program is described more fully in chapter III, section M. Additional information is available at www.yale.edu/admit/other/whitney/index.html.

HONORS

GENERAL HONORS

The bachelor’s degree cum laude, magna cum laude, or summa cum laude is awarded at graduation on the basis of a student’s general performance in courses taken at Yale. At Commencement, General Honors are awarded to no more than 30 percent of the class. The bachelor’s degree is awarded summa cum laude to no more than the top 5 percent of the graduating class, magna cum laude to no more than the next 10 percent of the graduating class, cum laude to no more than the next 15 percent of the graduating class. Eligibility for General Honors is based on the grade point average (GPA) earned in courses taken only at Yale, with letter grades carrying the following values:

<table>
<thead>
<tr>
<th>Grade</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A–</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B–</td>
<td>2.67</td>
</tr>
<tr>
<td>C+</td>
<td>2.33</td>
</tr>
<tr>
<td>C</td>
<td>2.00</td>
</tr>
<tr>
<td>C–</td>
<td>1.67</td>
</tr>
<tr>
<td>D</td>
<td>1.33</td>
</tr>
<tr>
<td>D–</td>
<td>1.00</td>
</tr>
<tr>
<td>F</td>
<td>0.67</td>
</tr>
<tr>
<td>F</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Marks of CR in courses taken on a Credit/D/Fail basis are not included in the calculation of grade point averages. Marks of W, for Withdrawal, carry no course credit, and do not figure in a grade point average.

DISTINCTION IN THE MAJOR

Distinction in the Major is conferred at graduation on any senior who, on nomination by the student’s department or program, and with the concurrence of the Committee on Honors and Academic Standing, merits such an award for the quality of work completed in the major subject.

Distinction is awarded to students who have earned grades of A or A– in three-quarters of the credits in the major subject or program and who have earned a grade of A or A– on the senior departmental examination, senior essay, or senior project. All courses taken for the major are included in these calculations for Distinction in the Major. Grades of F and marks of CR in courses taken Credit/D/Fail are included as non-A grades. Marks of W, for Withdrawal, carry no course credit, and do not figure in the calculation for Distinction.
PHI BETA KAPPA

Election to Phi Beta Kappa is based on the percentage of grades of A earned at Yale. The grade point average (GPA) is not a factor. Marks of CR in courses taken Credit/D/Fail are counted as non-A grades. Marks of W, for Withdrawal, carry no course credit, and do not figure in the calculation for Phi Beta Kappa. Grades earned outside Yale, including those earned during study abroad other than at Yale-in-London or the Peking University–Yale University Joint Undergraduate Program, are also not included in the calculation. Further information about the criteria for election and about the Yale chapter can be found at www.yale.edu/pbk/home.

PRIZES

For a list of the numerous prizes open annually to students in Yale College, consult www.yale.edu/secretary/prizes.

MISCELLANEOUS

Expenses and expected patterns of payment are described in the Undergraduate Regulations, published by the Yale College Dean’s Office, Yale University, P.O. Box 208241, New Haven, CT 06520-8241, and on the Web at www.yale.edu/yalecollege/publications/uregs. The Undergraduate Regulations also provides details of student coverage in the Yale Health Plan. Information about programs designed to assist families in financing a Yale education is included in the Yale College Viewbook, available from the Office of Undergraduate Admissions, Yale University, P.O. Box 208234, New Haven, CT 06520-8234, and on the Web at www.yale.edu/admit/freshmen/financial_aid.
Freshman Placement and Acceleration

Yale recognizes that freshmen enter college with different degrees of preparation and proficiency in various subjects. A substantial number of freshmen have completed advanced or honors work either on their own, or under the auspices of the Advanced Placement program of the College Board, or by enrollment in college courses before coming to Yale. The University strongly supports superior attainments like these, and offers placement in advanced courses to all freshmen who have successfully undertaken such work.

Eligibility for placement in advanced courses may be demonstrated in several ways: by excellent scores on the Advanced Placement or SAT Subject Tests of the College Board, by superior performance on a departmental placement examination, or through consultation with the appropriate director of undergraduate studies or placement officer.

In addition, Yale offers students the opportunity to accelerate, that is, to earn the bachelor’s degree in fewer than eight terms of regular enrollment. Acceleration may occur either by the early accumulation of thirty-six course credits or by the employment of acceleration credits. Acceleration credits are awarded at matriculation to freshmen on the basis of Advanced Placement tests (or equivalent international tests) or may be earned by completing a designated advanced course during freshman year. Freshmen with superior preparation in biology, chemistry, computer science, economics, English, foreign languages (ancient and modern), history of art, mathematics, music, or physics have the opportunity of acquiring credits that may be used for acceleration.

COURSE SELECTION IN FRESHMAN YEAR

Many departments offer introductory courses specifically designed for students beginning the study of a subject. In some of these departments (e.g., Anthropology, Economics, Linguistics, Philosophy, Political Science, and Sociology), a number of different introductory courses are available, all presented on the same level of difficulty but each approaching the subject from a different vantage point. In other departments, courses are organized on different levels of difficulty and require different degrees of preparation or skill. The level at which a student should begin or continue the study of a subject at Yale is primarily a matter of common sense. What is desired is placement at a level that will mean energetic work without a disproportionate slighting of one’s other courses, productive tension without frustration, and the enjoyment that comes from a new challenge rather than from the comfortable recognition of familiar territory. When in doubt, freshmen should, after seeking advice, trust to their energies and choose the more challenging courses.

In deciding about appropriate courses, freshmen should first read carefully the material in this chapter and in the Freshman Handbook, and then
examine the introductory information about particular fields in chapter IV of this bulletin. (The *Freshman Handbook* is mailed to all freshmen during the summer.) The introductory passages in chapter IV of this bulletin contain information concerning courses especially appropriate for freshmen as well as explanations of the differences in level or approach among various introductory courses. After considering the descriptions of course offerings, freshmen should consult their freshman faculty advisers. Since advisers cannot know everything about every subject of instruction, the student should regard the faculty adviser not only as a source of information but also as a point of contact with other members of the faculty who have the more precise and specific information a particular freshman may need. The faculty adviser may therefore refer a student with special qualifications or problems to the director of undergraduate studies of a department or program, to a departmental placement officer, or to a departmental adviser in the student’s residential college. The names of these members of the faculty are given with the introductory information on each subject described in chapter IV, and no freshman should hesitate to consult them at any point during the academic year, particularly during the first weeks of the term.

In deciding the most appropriate level of placement, a student may want to attend courses on a trial basis. Freshmen have ample time after freshman registration in which to submit their course schedules, so that a student can resolve doubts about placement by attending courses at two levels (or on two different aspects) of the same subject. Discussions with the instructors of these courses will usually be helpful, because in that context the question of a student’s placement can be explored in a concrete and exact way. Even after the term is under way, with the permission of the department a change of level in such subjects as foreign languages or mathematics may be arranged if the instructor and student agree that it is appropriate.

Departments offering instruction in subjects for which students may take Advanced Placement examinations or SAT Subject Tests have drawn up placement policies fully described in the *Freshman Handbook*. Although these policies are intended to answer most questions that freshmen may have, they cannot take into account every individual situation. Freshmen with questions about placement that are not answered in the *Freshman Handbook* or in this bulletin are invited to discuss their qualifications with the appropriate director of undergraduate studies or departmental representative.

## ENROLLMENT IN ADVANCED COURSES AND ACCELERATION CREDIT

*Enrollment in an advanced course* is permitted any freshman whose academic preparation has anticipated the main content of the prerequisite course or courses in that subject in Yale College. All students are encouraged, indeed, expected, to place themselves in the courses most appropriate to their preparation. At the same time, any student seeking to enroll in an advanced course should expect to furnish proof of being ready to continue work at an advanced level. Most students present good or excellent scores on such recognized, nationally administered, standardized tests as the Advanced Placement, SAT Subject, International Baccalaureate, or GCE A-levels. Some students—for example, native speakers of foreign languages or students who have studied languages or other subjects independently—may not have taken such tests,
but should still expect to establish their qualifications by taking a departmental placement examination (where one is available), or by speaking with the director of undergraduate studies or an instructor.

Placement in an advanced course does not award more than normal credit or reduce the total number of credits required for graduation. Successfully completing certain advanced courses during freshman year may award acceleration credits, or may allow students to skip some, or even all, prerequisite courses in certain majors (though may not be used to reduce the number of required courses in any major). Interested freshmen should consult the Freshman Handbook, and then seek advice from the appropriate director of undergraduate studies or departmental representative.

An acceleration credit is the equivalent of one course credit that may be applied to the 36-course-credit requirement for the bachelor’s degree only by students who are permitted to accelerate their progress toward graduation, that is, to complete the requirements of the bachelor’s degree in fewer than eight terms. The rules governing how acceleration credits may be used to reduce the number of terms required for the bachelor’s degree are complex and strictly enforced. Students seeking to accelerate should take special care to familiarize themselves with appendix A of the Freshman Handbook. Acceleration credits may not be employed to meet the distributional requirements for the freshman, sophomore, or junior years, or the distributional requirements for the bachelor’s degree, including the foreign language requirement.

Acceleration credits may be acquired in two ways:

1. On entrance: Freshmen who have scored 4 or 5 on an Advanced Placement test of the College Board will in many subjects be awarded two acceleration credits at matriculation. See below, “Criteria for the Award of Acceleration Credit.” Similarly, for subjects in which acceleration credits are awarded for specified scores on Advanced Placement tests, freshmen may be awarded the same number of acceleration credits for scores of 6 or 7 on higher-level International Baccalaureate examinations or for scores of B or A on the General Certificate of Education (GCE) A-level examinations. Students who have taken such examinations, or such established national examinations as the German Abitur or the French Baccalauréat, should bring the fact to the attention of their residential college deans and submit copies of their scores to the Registrar’s Office. For a score on a test to result in the award of acceleration credit, that test must have been taken while the student was enrolled in secondary school.

2. At Yale: Students may be granted acceleration credit in some subjects at the end of freshman year if during the year they successfully complete an appropriate advanced course in that subject. Such acceleration credit is in addition to the course credit earned, but is not in addition to acceleration credit already granted in that subject on the basis of an Advanced Placement test. Thus, for example, a freshman eligible to take ENGL 125 who has not received acceleration credits in English but who completes both terms of ENGL 125 with a grade of B or above receives course credit for ENGL 125 as well as two acceleration credits in English. See below, “Criteria for the Award of Acceleration Credit.”

In order to be awarded acceleration credit on the basis of advanced course work completed at Yale, the student must earn a grade of B or above in the course stipulated below during the freshman year. Other grades, including the mark of CR on the Credit/D/Fail option, will not yield acceleration credit. Acceleration credit cannot be awarded upon completion of advanced courses after a student’s first two terms of enrollment in Yale College.
In some subjects, such as economics, a high score on the Advanced Placement test does not in itself award acceleration credits. But the Advanced Placement test score may qualify students to enroll in intermediate-level courses, by which they may earn acceleration credits during freshman year. The chart below gives the acceleration criteria for each department.

Yale does not award course credit to students who took college courses while they were enrolled in secondary school. (Courses taken in Yale College or Yale Summer Session are exceptions.) However, a student who has taken such a course may be able to complete satisfactorily an advanced course in that subject during the freshman year at Yale and thus receive acceleration credit on that basis.

A student expecting acceleration credits must select courses with particular care throughout his or her years at Yale, because acceleration credits in a subject will be forfeited if a student takes a course that duplicates or is the equivalent of the work for which the acceleration credits are granted. Acceleration credit is usually forfeited if a student completes any course with a lower number than the lowest-numbered course earning acceleration credit in the subject. For specific information on the courses that result in the forfeit of acceleration credit, see the chart below.

Two is the maximum number of acceleration credits that may be earned in any subject, whether those credits are earned on matriculation or through course work at Yale.

**CRITERIA FOR THE AWARD OF ACCELERATION CREDIT**

Following are the criteria by which acceleration credit will be awarded to members of the freshman class. Also see appendix A of the *Freshman Handbook.*

<table>
<thead>
<tr>
<th>Subject</th>
<th>Acceleration Credit Awarded on Entrance</th>
<th>Acceleration Credit Earned during Freshman Year</th>
<th>Courses Resulting in the Forfeit of Acceleration Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Biology</td>
<td>1 credit for 5 on AP Biology test. No credit given for AP Environmental Science test.</td>
<td>1 credit for MCDB 200b, 202a, 205b, 210b, or 300a.</td>
<td>MCDB 109a or b, 107a, 109b, or 120a.</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1 credit for 5 on AP Chemistry test.</td>
<td>1 credit for CHEM 118a; 1 credit for 1 term, 2 credits for 2 terms of 124a, 125b, 220a, 221b, 225b, 232b, 322b, or 333b.</td>
<td>CHEM 112a, 113b, 114a, 115b</td>
</tr>
<tr>
<td>Computer Science</td>
<td>1 credit for 4 or 5 on AP Comp Sci AB test. No credit given for AP Comp Sci A test.</td>
<td>1 credit for CPSC 201a or b or 223b; 2 credits for 323a.</td>
<td>If 1 acceleration credit awarded: 1 lost by CPSC 112a or b. If 2 awarded: 2 lost by 112a or b, 1 lost by 201a or b or 223b.</td>
</tr>
<tr>
<td>Economics</td>
<td>None</td>
<td>1 credit in microeconomics for ECON 150a or b or 152a; 1 credit in macroeconomics for 153b or 154a or b.</td>
<td>Microeconomics credit lost by ECON 108a or b, 110a, 115a or b, or 117a; macroeconomics credit lost by 111b or 116a or b.</td>
</tr>
</tbody>
</table>
### Acceleration Credit Awarded on Entrance

**English**
- 2 credits for 5 on either AP English Lang and Comp or AP English Lit and Comp tests.

**Foreign Languages**
- French, German, Latin, and Spanish only:
  - 2 credits for 4 or 5 on AP test. No additional credit for multiple tests in a single language.

### Acceleration Credit Earned during Freshman Year

**English**
- 1 credit for ENGL 120A or b; 1 credit for 1 term.
- 2 credits for 2 terms of ENGL 125, 127, 129, or DRST 121.

**Foreign Languages**
- Spanish only:
  - 2 credits for SPAN 060A or 220A, or for L5 course numbered above 220.

### Courses Resulting in the Forfeit of Acceleration Credit

**English**
- ENGL 114A or b, 115A or b, 116B, 117B.

**Foreign Languages**
- All languages:
  - 2 acceleration credits lost for L1, L2, L3, L1–L2, or L3–L4 course; 1 lost for L4 course.

### History
- None.

### History of Art
- None.

### Mathematics
- 1 credit for MATH 115A or b; 1 credit for 118A or b; 2 credits for 120A or b or higher-numbered course (except 190A, 290B, and multiple-titled courses).

### Music
- 1 credit for 4 or 5 on AP Music Theory test.
- 2 credits for MUSI 210A or b, 211A or b, 304B, 305A, 307A, or 308B.

### Physics
- 1 credit for 4 or 5 on either AP Physics C test, with 5 on AP Calculus AB test or 4 or 5 on Calculus BC test.
- 2 credits for 4 or 5 on both parts of Physics C test with requisite score on Math AB or BC tests. No credit given for AP Physics B test.
- 2 credits for PHYS 260A, 261B, or for course numbered PHYS 400 or higher.

### Political Science
- None.

### Psychology
- None.

### Statistics
- None.

The registrar automatically awards acceleration credit by these criteria during the summer between freshman and sophomore years after an examination of the records of each member of the freshman class.
As a condition of enrollment in Yale College, every student is required to comply with the academic regulations. Students are expected to familiarize themselves with these regulations, and an assertion of ignorance of their provisions cannot be accepted as a basis for an exception to them. No student or group of students should expect to be warned individually to conform to any of the regulations contained in this publication. Students are advised to pay special attention to all deadlines given in the academic regulations. Students who have questions or concerns about these regulations should consult with their residential college dean.

A. REQUIREMENTS FOR THE B.A. OR B.S. DEGREE

To qualify for the bachelor’s degree, B.A. or B.S., a student must successfully complete thirty-six term courses in Yale College or their equivalent. In doing so, the student must fulfill the distributional requirements of Yale College and the requirements of a major program. A student may normally complete no more than eight terms of enrollment in order to fulfill these requirements. Students enrolled in the Eli Whitney Students program should consult section M, “Eli Whitney Students Program.”

Students who have already earned a bachelor’s degree, at Yale or at another institution, are not eligible for degree enrollment in Yale College, except in the Eli Whitney Students program.

DISTRIBUTIONAL REQUIREMENTS

All students in Yale College must fulfill distributional requirements in order to qualify for the bachelor’s degree. For a general introduction to the distributional requirements and a definition of the disciplinary areas and skills categories, refer to chapter I.

1. Distributional requirements for the freshman, sophomore, and junior years.

Students must partially fulfill the distributional requirements during the freshman, sophomore, and junior years in order to be eligible for promotion.

Distributional requirements for the freshman year: Students must have enrolled for at least one course credit in two skills categories by the end of the second term of enrollment in order to be eligible for promotion to sophomore standing. They may elect no more than four course credits in a single department, and no more than six course credits in a single disciplinary area, except that a student taking a laboratory course may elect as many as seven course credits in the sciences.

Distributional requirements for the sophomore year: Students must have enrolled for at least one course credit in each of the three disciplinary areas and for at least one course credit in each of the three skills categories by the end of the fourth term of enrollment in order to be eligible for promotion to junior standing.

Distributional requirements for the junior year: Students must have completed all of their skills requirements by the end of the sixth term of enrollment in order to be eligible for promotion to senior standing.
2. **Multiple distributional designations.** Although some courses may carry more than one distributional designation, a single course may be applied to only one distributional requirement. For example, if a course is designated both Hu and So in chapter IV of this bulletin, it may be applied toward either the humanities and arts requirement or the social science requirement, but not both. Similarly, if a course is designated QR and Sc, it may be applied toward either the quantitative reasoning requirement or the science requirement, but not both.

A course with multiple distributional designations, once applied toward one distributional requirement, may subsequently be applied toward a different distributional requirement. During the summer after each academic year, the Registrar's Office optimizes the use of each student's completed courses toward fulfillment of the distributional requirements.

3. **Foreign language distributional requirement.** All students are required to engage in the study of a foreign language while enrolled in Yale College. The most common paths to fulfillment of the foreign language distributional requirement are illustrated in the chart on page 34.

Students who matriculate at Yale with no previous foreign language training must complete three terms of instruction in a single foreign language. This requirement is fulfilled by the completion of courses designated L1, L2, and L3 in chapter IV of this bulletin.

Students who have taken the Advanced Placement examination in French, German, or Latin and who present scores of 4 or 5, or who have taken the Advanced Placement examination in Spanish and who present scores of 5, are recognized as having completed the intermediate level of study. Scores of 6 or 7 on the International Baccalaureate Advanced-Level examination are also accepted as evidence of intermediate-level accomplishment. Students at this level fulfill the language distributional requirement by completing one course designated L5 in chapter IV of this bulletin. Alternatively, they may successfully complete instruction in a different foreign language through the level designated L2.

Students who have studied a foreign language before matriculating at Yale but who have not achieved a score of 4 or 5 on the Advanced Placement test in French, German, or Latin, or a score of 5 on the Advanced Placement test in Spanish must take a placement test offered by the appropriate language department. Dates and times of placement tests are given in the *Calendar for the Opening Days of College* and in the departmental program descriptions in chapter IV of this bulletin. The departmental test determines whether students place into the first, second, third, or fourth term of language study (courses designated L1, L2, L3, or L4 in chapter IV of this bulletin), or whether they qualify for language courses beyond the fourth term of study (L5).

Students who place into the first term of a foreign language must complete three terms of instruction in that language, designated L1, L2, and L3 in chapter IV of this bulletin.

Students who matriculate at Yale able to place into the second term of a foreign language must successfully complete three terms of instruction in that language, designated L2, L3, and L4 in chapter IV of this bulletin. Alternatively, they may successfully complete instruction in a different foreign language through the level designated L3.

Students who matriculate at Yale able to place into the third term of a foreign language must successfully complete two terms of instruction in that language, designated L3 and L4 in chapter IV of this bulletin. Alternatively,
This chart illustrates the most common paths for fulfilling the language requirement. Refer to the text of this chapter for complete information.
they may successfully complete instruction in a different foreign language through the level designated L3.

Students who matriculate at Yale able to place into the fourth term of a foreign language must successfully complete one term of instruction in that language, designated L4 in chapter IV of this bulletin. Alternatively, they may successfully complete instruction in a different foreign language through the level designated L3.

Students who matriculate at Yale able to place into the fifth term of a foreign language must successfully complete one term of instruction in that language, designated L5 in chapter IV of this bulletin. Alternatively, they may successfully complete instruction in a different foreign language through the level designated L2.

Students who demonstrate by examination at Yale that they are native speakers of a language other than English must successfully complete instruction in a third language, neither English nor the native language, through the level designated L2. Alternatively, students in this category who present a secondary school transcript showing that the language of instruction was other than English may fulfill the foreign language requirement by completing ENGL 114a or b, 120a or b, or 450b.

In order to promote firsthand experience in foreign cultures and the learning of language in real-world settings, students are permitted to apply toward the satisfaction of the foreign language requirement the completion of an approved study abroad program in a foreign-language-speaking setting if they have first completed or placed out of a language course designated L2 in chapter IV. A student may seek permission from the appropriate director of undergraduate studies or the director of the Center for Language Study to substitute a term or a summer abroad in an approved program for intermediate or advanced language study at Yale (L3 or higher). Study abroad may be used in place of L1 and L2 courses only if it is part of a Yale College program. Study abroad opportunities are described in chapter I under the heading “International Experience.”

Students who have taken a course in a foreign language at another institution and who wish to offer that course toward fulfillment of the foreign language distributional requirement must pass a foreign language examination administered at Yale by the appropriate director of undergraduate studies or the director of the Center for Language Study.

Intensive language courses provide the equivalent of a full year of instruction in a single term. A course designated L1–L2 in chapter IV of this bulletin fulfills both the L1 and the L2 levels of the foreign language distributional requirement. Similarly, a course designated L3–L4 satisfies both the L3 and the L4 levels.

Not all of the languages offered in Yale College are offered at all levels, and it may not be possible to fulfill the language requirement in some of them. Languages currently offered in Yale College are Akkadian, Arabic, Chinese, Coptic, Czech, hieroglyphic Egyptian, French, German, ancient Greek, modern Greek, biblical Hebrew, modern Hebrew, Hindi, Indonesian, isiZulu, Italian, Japanese, Kiswahili, Korean, Latin, Persian, Polish, Portuguese, Russian, Sanskrit, Serbian and Croatian, Spanish, Syriac, Tamil, Turkish, Vietnamese, and Yorùbá. Students wishing to fulfill the foreign language requirement in a less commonly taught language should consult the director of undergraduate studies in the relevant department to verify that the appropriate level of study will be offered. Students who have intermediate- or higher-level proficiency in a language other than those listed here (including
American Sign Language) should consult the appropriate director of undergraduate studies or the director of the Center for Language Study to arrange for a placement examination.

Students who, for medical reasons, are not able to complete the language requirement may petition the Committee on Honors and Academic Standing for a waiver of the requirement. In granting such a waiver, the committee will normally require that a student complete four course credits in the study of a specific non-English-speaking culture.

4. Courses taken on the Credit/D/Fail basis. A student may not apply any course credit earned on the Credit/D/Fail basis toward satisfaction of the distributional requirements for the bachelor’s degree.

5. Acceleration credits. Acceleration credits may not be employed to satisfy the distributional requirements for the bachelor’s degree, nor may they be employed to meet the distributional requirements for the freshman, sophomore, or junior years.

6. Course credit earned at Yale before matriculation. Course credit earned at Yale before a student’s matriculation, either at Yale Summer Session or in the Nondegree Students program while the student was enrolled as a secondary school student in the New Haven area, may be applied to the distributional requirements for the bachelor’s degree and to those for the sophomore and junior years, but it may not be applied to the distributional requirements for the freshman year.

7. Course credit from outside Yale. Course credit earned at another university may be applied toward the distributional requirements for the bachelor’s degree and to those for the sophomore and junior years whether or not it is counted toward the 36-course-credit requirement for graduation. Credit from outside Yale may not be applied toward the distributional requirements for the freshman year. See section O, “Credit from Other Universities.” Note particularly that Yale does not award course credit or distributional credit for courses completed at another college or university before the student graduated from secondary school.

8. Major programs. Courses taken in fulfillment of a student’s major requirements may be applied toward satisfaction of the distributional requirements for the freshman, sophomore, and junior years and toward the distributional requirements for the bachelor’s degree.

9. Permission for a partial waiver of the distributional requirements for the freshman year. If, with the permission of the residential college dean, a freshman enrolls in a program of study for the first two terms of enrollment worth more than nine course credits, the dean may waive the year limit on the number of course credits that a student may elect in a single department or disciplinary area. Under no circumstances may a student be promoted to sophomore standing without having enrolled for at least one course credit in two skills categories (foreign language, quantitative reasoning, writing).

10. Permission to postpone fulfillment of the distributional requirements for the sophomore year. A student may petition the Committee on Honors and Academic Standing for permission to fulfill the distributional requirements for the sophomore year in the fifth term of enrollment. Such a petition must be filed no later than the date of midterm of the fourth term of enrollment; it should explain the sound academic reasons why these requirements cannot be satisfied within four terms of enrollment and give an exact description of how they shall be fulfilled in the fifth term. Students who have not
fulfilled the distributional requirements for the sophomore year by the end of the fourth term of enrollment and who have not been granted permission by the Committee on Honors and Academic Standing to postpone their fulfillment will normally not be promoted to junior standing.

11. Permission to postpone fulfillment of the distributional requirements for the junior year. In exceptional circumstances, a student may petition the Committee on Honors and Academic Standing for permission to fulfill the distributional requirements for the junior year in the seventh term of enrollment. Such a petition, which must include the written support of the director of undergraduate studies in the student's major and the residential college dean, should be filed no later than the date of midterm of the fifth term of enrollment; in no case will a petition be accepted later than the date on which the student's course schedule is due in the sixth term of enrollment. It should explain the sound academic reasons why these requirements cannot be satisfied within six terms of enrollment and give an exact description of how they shall be fulfilled in the seventh term. Students who have not fulfilled the distributional requirements for the junior year by the end of the sixth term of enrollment and who have not been granted permission by the Committee on Honors and Academic Standing to postpone their fulfillment will normally not be promoted to senior standing.

MAJOR REQUIREMENTS

The requirements of the various major programs are given in chapter IV. Every major program includes a senior requirement, which may take the form of a senior essay, a senior project, or a senior departmental examination.

EIGHT TERMS OF ENROLLMENT

A student must complete the requirements for the bachelor's degree in no more than eight terms of enrollment. Terms spent on a Year or Term Abroad, or in the Yale College program at the Paul Mellon Centre in London during a spring term, or in the Peking University–Yale University Joint Undergraduate Program in Beijing, are considered the equivalent of terms of enrollment in Yale College. Note, however, that course credits earned in terms spent on a Year or Term Abroad may not be applied to acceleration by the early accumulation of thirty-six course credits all earned at Yale: see section P, “Acceleration Policies.” (Attendance at the summer program at the Paul Mellon Centre in London or Yale Summer Session does not constitute a term of enrollment in Yale College.)

In exceptional circumstances, a student may petition the Yale College Committee on Honors and Academic Standing for permission to enroll for an additional term. Such a petition should be made no later than the beginning of a student's seventh term of enrollment; it should describe precisely, giving detailed information on specific courses, why it is impossible for the student to complete the requirements for a bachelor's degree within eight terms; and it should be accompanied by detailed, informative letters of endorsement from the student's director of undergraduate studies and residential college dean. For a student to exceed eight terms of enrollment usually means that another student cannot be admitted to Yale; a petition for a ninth term will therefore be approved only in extraordinary circumstances. The Committee on Honors and Academic Standing cannot grant permission for a ninth term
in order for a student to undertake an optional arrangement not necessary for the acquisition of a bachelor’s degree, such as, for example, the completion of two majors, or enrollment in the Program for the Simultaneous Award of the Bachelor’s and Master’s Degrees, or completion of the entrance requirements for graduate or professional school. A student given permission to enroll for a ninth term is not eligible for scholarship assistance from Yale, although other forms of financial aid may be available (see chapter VIII, “Financial Aid Regulations,” in the Yale College publication Undergraduate Regulations).

Graduation in fewer than eight terms of enrollment is possible: see section P, “Acceleration Policies.” Under no circumstances may a student graduate in fewer than six terms of enrollment, unless the student was admitted by transfer from another college or university. Transfer students should consult section L, “Transfer Students.”

B. GRADES

LETTER GRADES

The letter grades in Yale College are as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
</tr>
<tr>
<td>A–</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>Good</td>
</tr>
<tr>
<td>B–</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>C–</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>Passing</td>
</tr>
<tr>
<td>D–</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
</tr>
</tbody>
</table>

CREDIT/D/FAIL OPTION

In order to encourage academic exploration and to promote diversity in students’ programs, the Yale College Faculty has provided that students may elect a certain number of courses on a Credit/D/Fail basis.

1. Reporting of grades. In all courses (except for a few professional school courses), instructors report letter grades for all students. If the student has chosen the Credit/D/Fail option in a course, the registrar converts grades of A, A–, B+, B, B–, C+, C, and C– into the notation CR, which is entered on the student’s transcript. Grades of D+, D, D–, and F are entered on the transcript as reported. A student may not be required to disclose to the instructor of a course whether the student has enrolled in the course for a letter grade or under the Credit/D/Fail option.

2. Eligibility. All courses offered in Yale College during the fall and spring terms are available for election under the Credit/D/Fail option. Courses in Yale Summer Session may not be taken under the Credit/D/Fail option.

3. Total number of courses. A student may offer as many as four course credits earned on the Credit/D/Fail basis toward the bachelor’s degree.
4. **Number of courses in a term.** As many as two credits may be elected under the Credit/D/Fail option in a term; thus in an academic year a student may earn as many as four credits on the Credit/D/Fail option. In each term, a student must elect at least two courses, representing at least two course credits, for letter grades.

5. **Distributional requirements.** A student may not apply any course credit earned on the Credit/D/Fail basis toward satisfaction of the distributional requirements for the bachelor’s degree.

6. **Requirements of the major.** Program descriptions in chapter IV of this bulletin specify whether or not courses taken on the Credit/D/Fail basis count toward the requirements of particular majors.

7. **Credit/Year only courses.** A *Cr/Year only* course may be taken under the Credit/D/Fail option for one term while the other term of the yearlong course is taken for a letter grade. For *Cr/Year only* courses in which a student receives a separate letter grade for each of the two terms (e.g., THST 237, Design for the Theater), each term of the course will be governed by the enrollment option the student elected for that term. For *Cr/Year only* courses in which a student receives the mark of SAT or NSAT for the first term and a letter grade for the second (e.g., SCIE 198, Perspectives on Science), the enrollment option that the student elects for the second term governs both terms of the yearlong course; that is, students will receive either the mark of CR for both terms of the course or a letter grade for both terms of the course, depending on the option elected for the second term of the course.

8. **Course schedules.** Students must indicate on their course schedules at the beginning of a term the use they wish to make during that term of the Credit/D/Fail option. As indicated above, in a given term a student may elect as many as (but no more than) two course credits on the Credit/D/Fail basis; and a student must elect at least two courses, representing at least two course credits, for letter grades. If a student indicates on the course schedule more than two course credits being taken on the Credit/D/Fail option, the registrar will record only the first two of them, in the order in which they are listed, as being taken on that basis, and the student will not be permitted to take the others on the Credit/D/Fail option.

9. **Late course schedules.** Because a decision to employ the Credit/D/Fail option in a course must be declared at the beginning of the term on the student’s course schedule, and because conversion from a letter grade to the Credit/D/Fail option is not possible for students who submit their schedules on time, a student who submits the schedule after the date on which it is due may not employ the Credit/D/Fail option in any course during that term. See “Enrollment in Courses” in section E. The only exception to this rule may be in the case of a student who for some valid and extraordinary reason cannot submit the course schedule on time and who has the permission of the residential college dean and the registrar to submit it late. If the college dean approves, such a student may employ the Credit/D/Fail option only by submitting to the college dean by the date on which the course schedule is due (as published in the calendar at the beginning of this bulletin) a written statement specifying the course (or courses) that the student wishes to take on the Credit/D/Fail basis.

10. **Registration withheld.** In order to employ the Credit/D/Fail option, students whose registration is being withheld by the Office of Student Financial Services or any other administrative office of the University must
submit their schedules on time, before the deadline indicated on the student’s course schedule and listed in the calendar at the beginning of this bulletin.

11. Conversion to a letter grade. Until November 7, 2008, in the fall term (two weeks after midterm), and until March 30, 2009, in the spring term (a week after the date of the resumption of classes following spring recess), a student who has elected a course on the Credit/D/Fail basis may choose to receive a letter grade in that course by filing the appropriate form in the office of the residential college dean. After these dates such conversion is not possible. If a student converts from the Credit/D/Fail option to a letter grade before the deadline, the option may not again be resumed even if the student desires to do so before the deadline.

12. Conversion from a letter grade to Credit/D/Fail. A course once elected for a letter grade may not subsequently be converted to a course taken on the Credit/D/Fail basis.

13. Courses selected after the deadline. A student who for any reason has been granted extraordinary permission by the Committee on Honors and Academic Standing to elect a new course after the deadline for submitting a course schedule may not employ the Credit/D/Fail option in that course. A change of level in courses in which the subject is taught in an ordered progression is not considered the election of a new course.

14. Acceleration credit. Work completed under the Credit/D/Fail option cannot yield acceleration credit (see “Enrollment in Advanced Courses and Acceleration Credit” in chapter II).

15. Prizes and honors. Marks of CR are included in the calculations for some prizes, for Distinction in the Major, and for election to Phi Beta Kappa as non-A grades, but marks of CR are not included in the calculation for General Honors (see under “Honors” in chapter I).

16. Courses in the graduate and professional schools. Courses in the Graduate School of Arts and Sciences and in the professional schools of the University are not available on the Yale College Credit/D/Fail option. Some courses in certain professional schools of the University are, however, graded on a Pass/Fail basis only, and grades for undergraduates in these courses are recorded as CR or F. Such credits are counted in the total earned on the Credit/D/Fail basis that a student is permitted to offer in a term as well as the total offered toward the requirements of a bachelor’s degree. Marks of CR in professional school courses are included in the calculations for Distinction in the Major as non-A grades. Marks of CR in professional school courses are not included in the calculation for General Honors (see “General Honors” and “Distinction in the Major” in chapter I).

17. Independent study. It is expected that course credit earned in independent study, directed reading or research, tutorial courses, or the like, will not be taken on the Credit/D/Fail basis.

GENERAL REGULATIONS CONCERNING GRADES AND TRANSCRIPTS

1. Record of courses. A transcript is the record of courses in which a student has enrolled during the student’s progress in completing the requirements of the bachelor’s degree. All grades, passing and failing, thus appear on the transcript. If a student remains in a course after the date of midterm, the student is considered to have been enrolled in that course; therefore, if a student
withdraws from the course after midterm and before the first day of the reading period, the mark W (for Withdrew) appears on the transcript in association with the course. See paragraph 5 below.

2. Equal value of courses. Passing grades contribute equally, to the extent to which they carry course credit, toward the 36-course-credit requirement for graduation. A grade of D in a course, for example, does not need to be balanced with a higher grade in some other course.

3. Change of a grade. A grade, once submitted by the instructor of a course to the registrar, may not be changed except by vote of the Yale College Committee on Honors and Academic Standing on petition of the instructor, unless it is the result of a clerical error made in the instructor’s computation or in transcription of a grade.

4. Withdrawal from courses before midterm. If a student has elected a course on the course schedule but formally withdraws from it before midterm (October 14, 2008, in the fall term; March 6, 2009, in the spring term), the student’s transcript will contain no indication of that course after the withdrawal has been recorded by the registrar. See “Withdrawal from Courses,” section F.

5. Withdrawal from courses after midterm. If a student enrolled in a course formally withdraws from it after midterm but before the first day of the reading period, the student’s transcript will record the designation W (Withdrew) for the course. The mark of W is a neutral designation indicating simply that the student has been enrolled in, but has withdrawn from, a course; while the course obviously carries no credit toward the degree, the W implies no evaluation of a student’s work and carries no implication whatsoever of failure. Withdrawal from a course after the deadline (December 5, 2008, in the fall term, and April 27, 2009, in the spring term) is not possible. See “Withdrawal from Courses,” section F.

6. Incomplete work and postponed final examinations. A student who has received permission for a mark of Temporary Incomplete in a course, or who has been authorized to take a makeup final examination in a course, is allowed the specified period of time to repair the deficiency in the course. If the deficiency is not repaired by a satisfactory performance within the stipulated time, then the designation TI (Authorized Temporary Incomplete) or ABX (Authorized Absence from Final Examination) is automatically converted by the registrar to the grade of F. See “Postponement of Final Examinations” and “Work Incomplete at the End of Term” in section H.

7. Withdrawal from Yale College. Whether a student withdraws from Yale College for personal, medical, academic, or disciplinary reasons, the entry placed in each case on the student’s transcript is the word “Withdrew” together with the date of the withdrawal.

8. Tracks and programs within majors. A transcript may show as a student’s major subject only a designation approved for that purpose by the Yale College Faculty; “tracks” or programs within majors may not appear on transcripts. The majors approved by the faculty are listed in this bulletin at the beginning of chapter IV under “Majors in Yale College.”

9. Distribution of grade reports. The Registrar’s Office sends grade reports to students each term from six to eight weeks after the close of the term. At registration each year, a student is given the opportunity to declare whether his or her grades may be released to certain other parties. If the student gives permission for grades to be released to a guardian or to parents, after the fall
term of that year the Registrar’s Office will send a grade report to them. After
the spring term, the Registrar’s Office sends a grade report to each student
at the student’s home address, and this report may be shared with parents if
the student wishes. If a student gives permission for grades to be released
to a secondary school or Alumni Schools Committee, grade reports will be
furnished to them only upon specific request of the school or the commit-
tee. Upon written request of the student, the Registrar’s Office will also send
a copy of the grade report to any additional person or agency designated by
the student.

10. Early access to grade reports. Early access to recorded grades is available
on line to students in any Yale College course for which they have completed
or actively declined to complete the online course evaluation form through
the Yale University Student Information Systems.

11. Transcript orders. Transcripts may be ordered either at the Registrar’s
Office, 246 Church Street, or on the Web at www.yale.edu/sfas/registrar/
index.html#transcripts. In each transcript order, the charge for the first tran-
script is $7, with a charge of $3 for each additional transcript ordered at the
same time to the same address. Each fall the registrar provides in each stu-
dent’s registration packet, free of charge, an unofficial copy of the student’s
academic record to date. This record may serve as a convenient aid in dis-
cussions with the student’s adviser of the student’s academic plans during the
coming year.

C. COURSE CREDITS AND COURSE LOADS

CREDIT VALUE OF COURSES

Most courses in Yale College are term courses that carry one course credit if
completed with a passing grade. There are, however, some variations:

1. Double-credit courses. A few courses in Yale College, including intensive
language or research courses, award two course credits for a single term’s work.

2. Yearlong courses. There are a few yearlong courses in which two course
credits are awarded upon the satisfactory completion of both terms of the
course; other courses, including some research and laboratory courses, give
one or four course credits for the successful completion of the full year’s work.
A student who fails the first term of a year course may be permitted to continue
the course only with the instructor’s written permission, and will receive
course credit only for the successful completion of the second term’s work. A
student who satisfactorily completes the first term of a year course may receive
course credit routinely for that term’s work, except in those courses marked
Cr/Year only. (See “Key to Course Listings” at the beginning of this bulletin.)

Note that completion of a modern foreign language course numbered
110a or b does not award credit unless and until the subsequent term, num-
bered 120a or b, is also successfully completed. Except in intensive, double-
credit courses in which the equivalent of one year of language study is cov-
ered in one term, credit may not be given in any circumstance for the first term
only of an introductory modern foreign language; neither instructors nor
departments have the authority to make an exception to this rule. With some
exceptions, credit will be given for successful completion of the second term
only of an introductory modern foreign language, or for the first term only
or the second term only of an intermediate modern foreign language.
3. **Laboratory courses.** Some laboratory courses carry no separate credit toward the degree; others carry a full course credit for a term’s work; and still others carry one-half course credit.

4. **Half-credit courses.** All courses that carry 0.5 or 1.5 course credits and that are not bound by the **Cr/Year only** restriction count toward the 36-course-credit requirement for the bachelor’s degree.

**NORMAL PROGRAM OF STUDY**

A student in Yale College normally takes four or five term courses, or their equivalent, for each of eight terms.

1. **Minimum course load.** A student may not enroll in a program of study worth fewer than three course credits in one term. A student enrolled for three course credits may withdraw from one course credit between midterm and the first day of the reading period, receiving the neutral designation W (Withdrew) in that course. Similarly, a student enrolled for four or more course credits may withdraw from one or more courses as described above, but at no time may any student carry a schedule of courses that will earn fewer than two course credits in a term.

2. **Course loads requiring permission.** A three-course-credit program of study or a six-course-credit program of study requires the permission of the residential college dean. It is assumed that any student who requests permission to carry more than five course credits does not intend to drop any of them.

3. **Seven course credits in a term.** A student must petition the Yale College Committee on Honors and Academic Standing for permission to take a program worth seven credits in a term. In the petition the student must explicitly state an intention to complete all the courses proposed.

4. **Independent study.** Opportunities for independent study exist in many programs and departments under various designations: directed reading or research, individual reading or research, independent research or study, independent or special projects, individual instruction in music performance, independent, individual, or special tutorials, and the senior essay or project, among others. Note that course credit earned in such study may not be used toward fulfillment of the distributional requirements. Approval for any such particular course is given by the department or program; however, approval for an independent study course is also required from the Yale College Committee on Honors and Academic Standing if certain limits are exceeded. A student must petition the committee for permission to enroll in more than one such course credit in any one term before the senior year or in more than two such course credits in any one term during the senior year. Permission is also required for a student to enroll in more than three such course credits in the first six terms of enrollment. In the petition the student must give sound academic reasons for exceeding these limits.

**D. PROMOTION AND GOOD STANDING**

**REQUIREMENTS FOR PROMOTION**

1. To be promoted to sophomore standing after two terms of enrollment, a student must have earned at least eight course credits or the equivalent and have fulfilled the distributional requirements for the freshman year.
2. To be promoted to junior standing after four terms of enrollment, a student must have earned at least sixteen course credits or the equivalent and is expected to have fulfilled the distributional requirements for the sophomore year.

3. To be promoted to senior standing after six terms of enrollment, a student must have earned at least twenty-six course credits or the equivalent and is expected to have fulfilled the distributional requirements for the junior year.

REQUIREMENTS FOR ACADEMIC GOOD STANDING

At the conclusion of each term of enrollment, a student must have earned enough course credits to be in academic good standing.

1. At the end of the first term at Yale, a student must have earned at least four course credits.
2. At the end of the second term, a student must have earned at least eight course credits.
3. At the end of the third term, a student must have earned at least twelve course credits.
4. At the end of the fourth term, a student must have earned at least sixteen course credits.
5. At the end of the fifth term, a student must have earned at least twenty-one course credits.
6. At the end of the sixth term, a student must have earned at least twenty-six course credits.
7. At the end of the seventh term, a student must have earned at least thirty-one course credits.

Regardless of the number of credits accumulated, a student is not in academic good standing if the student's record shows the following: failure, in a term or over two or three successive terms, to receive credit for three courses from which the student did not formally withdraw. “Successive terms” means successive terms in which the student enrolls, whether or not broken by a withdrawal or by a leave of absence. See “Dismissal for Academic Reasons” and “Makeup of Course Deficiencies for Promotion or Academic Good Standing” in section I.

E. REGISTRATION AND ENROLLMENT IN COURSES

REGISTRATION

Every student is required to register at the beginning of each term in which he or she is to be enrolled in courses at Yale College.

1. Fall-term registration. To register for the fall term, all freshmen must attend a registration meeting with their residential college dean and freshman counselor on Friday, August 29, 2008. Upperclassmen must attend the registration meeting conducted by the office of the residential college dean on Tuesday, September 2, 2008. Students whose registration is being temporarily withheld by the Office of Student Financial Services or by any other administrative office of the University are nonetheless required to attend the appropriate registration meeting.

2. Spring-term registration. To register for the spring term, freshmen are required to attend a registration meeting in their residential college at 9 p.m.
on Sunday, January 11, 2009. Sophomores, juniors, and seniors are required to pick up registration materials from the office of the residential college dean no later than 5 p.m. on the first day of classes, Monday, January 12, 2009. Students whose registration is being temporarily withheld by an administrative office of the University are nonetheless required to report for spring-term registration as given immediately above.

3. *Late registration.* A student who, for reasons other than incapacitating illness, the death of a family member, or a comparable emergency, fails to follow the registration procedures in paragraph 1 or 2 above may register for the term only by exceptional action of the Committee on Honors and Academic Standing and will be liable to a fine of $50.

**ENROLLMENT IN COURSES**

Enrollment in courses can be accomplished only by the submission of an approved course schedule or, in amendment of the course schedule, by the submission of an approved course change notice. Attendance at a class does not constitute enrollment. The course schedule is an important document. A student is responsible for the timely submission of the course schedule and for the accuracy of all the information that the student enters upon it. The course elections that a student indicates on a course schedule or course change notice shall appear on the student’s transcript unless a student formally withdraws from a course before midterm. See section F, “Withdrawal from Courses.”

The following rules govern students’ enrollment in courses during the fall and spring terms of the academic year:

1. **Deadline for submitting schedules.** Every student must submit a course schedule for each term at the office of the residential college dean by 5 p.m. on the deadline indicated on the student’s course schedule and listed in the calendar at the beginning of this bulletin. Students whose registration has been withheld by the Office of Student Financial Services or any other administrative office of the University must nonetheless submit their course schedules by these same deadlines.

   It is the student’s responsibility to obtain all necessary signatures, except that of the residential college dean, before the schedule is due. In the rare instance that the student’s adviser is unavailable before the deadline, the student should nonetheless submit the schedule on time, and take a copy to be signed by the adviser and submitted to the dean as soon as possible. If the student does not submit a copy of the schedule signed by the adviser within one week of the deadline, the student will be subject to the fines and restrictions described under paragraphs 3 and 4 below.

2. **Addition of a new course after the deadline.** The election of a new course after the deadline for submitting a course schedule will not be permitted save by exceptional action of the Committee on Honors and Academic Standing. Students who seek such an exception should consult immediately with the residential college dean. Permission to elect a new course must be requested by a petition that is accompanied by the written approval of the course instructor and the submission of a course change notice at the office of the residential college dean. The petition should explain in detail why the course is necessary to the student’s schedule and why the student was unable to elect the course during the course selection period. Timeliness is an essential feature of any request to add a course to the course schedule;
a delay in consulting with the dean or in submitting a complete petition will normally be grounds for denial. A fee of $20 will be charged for the processing of an approved course change notice on which the election of a new course is requested. A student may not elect a new course after midterm (October 24, 2008, in the fall term; March 6, 2009, in the spring term), unless such election is made to correct a clerical error on the course schedule. A change of level in courses in which the subject is taught in an ordered progression, as for example in languages or in mathematics, is not considered the addition of a new course. Such a change may be made with the approval of the instructors involved (and, if necessary, with the added permission of the director of undergraduate studies in the subject). Similarly, a change of section in the same course is not considered the addition of a new course.

3. Fines for late schedules. Students who submit their schedules after the deadlines will be fined at least $50. Additional fines, increased $5 daily according to lateness, will be imposed for schedules submitted more than one week after the deadlines. A schedule received more than two weeks after it is due will be accepted only by exceptional action of the Committee on Honors and Academic Standing and will be subject to an increased fine or other penalty.

4. Credit/D/Fail option. A student who submits a course schedule after the date on which it is due may not employ the Credit/D/Fail option in any course during that term. (See “Credit/D/Fail Option” in section B, paragraph 9.)

5. Fines for clerical errors. A student who submits a course schedule or course change notice with clerical errors or omissions of data is liable to a fine of $50.

6. Overlapping meeting times. A student may not elect courses with meeting times that overlap. If, for good cause, a student is obliged to elect two courses with a small and insignificant overlap in meeting times, the student must supply the residential college dean with the written permission of both instructors at the beginning of the term and must petition the Committee on Honors and Academic Standing, explaining why the student must enroll in both courses in the current term and how the student will meet all the requirements for both courses. Failure to file a complete and timely petition may result in the loss of credit for both courses.

7. Starred courses. Election of a starred course requires that a student secure the permission of the instructor and, where appropriate, the director of undergraduate studies. If a student enters a starred course on the course schedule without the appropriate permission, the instructor may direct the registrar to drop the student from the class.

8. Prerequisites. Students are expected to have met the prerequisites published in course descriptions in this bulletin. If a student wishes to elect a course for which prerequisites are indicated but has not met those prerequisites, it is the student’s responsibility to secure the permission of the instructor and, where appropriate, the director of undergraduate studies before enrolling. The registrar may drop the student from the class if the student has not met the prerequisites for enrollment.

9. Teaching evaluations. For the advancement of teaching in Yale College, anonymous teaching evaluations are made available through the Yale University Student Information Systems. Students are expected to participate in this evaluation process for any Yale College course in which they are enrolled. Students who withdraw from a course after midterm are invited but not required to participate.
10. **Selection of a less advanced course in the same subject.** In certain subjects, such as mathematics, foreign languages, and the sciences, knowledge of the subject is acquired in an ordered progression. That is, the concepts and skills introduced in one course are necessary, or prerequisite, for mastery of the material in subsequent courses in that field. Occasionally a student, having completed an intermediate or advanced course in a subject, may take a less advanced one in that same subject. In such a case, although the student obviously cannot receive course credit for both courses, each course will appear on the student’s transcript with the grades earned; however, the student will receive course credit only for the more advanced course. A student may sometimes be permitted to complete an intermediate or advanced course without having first completed a less advanced course in a subject; in such a case, the student does not receive course credit for the less advanced course by virtue of having completed the more advanced course.

11. **Repeated enrollment in the same course.** Courses may not be repeated for credit, except for courses marked “May be taken more than once” or “May be repeated for credit.” On some rare occasions, a student may take the same course over again, or may take a course with the same content as another course the student has already passed. In such cases, the student receives credit for the course only once. Should a student take the same or an equivalent course twice, each course with its grade appears on the transcript. The student receives course credit for the higher grade if one is earned; in such an event, course credit is not given for the lower grade. Note, however, that both grades are included in the calculation for General Honors.

12. **Placement in foreign language courses.** A student placed by a language program into a particular level of a foreign language may not earn course credit for the completion of a course in that language at a level lower than the placement. For example, a student placed into the third term (L3) of a foreign language earns no course credit for the completion of an L1 or L2 course in that language. Should a student complete a foreign language course at a level lower than the placement, the lower-level course with its grade appears on the transcript but earns no credit toward graduation.

13. **Use of vertebrate animals.** If the satisfactory completion of a course will require the use of vertebrate animals in experiments, the student must be notified of that requirement at the first meeting of the course. If a student objects on ethical grounds to participating in the animal usage in question, it is the student’s responsibility to discuss the matter with the faculty member in charge and not to enroll in the course if no alternative acceptable to the faculty member can be arranged.

14. **Field trips.** If the satisfactory completion of a course will require participation in a field trip, students should understand that there are inherent risks, including the risks of travel, involved in such an activity. If a student objects to assuming these risks, it is the student’s responsibility to discuss the matter with the faculty member in charge and not to enroll in the course if no alternative acceptable to the faculty member can be arranged. Yale College’s policies regarding field trips can be found at [www.yale.edu/yalecollege/students/administration/documents/pdf/field_trips.pdf](http://www.yale.edu/yalecollege/students/administration/documents/pdf/field_trips.pdf).

**F. WITHDRAWAL FROM COURSES**

Students are permitted to withdraw from courses for which they have enrolled in a term until 5 p.m. on the last day of classes before the reading
period in that term. Withdrawal from a course can be accomplished only by
the submission of a course change notice at the office of the residential col-
lege dean. A fee of $20 will be charged for the processing of an approved
course change notice on which withdrawal from a course is requested. Formal
withdrawal is important, because failure to receive credit for courses in which
students are registered will be recorded as F on their transcripts and may open
them to the penalties described under “Academic Warning” and “Dismissal
for Academic Reasons” in section I.
1. Transcripts. Each course listed on a student’s course schedule appears on
the student’s transcript unless the student withdraws from the course by
midterm. See paragraph 3 below.
2. Permission. All course withdrawals require the permission of the resi-
dential college dean.
3. Withdrawal before midterm. If a student formally withdraws from a
course by midterm (October 24, 2008, in the fall term; March 6, 2009, in the
spring term), then after the registrar has recorded the withdrawal, the tran-
script will contain no indication of that course.
4. Withdrawal after midterm. If a student formally withdraws from a
course after midterm but before 5 p.m. on the last day of classes before the
reading period, the transcript will record the course and show the neutral
designation W (Withdrew) for the course. The deadlines for such with-
drawals are December 5, 2008, in the fall term, and April 27, 2009, in the
spring term. The deadlines apply to all courses, whether or not a particular
course observes the reading period.
A change of level in courses in which the subject is taught in an ordered
progression, as, for example, in foreign languages or in mathematics, is not
considered a course withdrawal and does not result in the recording of a W.
5. Withdrawal after the deadlines. After these deadlines, withdrawal from a
course is not permitted. An exception will be made only for a student who
withdraws from Yale College for medical reasons as certified by the Univer-
sity Health Services after the beginning of the reading period but by the last
day of the final examination period; in such a case the student will be per-
mitted to withdraw from a course with a mark of W.
6. Lack of formal withdrawal. If, when grades are due, the instructor of a
course notifies the registrar that a student has not successfully completed a
course from which the student has not formally withdrawn, then a grade of
F will be recorded for that course on the student’s transcript. See “General
Regulations concerning Grades and Transcripts” in section B. See also
“Work Incomplete at the End of Term” and “Postponement of Final Exam-
inations” in section H.
7. Withdrawal from Yale College. A student who has withdrawn from Yale
College for any reason, including medical, is no longer enrolled. Conse-
quently, as of the date of the withdrawal, such a student cannot continue to
attend classes or complete assignments, even if the deadline for such assign-
ments was previously extended by the instructor or by the residential college
dean.
8. Transcripts of students withdrawn from Yale College. It follows that if a stu-
dent withdraws from Yale College by midterm, the transcript will not show
that the student has been enrolled in any course during that term. If a stu-
dent withdraws from Yale College after midterm, but before 5 p.m. on the
last day of classes before the reading period, the transcript will record the stu-
dent’s courses with the designation W (Withdrew). If a student withdraws
from Yale College after the beginning of the reading period, the transcript will show the student's courses with grades of F unless an instructor reports a passing grade for the student in any of the courses. The only exception is for a student who withdraws from Yale College for medical reasons after the beginning of the reading period but before the end of the term; see paragraph 5 above.

**G. READING PERIOD AND FINAL EXAMINATION PERIOD**

1. *Due dates for course work.* It is expected that instructors will require all course assignments, including term papers, to be submitted at the latest by the last day of reading period. (For the dates of the reading period and final examination period, consult the calendar at the beginning of this bulletin.) Instructors do not have the authority to give permission for this deadline to be extended beyond the end of the term; only the residential college dean has this authority (see “Work Incomplete at the End of Term” in section H). Even if an extended deadline should be announced by the instructor, a grade reflecting work submitted after the end of the term cannot be accepted unless a Temporary Incomplete was authorized by the student's residential college dean.

2. *Reading period.* The Yale College Faculty established the reading period between the end of classes and the beginning of final examinations in order to provide a period of about a week during which students might conclude their course work and prepare for final examinations. The instructor of each course determines whether or not that course observes the reading period. A course that does not observe the reading period is identified in chapter IV by the phrase “Meets RP” in the data line.

The assumption underlying the faculty's institution of the reading period was that no additional assignments would be required during the reading period in a course observing it, but that students would use the reading period in their own way to consolidate and augment the work of the course. Such being the case, no final examination may be administered during the reading period. A final examination in a course, whether or not the course observes the reading period, must be administered during the final examination period. No take-home final examination may be due during the reading period.

3. *Final examinations.* Yale College expects every course to conclude with a regular final examination or with a substitute for such an examination. The substitute should be in the nature of a final examination in that it requires the student to demonstrate proficiency in the discipline and subject matter of the course. Substitutes may include, for example, an oral presentation or examination, a term essay due at the latest before the beginning of the final examination period, or the last of a series of hour tests administered during the last week of classes. Final examinations normally last either two or three hours but, in either case, students are permitted to take an additional half-hour before being required to turn in their answers. This additional time is given for improving what has already been written, rather than for breaking new ground.

4. *Scheduling of final examinations.* The Registrar’s Office has assigned a specific time and date for the administration of final examinations in most courses in Yale College. The time of the final examination is determined by
the meeting time of a course during the term and is indicated by the examination group number included in the course listing in this bulletin. Examination group numbers are assigned particular days and times within the final examination period. These may be found tabulated on the page “Final Examination Schedules” at the front of this bulletin. If the instructor of a course with the examination group number zero decides to offer a final examination, it must be administered at the time defined by the meeting time of the course. If the meeting time of a course is changed from that published for the course in this bulletin, the time of the examination is defined by the new meeting time.

5. Date of administering final examinations. Since the final examination schedule has been carefully designed to make efficient use of the entire final examination period and to minimize overcrowding of students’ schedules, a final examination must be administered on the date and at the time specified. On occasion instructors have administered final examinations at times different from those shown on the final examination schedule. Such an arrangement is allowed under the following conditions: (a) that two different and distinct final examinations be administered; (b) that one of these examinations be administered at the regularly specified time within the final examination period; (c) that the alternative examination be administered during the final examination period; and (d) that no student be required to obtain permission to take the alternative examination.

6. Take-home final examinations. Take-home final examinations are sometimes substituted for regular final examinations. If a course has been assigned a final examination group number, a take-home examination for that course is due on the day on which the final examination has been scheduled. If a course has not been assigned a final examination group number, a take-home examination for the course is due on the day specified in the final examination schedule by the meeting time of the course. (See “Final Examination Schedules” at the front of this bulletin.) If a course does not meet at a time covered by the final examination schedule, a take-home examination may not be due during the first three days of the final examination period. No take-home examination may be due during the reading period.

7. Due dates for term grades. An instructor is required to submit term grades promptly after the completion of a course. Fall-term grades are due by 5 P.M. on January 2, 2009; spring-term grades are due within one week of the end of the final examination period; grades for seniors in the spring term are due within forty-eight hours of the end of the final examination period.

In submitting term grades, the instructor is expected to apply appropriate penalties for missed or incomplete work unless the late submission of the work has been authorized by the student’s residential college dean or by the Committee on Honors and Academic Standing. If an instructor reports a mark of incomplete for which there has been no authorization by the college dean, the incomplete will be recorded by the Registrar’s Office as a grade of F.

8. An hour test at the end of term instead of a final examination. Some instructors do not give final examinations of the usual two-and-one-half-hour or three-and-one-half-hour length, but instead terminate their courses with an hour test that is the last in a succession of hour tests administered during the term.

For courses that do not observe the reading period, this hour test may be administered during the reading period, since, in such courses, regular class
meetings are scheduled to extend through the reading period. A course that does not observe the reading period may also administer the hour test during the final examination period at the time specified in the final examination schedule.

For courses that do observe the reading period, the hour test may not be administered during the reading period, but may be administered only during the last week of classes or during the final examination period at the time specified in the final examination schedule.

9. Senior departmental examinations. In those major programs requiring a senior departmental examination, that examination is scheduled on the two weekdays preceding the final examination period in the fall and spring terms. In a department or program in which a two-day written senior departmental examination is administered on those days, a senior may, with the written consent of the appropriate instructors, be excused from final examinations in as many as two courses in the major in the term in which he or she takes the departmental examination. In a department or program in which the senior departmental examination takes place on only one of the two scheduled days, a senior may, with the written consent of the instructor, be excused from the final examination in one course in the major in the term in which the departmental examination is taken. If the senior departmental examination takes place before the scheduled days, or if a senior essay or senior project takes the place of the examination, a student may not omit a final examination.

H. COMPLETION OF COURSE WORK

SUBMISSION OF COURSE WORK TO INSTRUCTORS

Students in Yale College are expected to take personal responsibility for the timely delivery to their instructors of all course work, including examinations, in the manner and format prescribed by the instructors. It is generally expected that the student will submit course work in person, either to the instructor or to a person explicitly designated by the instructor, such as a teaching fellow or an administrative assistant. Students who submit course work in a manner other than in person, directly to an appropriate individual (e.g., place it under a door or in a box in a hallway), do so at their own risk. Students who must use postal services to submit a course assignment, because they will be unavoidably absent from campus at the time an assignment is due, should ascertain in advance from the instructor the correct mailing address and use receipted mail services to establish the date of mailing.

Instructors are not required to accept course work sent over a computer network to their computer, printer, or electronic-mail account unless they have explicitly authorized such electronic submission in the syllabus for the course or have made a special arrangement with the student. Instructors may establish a deadline for electronic submission of a particular assignment different from the deadline for submission of the same assignment on paper.

LATE OR POSTPONED WORK

There are three kinds of late or postponed work: (1) work late during term time; (2) work incomplete at the end of term; and (3) postponed final
examinations. Instructors of courses may, during term time, give permission to make up late or missed work, provided that such work is submitted before the end of term. *Only the residential college dean, however, may authorize the late submission of work still incomplete at the end of term, or the postponement of a final examination.*

When students know in advance that they must miss or postpone work for a legitimate reason, as described below in “Work Missed during the Term” and in “Postponement of Final Examinations,” they should inform the instructor and the residential college dean as soon as possible.

**WORK MISSED DURING THE TERM**

The basic responsibility for permitting postponement of work during the term is the instructor’s. However, the residential college dean may give permission for a student to make up work missed or delayed during the term because of an incapacitating illness, the death of a family member, or a comparable emergency. The residential college dean also has authority to give permission to make up work missed because of the observance of religious holy days and because of participation required in intercollegiate varsity athletic events. Only in these cases does a residential college dean have authority to give permission to make up late work during term time. This permission is conveyed by means of a special form from the college dean that the student delivers to the instructor. Students participating in events of intramural or club sports, as differentiated from varsity events sponsored by the Department of Athletics, are not eligible for a postponement of work by the dean on account of those events.

In all other cases of work missed during the term, permission to make up course work must be secured directly from the instructor of the course, since the instructor is the only person who can decide, in the context of the nature and requirements of the course, whether such permission is appropriate. This permission may not, however, extend beyond the end of the term. Permission to submit work still incomplete at the end of term may be granted only by a student’s residential college dean. See “Work Incomplete at the End of Term” below.

**WORK INCOMPLETE AT THE END OF TERM**

*Only the residential college dean has authority to give permission to a student to submit work in a course after the end of term.* The college dean may give such permission because of an incapacitating illness, because of a serious family emergency, or because of another matter of comparable moment. In such cases the college dean may authorize a mark of Temporary Incomplete for a period not to exceed one month from the beginning of the final examination period. Note that the mark of Temporary Incomplete refers to unfinished course work, not to a final examination missed for any reason; see “Postponement of Final Examinations” below.

The residential college dean, in authorizing a mark of Temporary Incomplete, will stipulate the date on which the student’s late work will be due and the date on which the instructor is expected to submit a course grade to the registrar. The college dean may not set this second date later than one month after the beginning of the final examination period. If the student’s work has not been completed in time for the instructor to report a grade to the registrar by the deadline stipulated, then the instructor will submit a
grade for the student that reflects the absence of the missing work, or the registrar will convert the mark of Temporary Incomplete to a grade of F. See “General Regulations concerning Grades and Transcripts” in section B, and “Withdrawal from Courses,” section F.

Permission for a mark of Temporary Incomplete to last beyond one month from the beginning of the final examination period can be granted only by the Yale College Committee on Honors and Academic Standing. Such an extension may be given only for a brief period of time, usually one to two weeks, and only in response to extraordinary circumstances, usually of a medical nature. A petition for such permission must be submitted at the earliest possible date. In considering such requests, the Committee on Honors and Academic Standing takes into account the original deadline for submission of the work and the date on which a petition is delivered to the committee.

USE OF COMPUTERS AND POSTPONEMENT OF WORK

Problems that may arise from the use of computers, software, and printers normally are not considered legitimate reasons for the postponement of work. A student who uses computers is responsible for operating them properly and completing work on time. (It is expected that a student will exercise reasonable prudence to safeguard materials, including saving data on removable disks at frequent intervals and making duplicate copies of work files.) Any computer work should be completed well in advance of the deadline in order to avoid last-minute technical problems as well as delays caused by heavy demand on shared computer resources in Yale College.

POSTPONEMENT OF FINAL EXAMINATIONS

Only the residential college dean may authorize postponement of a final examination. The residential college dean may give such permission because of an incapacitating illness, because of a family emergency requiring the student’s absence from New Haven, or because of another matter of comparable moment. The residential college dean may also authorize such a postponement because of the observance of religious holy days, or because of participation required in an intercollegiate varsity athletic event. Students participating in events of intramural or club sports, as differentiated from varsity events sponsored by the Department of Athletics, are not eligible for a postponement of final examinations on account of those events. Finally, the college dean may authorize postponement of a final examination if a student has three examinations scheduled during the first two days of the final examination period, or three examinations scheduled consecutively in the final examination schedules.* The postponement of a final examination for

*The final examination schedules indicate three examination sessions, or time slots, per day: one in the morning, one in the afternoon, and one in the evening. Some of these time slots contain examination group numbers; others do not. A college dean may postpone an examination if a student has three examinations scheduled within any four consecutive time slots, whether or not each of those time slots has an examination group number assigned to it. See “Final Examination Schedules” at the beginning of this bulletin. Occasionally an instructor may arrange an option for an alternative final examination in addition to the regularly scheduled examination. (See paragraph 5 in section G, “Reading Period and Final Examination Period.”) Such an optional arrangement cannot be the basis for a postponement of an examination if three of a student’s final examinations would thereby acquire “consecutive” status.
any other reason requires the permission of the Committee on Honors and Academic Standing. A student’s end-of-term travel plans are not a basis for the postponement of a final examination. See “Final Examination Schedules” at the beginning of this bulletin and paragraph 4 in section G, “Reading Period and Final Examination Period.”

It is normally the expectation that when a student begins a final examination but does not complete it, the student will receive credit only for the work completed on the examination. If, however, a student becomes unable to complete an examination because of a sudden and serious illness or other emergency during the examination, the student may request authorization from the residential college dean to take a makeup final examination. In such a case, the student must explain his or her departure to the instructor, or to some other person proctoring the examination, before leaving the room, and must contact the University Health Services or the residential college dean as soon as possible thereafter.

Makeup examinations for the fall term are scheduled to take place at the end of the second week of classes in the spring term. Makeup examinations for underclassmen who miss final examinations in the spring term are scheduled at the end of the second week of classes in the following fall term. Makeup final examinations are administered by the Registrar’s Office only at these times. Students who will not be enrolled at these times—whether because they are on leave of absence or on a Year or Term Abroad, or because they have withdrawn from Yale—must make alternative arrangements with the Registrar’s Office in advance of the dates on which makeup final examinations are administered by that office. The registrar automatically records a grade of F in a course for a student who fails to take an officially scheduled makeup examination in that course at the appointed time. If an examination is not administered by the registrar, it is the student’s responsibility to make arrangements with the instructor to take the makeup examination. In such cases, if a grade is not received by the midterm following the original examination date, the registrar automatically records a grade of F in the course.

No fee will be charged for a makeup examination necessitated by illness, family emergency, the observance of a religious holy day, or participation required in an intercollegiate varsity athletic event. A charge of $35 will be made for the administration of a makeup examination occasioned by a conflict between two final examinations scheduled at the same time, or three examinations scheduled in the first two days of the examination period, or three final examinations scheduled in consecutive examination periods. Ordinarily there will be a charge of $35 for makeup examinations authorized for special reasons approved by the Committee on Honors and Academic Standing.

Permission to postpone a final examination does not also carry authorization for a student to submit other work late in that course. See “Work Incomplete at the End of Term” above.

I. ACADEMIC PENALTIES AND RESTRICTIONS

CUT RESTRICTION

Regular classroom attendance is expected of all students. While Yale College enforces no general regulation concerning attendance, instructors of
individual courses may require it of all students. This is particularly the case in
discussion groups, seminars, laboratories, and courses in foreign languages.

A student who, in the opinion of the instructor and of the residential col-
lege dean, has been absent from a course to an excessive degree and with-
out excuse may at any time be placed on Cut Restriction in that course or
in all courses. A student on Cut Restriction who continues to be absent from
a course may, with the concurrence of the college dean and the Committee
on Honors and Academic Standing, be excluded from it without credit. See
“Exclusion from Courses” below.

EXCLUSION FROM COURSES

Any student may, because of excessive absences or unsatisfactory work, be
excluded from a course without credit at any time upon recommendation,
made by the instructor or department concerned, to the residential college
dean and the Committee on Honors and Academic Standing. If the exclu-
sion occurs after midterm and before the first day of the reading period, the
student’s record will show a mark of W for the course.

ACADEMIC WARNING

Academic Warning is an indication that a student’s scholastic record is unsat-
isfactory. Students on Academic Warning who do not pass all of their courses
in the term in which they are on Academic Warning will be dismissed for
academic reasons. No matter how many course credits a student has earned,
Academic Warning is automatic in the following cases: (a) failure in one
term to earn more than two course credits; (b) a record that shows two
grades of F in one term; (c) in two successive terms, a record that shows a
grade of F for any course. The college deans attempt to give written notifi-
cation of Academic Warning to students whose records show these defi-
ciencies, but such students should regard themselves as being on warning
even in the absence of written notification. A student permitted to continue
in Yale College with fewer than the number of course credits ordinarily
required for academic good standing (see “Requirements for Academic
Good Standing” in section D) may be placed on Academic Warning, and in
such a case the student will be notified that he or she has been placed on
warning. The Committee on Honors and Academic Standing may at its dis-
cretion disqualify a student on Academic Warning from participation in rec-
ognized University organizations.

DISMISSAL FOR ACADEMIC REASONS

1. _Failure in three classes_. A record that shows three grades of F in a term or
over two or three successive terms will normally result in the student’s dis-
missal from Yale College. “Successive terms” means successive terms in which
the student enrolls, whether or not broken by a withdrawal or by a leave of
absence.

2. _Failure to meet requirements for good standing or promotion_. A student
who has not, at the end of a term, met the minimum requirements for aca-
demic good standing (see section D), or a student who has failed to meet the
minimum standards for promotion (see section D), may be dismissed unless
permitted by the Committee on Honors and Academic Standing to repair
the deficiency. See “Makeup of Course Deficiencies for Promotion or Academic Good Standing” below. A student who is short by more than two credits of the minimum requirements for academic good standing or promotion, even if the student has no grades of F, will be dismissed.

3. Students on Academic Warning. A record that shows a grade of F for a student who is on Academic Warning in that term will result in that student’s dismissal for academic reasons. See “Academic Warning” above.

4. Readmitted students. A student readmitted to Yale College who does not, in the first or second term following readmission, pass all the courses completed in that term will be dismissed for academic reasons. See “Readmission” in section J.

In addition, at any point during the year a student may be dismissed from Yale College if in the judgment of the Yale College Committee on Honors and Academic Standing the student’s academic record is unsatisfactory.

MAKEUP OF COURSE DEFICIENCIES FOR PROMOTION OR ACADEMIC GOOD STANDING

A student who has failed to satisfy the requirements for promotion or for academic good standing, if permitted to continue by the Committee on Honors and Academic Standing, must repair the deficiency promptly. Such deficiencies are to be repaired before the opening of the next fall term by work in summer school. The institution to be attended and the courses to be taken require the approval of the residential college dean. See section O, “Credit from Other Universities.” Only in extraordinary circumstances will a student be allowed to repair a deficiency by carrying an additional course during the following academic year. Course deficiencies may not be repaired under any circumstances by the application of acceleration credits.

J. LEAVE OF ABSENCE, WITHDRAWAL, AND READMISSION

LEAVE OF ABSENCE

Any student in Yale College who is in academic good standing will normally receive permission, upon petition to the Committee on Honors and Academic Standing through the residential college dean, to take one or two terms of leave of absence, provided that the student departs in academic good standing at the end of a term and returns at the beginning of a term. (See “Requirements for Academic Good Standing” in section D.) In order that the University may make plans to maintain enrollment at the established level, students desiring leaves of absence are requested to make their intentions known to their residential college deans as soon as possible. Yale College assumes that students who take leaves of absence will inform their parents or guardians in good time that they intend to do so. Ordinarily, residential college deans do not notify parents or guardians that a student has taken a leave of absence, though they may do so if they believe that such notification is appropriate.

1. Petition for a fall-term leave. For a fall-term leave of absence, a student is requested to submit a petition by May 1. Since a student’s plans often change during the summer, however, the Committee on Honors and Academic
Standing will ordinarily grant a petition for a leave that is received on or before the tenth day of the term in the fall. See paragraph 3 below.

2. Petition for a spring-term leave. For a spring-term leave of absence, a student’s petition must be received on or before the tenth day of the term in the spring. See paragraph 3 below.

3. Relinquishing housing. Students considering a leave of absence should be aware that there is a substantial financial penalty for relinquishing on-campus housing after the relevant deadlines for relinquishing such housing. See “Rebates of Undergraduate Charges” in chapter VII, “Financial Regulations,” in the Yale College publication Undergraduate Regulations.

4. Canceling a leave. A student may cancel a leave of absence for either term as late as the first day of classes in the term for which the leave has been requested. However, the deadlines for payment of the term bill and the penalties for late payment apply in such cases. See “Payment of Bills” in chapter VII, “Financial Regulations,” in the Undergraduate Regulations.

5. Total terms of leave. A student is eligible for a total of two terms of leave of absence. These two terms need not be taken consecutively.

6. Accelerated students. A student taking an accelerated degree by use of acceleration credits who has had two terms of leave of absence may receive a third term of leave if the third term of leave is needed to bring the student’s pattern of attendance into conformity with the pattern of attendance stipulated for an accelerated degree. See section P, “Acceleration Policies.”

7. Returning from a leave. Permission to take a leave of absence normally includes the right to return, with prior notification to the residential college dean but without further application, at the beginning of the term specified in the student’s petition to the Committee on Honors and Academic Standing. In the case, however, in which a student achieved eligibility for a leave of absence because of a postponement of a deadline for course work as a result of an identified medical problem, the Yale College Dean’s Office may require medical clearance from the University Health Services before the student’s return from the leave of absence.

8. Financial aid. Students taking leaves of absence who have received long-term loans will be sent information about their loan repayment obligations, which in most cases begin six months after the last day of formal enrollment at Yale. A student taking a leave of absence who is receiving financial aid through Yale must consult with a counselor in the Student Financial Services Center before leaving Yale; see “Rebates of Undergraduate Charges” in chapter VII, “Financial Regulations,” in the Undergraduate Regulations.

9. Health coverage. A student on a leave of absence is eligible to retain coverage by the Yale Health Plan during the time of the leave, but the student must take the initiative to apply for continued membership in the Yale Health Plan by completing an application form and paying the fee for membership. See “Leave of Absence” in chapter VI, “University Health Services,” in the Undergraduate Regulations. Application forms and details about medical coverage while on leave of absence may be obtained from the Member Services Department of the Yale Health Plan.

MEDICAL WITHDRAWAL

A withdrawal for medical reasons must be authorized by the director of the University Health Services or the chief of the Mental Health and Counseling department, or by their official designees within the Health Services.
If a student under the care of a non–University Health Services physician wishes to withdraw for medical reasons, that physician should submit sufficient medical history to the director of the University Health Services for a final decision on the recommendation. A student planning to return to Yale should discuss the requirements for readmission with the residential college dean or the chair of the Committee on Readmission.

Yale College reserves the right to require a student to withdraw for medical reasons when, on recommendation of the director of the University Health Services or the chief of the Mental Health and Counseling department, the dean of Yale College determines that the student is a danger to self or others because of a serious medical problem, or that the student has refused to cooperate with efforts deemed necessary by the University Health Services to determine if the student is such a danger.

WITHDRAWAL FOR PERSONAL REASONS

At any time during the year, a student may withdraw from Yale College for personal reasons. After consulting with the residential college dean, a student wishing to withdraw should write a letter of resignation to the college dean. In consulting with the college dean, a student planning to return to Yale should discuss the requirements for readmission. Also, students in academic good standing who fail to register in a term will be withdrawn for personal reasons.

REBATES OF UNDERGRADUATE CHARGES

For information on financial rebates on account of withdrawal from Yale College, consult chapter VII, “Financial Regulations,” in the Undergraduate Regulations.

READMISSION

During the time that a student who has withdrawn is away from Yale College, the Committee on Readmission expects him or her to have been constructively occupied and to have maintained a satisfactory standard of conduct.

Students whose withdrawal was for either academic reasons or personal reasons must remain away for at least one fall term and one spring term, in either order, not including the term in which the withdrawal occurred. Students whose withdrawal had been authorized as medical by the director of the University Health Services must normally remain away at least one full term before a return to Yale College, not including the term in which the withdrawal occurred. The period of withdrawal for disciplinary reasons is set by the Yale College Executive Committee at the time the student’s enrollment is suspended.

Further requirements depend to some extent on the circumstances of the withdrawal and its duration. Students who are not in academic good standing, i.e., students who withdrew while a term was in progress or who were dismissed for academic reasons (see section I), must ordinarily complete the equivalent of at least two term courses, either in Yale Summer Session or at another college or university, earning grades of A or B. In general, such a record of course work is also required of students who withdrew for medical
reasons and of any students who have been away from full-time academic work for two years or more, whether or not they were in academic good standing at the time of their departure, in order to demonstrate that upon return they can satisfactorily complete their academic program. Courses themselves, as well as the institution at which they are taken, should be cleared in advance with the chair of the Committee on Readmission or the applicant's residential college dean. In some cases, the Committee on Readmission may require more than two courses or courses in a specific subject area. All such course work must be completed no later than the opening of the term to which the student has applied to be readmitted, but no earlier than two years before the date that term begins.

Interviews with members of the committee are required of all applicants. The committee cannot approve a student's return to Yale College until after the necessary interviews have taken place. These may include meetings for any applicant with the chair of the committee, the applicant's residential college dean, and any other member of the committee, including a member of the University Health Services staff. Interviews are normally conducted just prior to the beginning of the term to which the student is seeking readmission.

As an integral part of the application for readmission, students who withdrew for medical reasons must obtain a recommendation from the Yale University Health Services. Such a recommendation must come from either the director of the Health Services or the chief of the Mental Health and Counseling department, or from their official designees within the Health Services.

Inquiries about readmission should be directed to the chair of the Committee on Readmission, Yale College Dean's Office, 110 SSS, Yale University, P.O. Box 208241, New Haven, CT 06520-8241. The first inquiry about readmission to a fall term should come no later than the previous April 30, and applications must be submitted in person or by receipted mail by June 1. The first inquiry concerning readmission to a spring term should come no later than the previous September 30, and applications must be submitted in person or by receipted mail by November 1. These deadlines are strictly enforced.

While the majority of students who apply for readmission do return to Yale College, readmission is not guaranteed to any applicant. Since the committee seeks to readmit only those students who have demonstrated the ability henceforth to remain in academic good standing and thus complete degree requirements within the specific number of terms of enrollment remaining to them, the committee may sometimes advise an applicant to defer his or her return until a time later than the one originally proposed.

Students who are readmitted to Yale College are expected to be complete and passing in all their courses at the conclusion of each of the two terms following their readmission. A student who fails to meet this condition is ordinarily required to withdraw after his or her record has been reviewed by the Committee on Honors and Academic Standing. A student is eligible to be readmitted only once; a second readmission may be considered only under unusual circumstances, ordinarily of a medical nature.

For complete information about readmission to Yale College, consult the brochure “General Information concerning Readmission to Yale College,” available from the Committee on Readmission.
K. SPECIAL ARRANGEMENTS

YEAR OR TERM ABROAD

In recognition of the value of international study, Yale College encourages students to spend a term or an academic year studying in an approved program abroad. In order to participate in a Year or Term Abroad, students must have the approval of the Yale College Committee on the Year or Term Abroad and have been accepted into an approved and accredited study-abroad program. Students in any major may apply. Please note that a term abroad may be taken only during the second term of the sophomore year or either the first or second term of the junior year, and that a year abroad may be taken only during the junior year. Within the limits of the eligibility requirements given below, other combinations of terms of study abroad may be permitted with the approval of the Committee on the Year or Term Abroad. Students are limited to a total of two terms abroad for full Yale credit and financial aid transfer. To be eligible, students must be in academic good standing as a junior or second-term sophomore, as appropriate, to begin an approved term or year abroad and be able to return to enrollment at Yale in academic good standing (see “Requirements for Academic Good Standing” in section D). Students must also have at least a B average at the time of their application and demonstrate sufficient competence in the language of the host country to do university-level course work. In general, by the time that they go abroad students should have completed the relevant intermediate-level foreign language course (typically a course numbered 140 with an L4 designation) or have demonstrated the equivalent proficiency by examination. Study in an English-speaking country or participation in any other program abroad in which instruction is in English is permitted when the student articulates clear academic objectives for such a program. Applicants may petition the committee for an exception to eligibility requirements if they believe they have compelling reasons for the exception.

Application forms for a Year or Term Abroad are available on the Web site of the Office of International Education and Fellowship Programs, www.yale.edu/iefp. A complete application includes all of the following: the application form; an approval form from the student’s director(s) of undergraduate studies; an evaluation form from the student’s residential college dean; a foreign language evaluation form (if applicable); and a statement concerning the proposed course of study. Students on Yale financial aid must also submit a Year Abroad Budget for Financial Aid Applicants to the appropriate office. Approval from the Yale College Committee on the Year or Term Abroad is contingent upon the student’s acceptance into a program or university abroad. Students must provide a copy of their acceptance letter to the committee before departure.

Applications for permission to study abroad in the spring term of the academic year 2008–2009 are due on October 15, 2008. Applications for study in the fall term of the academic year 2009–2010 or for the full academic year 2009–2010 are due on March 6, 2009. Early applications that meet all requirements as listed in this bulletin are reviewed on a rolling basis until the final deadline.

Applications for programs or universities abroad are available directly from the sponsoring institutions. Information about specific programs, including course descriptions, addresses and telephone numbers of the programs, and
evaluations from past Yale participants, can be found at the Office of International Education and Fellowship Programs. Note that application deadlines differ from program to program and usually also differ from the Yale College committee’s deadline. Students are responsible for meeting the deadlines set by the programs they seek to attend, whether those deadlines fall before or after the Yale College committee’s deadline.

In selecting programs abroad in which to enroll, students should be aware that such programs vary in quality, and some may not be approved for a Year or Term Abroad. At a minimum, approved programs must involve full-time work at the university level and must be undertaken during the regular academic year at an institution outside the United States. Students should note that programs in the Southern Hemisphere are subject to a different academic calendar, one which extends into the months of June, July, and August. With this exception, summer terms do not qualify as part of a Year or Term Abroad.

A list of programs which have had the approval of the committee in the past and in which Yale students have participated with success is available on the Web site of the Office of International Education and Fellowship Programs. Students applying to enroll in programs not previously reviewed or approved by the committee may be required to furnish informational literature about the program, course syllabi, or a letter of support from a Yale faculty member familiar with the program. The committee evaluates programs primarily on the quality and structure of their academic offerings. Study abroad advisers are available in the Office of International Education and Fellowship Programs to assist students in selecting an appropriate program.

1. **Course credits.** Students on a Year Abroad who complete a full program of study for the equivalent of two terms of enrollment at Yale may earn up to nine course credits. Students on a Term Abroad who complete a full program of study for the equivalent of one term of enrollment at Yale may earn up to four course credits. What the committee considers a full program of study varies from program to program. Students should consult with the Office of International Education and Fellowship Programs to ensure that they are enrolled in a full program abroad.

   Usually, if the student has consulted with the director of undergraduate studies and an adviser in the Office of International Education and Fellowship Programs before going abroad, the award of credit upon return from a Year or Term Abroad is routine.

2. **Course credit from outside Yale.** Enrollment in the Year or Term Abroad program is the only arrangement by which students may offer more than two outside credits toward the thirty-six course credits required for the bachelor’s degree.* Students receiving credit for the Year or Term Abroad may not apply any other credits from outside Yale toward the 36-course-credit requirement.

*Study during the academic year at the Paul Mellon Centre in London (Yale-in-London) is equivalent to enrollment in Yale College and is not considered a Term Abroad. Application to the Yale-in-London program should be made directly to that office at the Yale Center for British Art. For details, see under “Yale-in-London” in chapter I and under British Studies in chapter IV. Likewise, study during the academic year in the Peking University–Yale University Joint Undergraduate Program in Beijing is equivalent to enrollment in Yale College and is not considered a Year or Term Abroad. For details, see under Peking University–Yale University Joint Undergraduate Program in chapter IV.
3. Evidence of course work. To be awarded credit toward degree requirements, students must submit to the committee such evidence of their achievement as transcripts or other official academic records, wherever possible. Students should also be prepared to provide on their return to Yale copies of all course work, syllabi, and letters from instructors describing the nature and quality of their work.

4. Grades. No credit will be awarded for a course in which the grade earned was lower than a C or its equivalent in other grading scales. Nor will credit be awarded for a course taken on a Pass/Fail option, if the student had the choice of taking the course for a letter grade.

5. Distributional requirements and major requirements. In addition to applying credits earned on a Year or Term Abroad toward the 36-course-credit requirement, students may, with appropriate permissions, apply these course credits toward fulfillment of distributional requirements and some of the requirements of their major programs. Petitions for credit toward the distributional requirements should be directed to the director of study abroad; petitions for credit toward major requirements should be directed to the relevant director of undergraduate studies.

6. Academic regulations. Because a Year or Term Abroad counts as the equivalent of one or two terms of enrollment in Yale College, the academic regulations of Yale College pertain to enrollment abroad. Students must earn a sufficient number of credits abroad to remain in academic good standing. Failure to do so will result in academic warning or dismissal for academic reasons. (See section I, “Academic Penalties and Restrictions.”) Withdrawal from an approved program abroad has the same consequences as withdrawal from Yale College.

7. Canceling a Year or Term Abroad. Students who have received permission to study abroad but later decide not to do so must notify their residential college dean in writing of their change of plans and then either enroll as usual in Yale College or apply for a leave of absence before the deadline (see section J, “Leave of Absence, Withdrawal, and Readmission”). In some cases, such students will have to withdraw from Yale College if the deadline for requesting a leave has passed, or they have already taken two terms of leave, or the deadline for enrolling in courses in Yale College has passed. Under no circumstances can a Year or Term Abroad be converted retroactively to a leave of absence. Similarly, a leave of absence cannot be converted retroactively to a Year or Term Abroad.

8. Enrollment in Yale College after a Year or Term Abroad. After returning from a Year or Term Abroad, students must enroll in Yale College for at least two terms. Students who have accelerated should speak with their residential college dean about the possible need to decelerate (see section P, “Acceleration Policies”).

9. Financial aid. Students who have been approved by the committee to study abroad and who receive financial aid from Yale are eligible for aid while abroad. For information about financial aid support, consult a counselor in the Student Financial Services Center, 246 Church Street, 432-2700.

COMPLETION OF DEGREE REQUIREMENTS AT THE END OF A FALL TERM

Students who at the end of a fall term complete the requirements for graduation may be of three kinds: (1) those who complete such requirements in
eight terms of regular enrollment; (2) those who have accumulated thirty-six course credits or more, all earned at Yale, in fewer than eight terms of regular enrollment; and (3) students admitted by transfer to Yale College and students whose admission to Yale College was deferred until a spring term. (Note that acceleration credits may not yield a completion of degree requirements at the end of a fall term; see section P, “Acceleration Policies.”)

The following rules apply to students of these three kinds.

1. Notification by the student. By the day on which the student’s course schedule is due in the final term of enrollment, the student must notify the Committee on Honors and Academic Standing through the residential college dean that the fall term will be the student’s last term of enrollment. Forms on which to make such notification are available in the offices of the college deans. Notification must include written certification from the student’s director of undergraduate studies that the student will have completed all the requirements of the major program by the end of the fall term, and from the student’s residential college dean that the student will have fulfilled the distributional requirements by that time. Failure to observe the deadline will result in the student’s being charged a fine of $100.

2. Award of degrees and diplomas. Students who complete degree requirements at the end of a fall term are awarded their degrees and their diplomas at Commencement at the conclusion of the spring term of that academic year and are considered to be members of the class that graduates at that Commencement. General Honors and Distinction in the Major are also awarded at that time. If a student who completes degree requirements at the end of a fall term wishes to participate in the Commencement exercises held in the previous academic year, however, the student may do so with the permission of the residential college master and dean. Such might be the case, for example, of a student who because of a leave of absence did not qualify for graduation with the class in Yale College with which he or she entered as a freshman. Such a student would not receive the degree or diploma until the May of the academic year in which degree requirements were completed.

3. Health coverage. A student whose last term of enrollment is a fall term is eligible, upon application and payment of a fee, for continued coverage by the Yale Health Plan during the subsequent spring term, just as if the student were on leave of absence for that term. Such coverage extends to August 31. See “Leave of Absence” in section J.

TWO MAJORS

A student must petition the Committee on Honors and Academic Standing for permission to complete the requirements of two major programs. Application forms are available from the residential college deans. A student contemplating the completion of two majors should bear in mind that doing so will almost invariably limit the opportunities for a wider distribution of studies over different subjects.

Each major must be completed independently of the other, with no more than two term courses overlapping. Prerequisites in either major are not considered to be overlapping courses. Other than such prerequisites, all courses taken in a major—including those taken in excess of the minimum requirements of the major—are counted in the consideration of overlapping courses unless such courses are in excess of the minimum requirements for both majors. Overlapping courses may not include the senior
essay or senior project, unless the essay or project is unusually substantial and represents at least the equivalent of the minimum essay or project requirement of the one major in addition to the minimum essay or project requirement of the other major. If a single senior essay or project is approved for the two majors, no additional overlap in course credits is permitted.

It is not possible to offer as two majors a combined major with one of its component majors. For example, a major in Economics and Mathematics cannot be joined with a second major in either Economics or Mathematics. Similarly, a student completing a major that permits the inclusion of a concentration of courses from another major or program cannot also major in that second major or program. For example, a major in Sociology with Psychology cannot have a second major in Psychology. A Special Divisional Major may not be offered as one of two majors.

A petition for two majors should show clearly how the requirements for each of the two programs will be met, and should include the approval of the appropriate directors of undergraduate studies. The completion of two majors does not result in the award of two degrees; a student who completes a major that leads to the award of the B.A. degree and another major that leads to the award of the B.S. degree may choose the degree to be conferred.

A petition to complete the requirements of two majors should be made only after the student’s plans are definite, but no later than the due date for course schedules in the student's final term of enrollment. Petitions submitted after this deadline will be accepted only by exceptional action of the Committee on Honors and Academic Standing and will be fined $50.

A student may not petition for permission to complete the requirements of more than two major programs.

**SPECIAL DEPARTMENTAL MAJOR**

In special cases, a department or program may recommend to the Committee on Honors and Academic Standing that a student be awarded from four to six course credits for a two-term senior essay or project. The request for such an arrangement, with supporting information, must come from the director of undergraduate studies as early as possible before the beginning of the student's next-to-last term of enrollment. A student in the Special Departmental Major must, in addition to the senior project, complete at least three regular term courses during the last two terms of enrollment. Students who are interested in pursuing a Special Departmental Major should consult the appropriate director of undergraduate studies.

**CERTIFICATE OF EXCLUSION FOR SUBSEQUENT ENROLLMENT IN A PREVIOUSLY OVERCROWDED COURSE**

A student who has attempted in good faith to enroll in a lecture course but who has been prevented by overcrowding from doing so may claim a priority for enrollment in the course the next time the course is offered by the same instructor by securing the instructor’s signature on a Certificate of Exclusion from an Overcrowded Course. A copy of this certificate may be obtained from the office of the residential college dean. It must also be signed by the college dean and will be retained for the student by the college dean. When the course is next offered, the student may retrieve the certificate from the
college dean and present it to the instructor of the course. A Certificate of Exclusion may be issued only because of overcrowding; it may not be issued because a particular section of a course is filled when there is room in another section of the course; it may not be used to claim admission to any particular section of the course; it may be employed only at the next time that the course is offered, and not subsequently; it is not applicable to courses in which enrollment is determined by audition or other evaluation of the student's work; and it is not transferable.

DOUBLE CREDIT FOR A SINGLE-CREDIT COURSE

Two course credits for a course normally carrying one course credit may be awarded to a student under the following conditions:

1. **Deadline.** Permission must be requested by midterm, i.e., October 24, 2008, in the fall term, and March 6, 2009, in the spring term.

2. **Petition and approvals.** The student's petition must be approved by the instructor of the course, the director of undergraduate studies in the instructor's department, and the Committee on Honors and Academic Standing. The petition should include a detailed syllabus and an explanation of how the student's proposed work represents at least twice the normal expectations of the course.

3. **Distributional requirements.** When a petition for double credit is approved for a course that fulfills a distributional requirement, the additional credit may not be applied toward the distributional requirement, although it may be applied toward the 36-course-credit requirement for graduation.

4. **Multiple courses.** A student may make use of this arrangement rarely, no more than once or twice.

SPECIAL TERM COURSES

With the approval of the Yale College Committee on Honors and Academic Standing, a student may arrange with a member of the faculty to take a Special Term Course, or individual tutorial, for credit toward the bachelor's degree, provided that certain requirements are met. First, the material of the proposed course must be appropriate to the qualifications of the student and it must be otherwise unavailable in the Yale curriculum. If the subject can be pursued through independent study in an existing tutorial course in a department (e.g., HIST 497a or b, PLSC 471a and 472b), the student must apply for enrollment in that course through the director of undergraduate studies. Second, the instructor of the proposed special course must hold a teaching appointment in the University. Third, the student must describe in detail the nature of the proposed course work and submit a syllabus.

Requests for Special Term Courses should be made to the Committee on Honors and Academic Standing, 110 sss, on forms available from the residential college deans. The application form must be completed by the student and then approved and signed by the proposed instructor and the director of undergraduate studies of the instructor's department. A request for a Special Term Course should be made during the term before the course is actually to be taken. An application will not be accepted by the committee after the second week of the term for which a course is proposed. It is expected that Special Term Courses will be taken for a letter grade.
LIMIT ON RESIDENTIAL COLLEGE SEMINARS

The number of residential college seminars is limited and the demand for them is great. A student may therefore take no more than four residential college seminars. Permission to exceed this limit must be secured in advance from the Yale College Committee on Honors and Academic Standing; such permission will be given only if the student can demonstrate that the integrity or coherence of the student’s academic objectives would suffer without it.

COURSES IN THE YALE GRADUATE AND PROFESSIONAL SCHOOLS

When a course is open to undergraduate as well as either graduate or professional school students, a Yale College student must enroll under the undergraduate number, unless already accepted into the program for the simultaneous award of the bachelor’s and master’s degrees. A student may request to elect a graduate or professional school course by means of a form available from the residential college dean. Such requests should be made as early as possible in the term in which enrollment is sought and not later than one month after the first day of classes of the term. Forms that are submitted after this date will be accepted only by exceptional action of the Committee on Honors and Academic Standing and will be subject to a fine of at least $50, with increases of $5 daily according to lateness. The form must be completed by the student and signed by the course instructor. For enrollment in a course in the Graduate School of Arts and Sciences, the form must also be signed by the director of graduate studies in the department in which the course is offered. For enrollment in a course in any of the professional schools of the University, the form must also be signed by the appropriate agent of the dean or the registrar of the school in which the course is offered.

A student may offer toward the 36-course-credit requirement for the bachelor’s degree as many as four course credits earned in professional schools of the University. More than four such credits may be taken, and they will appear for credit on the student’s transcript, but they must be offered in excess of the 36-course-credit requirement. Courses taken in the Graduate School of Arts and Sciences are not included in this four-credit restriction.

Note that systems for the award of course credit in the professional schools differ and that not all courses in these schools yield a full course credit in Yale College.

Courses in performance in the School of Music may be taken only after completion of Musi 360a or b, 361a or b, and Musi 460a or b, 461a or b, in the Department of Music. Performance courses in the School of Music may not be counted toward the 36-course-credit requirement for the bachelor’s degree. Such courses will be included on the student’s transcript, but must be offered in excess of the thirty-six credits required for graduation. For further information, see the section entitled “Individual Instruction in Performance” under Music in chapter IV. Nonperformance courses in the School of Music may be taken for credit without previous completion of Musi 360a or b, 361a or b, and Musi 460a or b, 461a or b; such courses are also included in the limit of four credits that may be earned in professional schools of the University.
The deadlines and regulations of Yale College are binding on all students, including candidates for the simultaneous award of the bachelor's and master's degrees, in regard to courses in which they are enrolled in the Graduate School of Arts and Sciences and the professional schools of the University. These include the deadlines and regulations pertaining to withdrawal from courses, late or postponed work, work incomplete at the end of term, and double credit in a single-credit course. An exception in deadline may be made in a course offered in a professional school of the University in which the academic calendar differs from that of Yale College. A request for such an exception must be grounded in compelling academic reasons, and must be made in writing by the instructor of the course to the student's residential college dean in advance of the deadline in question. Instructors of courses in the Graduate School and in the professional schools of the University are expected to use the Yale College grading system when they report grades for undergraduates who have completed their courses.

SIMULTANEOUS AWARD OF THE BACHELOR'S AND MASTER'S DEGREES

A limited number of students of distinguished ability may undertake graduate work that will qualify them for the simultaneous award of the bachelor's and master's degrees at the end of their senior year. Students must apply to their department for admission to the program through their director of undergraduate studies no later than the first day of classes of their third-to-last term in Yale College. If the department acts favorably on the student's application, it is forwarded with the formal approval of the director of undergraduate studies and of the director of graduate studies to the Yale College Dean's Office, where a joint committee of Yale College and the Graduate School acts upon the department's nomination and notifies the student of acceptance into the program. The director of the Program for the Simultaneous Award of the Bachelor's and Master's Degrees is Dean Jill Cutler.

1. Eligibility. Applicants cannot be considered for admission unless by the end of their fifth term of enrollment they have achieved at least two-thirds A or A– grades in all of their course credits as well as in all of the course credits directly relating to their major. (Particular deadlines and specific grade requirements for the programs for the two degrees in Biology, Chemistry, Economics, Mathematics, and Molecular Biophysics and Biochemistry are listed under the headings for those departments in chapter IV. Nominations from these departments also require confirmation by the joint committee.)

Prior to admission to the program, students enrolling in a course that carries both an undergraduate and a graduate number must do so under the undergraduate number. Students planning to apply to the program who enroll in such a course may petition at the time of their enrollment in the course to have it converted to the graduate number on the academic record if they are subsequently admitted to the program. The petition, which is made to the director of the program, must be accompanied by certification that the course instructor has accepted the student's proposal to complete the course at its graduate level.

2. Program requirements. Yale will award the master's degree and the bachelor's degree simultaneously only in a single department or program that confers both degrees. A student in the Special Divisional Major or any other major that does not have an exact counterpart in the Graduate School is not
eligible for the combined degree program. A student cannot qualify for the simultaneous award of a bachelor’s degree in one department or program and a master’s in another.

Specific requirements for the award of degrees will be determined by each department. Normally a student is expected to complete the requirements of the undergraduate major in addition to eight or more courses in the Graduate School. For all students in the program, graduate work must not be entirely concentrated in the final two terms, and students in the program must take at least six term courses outside the major during their last four terms at Yale and at least two undergraduate courses during their last two terms. Students may not enroll in Yale College for more than eight terms in order to qualify for the simultaneous award of both degrees. It is possible to earn both degrees in fewer than eight terms, but not by the use of acceleration credits. Upon acceptance into the program, a student who has accelerated by the use of acceleration credits will automatically be decelerated, and may not, so long as the student remains in the simultaneous degree program, subsequently employ the credits to accelerate.

3. Requirements for the master’s degree. To qualify for the master’s degree, students must complete eight term course credits in the Graduate School with grades of A in at least two term courses (or in one year course) and with a B average in the remaining ones. Students in those departments with a language requirement for the Ph.D. degree will be required to demonstrate proficiency in one of the specified languages.

4. Approval of course schedules. Following notification that they have been accepted into the Program for the Simultaneous Award of the Bachelor’s and Master’s Degrees, students must have their course schedules approved each term by both the director of undergraduate studies and by the director of graduate studies.

COURSES IN YALE SUMMER SESSION

There is no limit on the number of courses in Yale Summer Session that a student may offer toward the requirements for the bachelor’s degree.

Attendance at Yale Summer Session does not constitute a term of enrollment in Yale College. Thus a student accelerating by one term by use of acceleration credits may not offer attendance at Yale Summer Session as one of the required seven terms of enrollment in Yale College.

A student accelerating by the early accumulation of thirty-six course credits all earned at Yale may count credits earned in Yale Summer Session toward such acceleration. See “Acceleration by the Early Accumulation of Thirty-Six Course Credits All Earned at Yale” in section P.

Courses successfully completed in Yale Summer Session may, with the permission of the student’s director of undergraduate studies, be counted toward the requirements of the student’s major program. They may also be counted toward any of the distributional requirements. The Credit/D/Fail option may not be used in Summer Session courses. There are no auditing privileges in Yale Summer Session.

Unless the Registrar’s Office is instructed in writing to the contrary, courses completed in Yale Summer Session will be entered on the Yale College record. Once a course in Yale Summer Session has been entered on or removed from the Yale College transcript in response to a student’s request, that action cannot subsequently be reversed by the student. When a Summer
Session course is entered on a student’s Yale College transcript, both the course and the grade are recorded; the course may not be recorded without the grade. If a Summer Session course is entered on the Yale College transcript, it will be included in the calculation of the student’s eligibility for General Honors and Distinction in the Major. For further information about Summer Session courses and transcripts, refer to the Summer Session Web site at www.yale.edu/summer.

YALE-IN-LONDON SUMMER PROGRAM

Courses in the summer program at the Paul Mellon Centre in London carry full Yale course credit, but enrollment in the Yale-in-London summer program does not constitute a term of enrollment in Yale College. (Attendance at the Yale College program at the Paul Mellon Centre in London during a spring term does count as a regular term of enrollment.) Thus a student accelerating by one term by use of acceleration credits may not offer attendance at the summer program at the Mellon Centre in London as one of the required seven terms of enrollment in Yale College.

A student accelerating by the early accumulation of thirty-six course credits all earned at Yale may count credits earned in the summer program at the Paul Mellon Centre in London toward such acceleration. See “Acceleration by the Early Accumulation of Thirty-Six Course Credits All Earned at Yale” in section P.

DIRECTED INDEPENDENT LANGUAGE STUDY

With the approval of the director of the Center for Language Study, a student may study a language not taught at Yale through the program in Directed Independent Language Study. Students may not apply to study a language being offered at the same time by Yale at the requested level. Students accepted into the program work on their own time, but on a schedule and with materials approved by the director of the Center for Language Study; they must meet regularly with a conversation partner; and they are tested at the end of the term in speaking, listening, reading, and writing. The director will approve only those proposals for which adequate materials, conversation partners, and testing can be arranged. Directed Independent Language Study does not earn Yale College course credit, nor does it appear on the transcript. Interested students should apply to the Center for Language Study.

AUDITING

Auditors are not permitted in courses taught in Yale College except for persons in one of the categories described below.

1. Students enrolled full time in Yale College or in one of the graduate or professional schools of the University may audit courses without charge. The permission of the instructor is required.

2. Members of the Yale faculty and emeritus faculty may audit courses without charge. The permission of the instructor is required.

3. Spouses or partners of full-time Yale faculty members, or of emeritus faculty, or of students enrolled full time in the University may audit courses without charge. Permission is required of the instructor and of Dean William Whobrey.
4. Employees of the University and their spouses or partners may audit courses without charge in accordance with applicable personnel policies. Permission is required of the instructor, of the employee’s supervisor, and of Dean William Whobrey.

No other persons are permitted to audit courses in Yale College except for those accepted through the Association of Yale Alumni Auditing program. The Alumni Auditing program is administered separately from the general auditing program, and different rules may apply. Information is available at www.yale.edu/admit/other/nondegree/term.html.

Persons auditing courses with limited laboratory or computer facilities must secure the explicit permission of the instructor to do so, and should understand that regularly enrolled students must at all times have priority in using such facilities. Computer or language laboratory facilities should be employed by auditors only during times when they are not in heavy demand, and in certain courses charges for computer use may be necessary. General access to the campus computing network may not be available to auditors.

It is the usual expectation that an auditor does not take tests or examinations or write papers for a course for evaluation by the instructor. Occasionally, however, an auditor may wish to do such work and may request the instructor to evaluate it. If the instructor wishes to cooperate with the auditor in this way, the instructor does so on a voluntary basis and not as an obligation.

The Registrar’s Office does not keep a record of courses audited. It is not possible, therefore, for a student’s transcript to show that a course has been audited, or for a transcript to be issued that records the auditing of a course.

Persons interested in auditing a course should consult Dean William Whobrey.

L. TRANSFER STUDENTS

The following regulations apply to students admitted to Yale College by transfer from other colleges and universities:

1. Degree requirements. In order to graduate from Yale College, transfer students must fulfill all the requirements for the bachelor’s degree. They must thus earn a total of the equivalent of at least thirty-six course credits, that total consisting of the number of credits awarded for their work at their previous institutions combined with the number of course credits subsequently earned at Yale. They must also complete the requirements of a major program in Yale College and fulfill the distributional requirements for the bachelor’s degree, which include the foreign language requirement. Upon their arrival at Yale, transfer students should consult carefully with the director of the transfer program in order to ascertain their status with regard to the distributional requirements, especially the foreign language requirement.

2. Terms of enrollment at Yale. Transfer students are expected to enroll in Yale College for the number of terms designated at the time of the final credit evaluation made of their work at previous institutions. Under no circumstances may a transfer student complete fewer than four terms of enrollment in Yale College. Under no circumstances may a transfer student earn fewer than eighteen course credits at Yale or accelerate by the use of acceleration credits.
3. **Transfer of credits.** A preliminary evaluation of transferable credits is made at the time of the student's admission. Final evaluation of transfer credits is completed when all official transcripts from a student’s previous institutions have been received.

4. **Additional terms at Yale.** Students who must remain at Yale beyond the terms designated in the final evaluation of transfer credits must petition the Yale College Committee on Honors and Academic Standing for permission to do so. Such a petition will be considered only if it is impossible for the student to complete the requirements for the bachelor’s degree in the designated number of terms. See section A under “Eight Terms of Enrollment.” A student thus granted permission to remain at Yale for an additional term, if the term represents more than the equivalent of eight terms of enrollment at the college level, is not eligible for scholarship assistance from Yale for the additional term, although other forms of financial aid may be available.

5. **Transcripts.** A transfer student’s Yale transcript indicates the institutions from which the student transferred to Yale, and the number of course credits earned there. It does not list the titles of courses taken or grades earned at the transfer student’s previous colleges or universities. A transfer student who needs a record of studies completed before admission to Yale must secure a transcript from the previous institutions.

6. **Course credit from outside Yale.** Transfer students may receive course credit for work completed outside Yale only for studies completed before matriculation at Yale; transfer students may not receive course credit for any outside courses taken after they have enrolled in Yale College. An exception is made for transfer students who earn credit on a Year or Term Abroad. Transfer students may attend a Year or Term Abroad provided that they enroll in Yale College proper for at least four terms, earning by attendance at Yale a minimum of eighteen course credits.

7. **Distributional requirements.** Transfer students are not bound by the distributional requirements for the freshman, sophomore, or junior years, but they must fulfill the distributional requirements for the bachelor’s degree. See paragraph 1 above. Transfer students are not eligible for the award of acceleration credit or for acceleration by use of acceleration credits.

8. **Attendance at Yale before enrollment.** Once a student has been accepted for admission as a transfer student, the student may not attend Yale as an Eli Whitney student or a nondegree student before his or her first term of enrollment at Yale.

**M. ELI WHITNEY STUDENTS PROGRAM**

The Eli Whitney Students program is designed to meet the needs of students who may not be able to attend college full time by allowing nonresident students to enroll in Yale College courses for credit. The Eli Whitney Students program is for enrollment for the degree of Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) only. Like all others enrolled in Yale College, students in this program are required to comply with the academic regulations.

To qualify for the bachelor’s degree through the Eli Whitney Students program, a student must successfully complete at least thirty-six course credits or the equivalent, earning at least eighteen of the thirty-six credits at Yale while enrolled in the Eli Whitney Students program. As many as eighteen course credits earned at another college or university or in the Nondegree
Students program at Yale may be transferred toward the requirements for the bachelor’s degree. Such credit will be awarded for academic courses that were taken at an accredited institution and that were similar in content to Yale College courses. Grades of A or B are expected, and no more than one-quarter of courses accepted for transfer toward the requirements for the degree may have grades of C. Once a student has matriculated at Yale as a candidate for the bachelor’s degree, as many as two course credits earned at another institution may be transferred to the student’s Yale record, provided that the student earns no fewer than eighteen course credits at Yale. The regulations governing the transfer of such credits are given in section O, “Credit from Other Universities.” The thirty-six course credits completed at Yale or elsewhere must meet the distributional requirements as described in chapters I and III.

Candidates for a bachelor’s degree must fulfill the requirements of one of the major programs listed at the beginning of chapter IV. See “Major Programs” in chapter I.

1. Academic requirements. The Eli Whitney Students program normally is to be completed in a period not exceeding seven years from initial enrollment. In any calendar year, an Eli Whitney student must have completed three courses to remain in academic good standing. Eli Whitney students are required to meet all of the academic obligations of any course in which they enroll and all requirements of their degree program. At the end of each term, the records of all Eli Whitney students will be reviewed; a student who does not have at least a C average for that term will be placed on academic warning and may not be permitted to enroll in a subsequent term.

2. Registration and enrollment. Eli Whitney students submit their course schedules for approval to their residential college dean according to the submission deadline for seniors. Whitney students may normally enroll for no more than a total of six course credits during an academic year (exclusive of enrollment in Yale Summer Session). As an exception, a student may petition the director to enroll for a total of eight course credits in an academic year; such permission, if granted, will be granted one time only. Students admitted since the fall term 2007 are permitted to enroll for a full course load, up to 5.5 course credits each term, with the possibility of a greater term load if appropriate permissions are secured. See “Normal Program of Study” in section C.

3. Tuition and financial aid. Tuition for the 2008–2009 academic year for Eli Whitney students admitted before the fall term 2007 is $2,700 per course credit; these students are not eligible for financial aid. Tuition for the 2008–2009 academic year for Eli Whitney students admitted since the fall term 2007 is $3,922 per course credit; these students are eligible to apply for financial aid. Yale employees are entitled to a tuition reduction as determined by the Office of Human Resources. Tuition must be paid in full to the Office of Student Financial Services before registration.

4. Facilities and services. Eli Whitney students are entitled to use the library system together with the other facilities that are required for the courses in which they are enrolled, such as laboratories, computers, and the like. They are also eligible for services such as career counseling through Undergraduate Career Services and fellowships through the Office of International and Educational Fellowship Programs. Eli Whitney students are entitled to purchase gymnasium membership and Yale Health Plan coverage. Students in the Eli Whitney program are not eligible for undergraduate housing and they may not serve as freshman counselors.
5. **Regulations.** Eli Whitney students are governed by the academic regulations of Yale College, wherever appropriate, and by the rules contained in the *Undergraduate Regulations*. In disciplinary matters, Eli Whitney students are subject to the jurisdiction of the Yale College Executive Committee.


7. **Year or Term Abroad.** With the approval of the director of the Eli Whitney Students program, the department of their major, and the Committee on the Year or Term Abroad, students enrolled in the Eli Whitney Students program may undertake study outside the United States for a full academic year or for either a fall or a spring term. An Eli Whitney student must comply with all deadlines and requirements of the Committee on the Year or Term Abroad. See “Year or Term Abroad” in section K. To be eligible to apply, an Eli Whitney student must have accumulated, before enrolling abroad, at least sixteen course credits but no more than twenty-two course credits toward the 36-course-credit requirement and have a B average in course work at Yale. Study abroad must involve full-time work at the university level. Eli Whitney students must enroll for at least two terms in Yale College after their return from study abroad and may not receive degree credit for any other work done at another university after their matriculation at Yale.

8. **Yale students.** No person who was ever a regular student in Yale College may enter the Eli Whitney Students program before the lapse of five years after withdrawing from Yale College. A person who in the past has withdrawn from Yale College without graduating and who wishes to return to Yale as a candidate for the bachelor’s degree as an Eli Whitney student must make application to the Eli Whitney Students program and fulfill all of its requirements for the bachelor’s degree, including the requirement that at least eighteen course credits must be earned while the student is enrolled in the Eli Whitney Students program. Once a former Yale College student has entered the Eli Whitney Students program, that student can pursue the bachelor’s degree only through the Eli Whitney Students program.

Further information and application forms for the Eli Whitney Students program are available at [www.yale.edu/admit/other/whitney/index.html](http://www.yale.edu/admit/other/whitney/index.html). Applications are due by May 1, 2009.

**N. NONDEGREE STUDENTS PROGRAM**

The Nondegree Students program is designed to meet the needs of students with specific and defined educational goals, which may include personal or professional enrichment, exploration of new fields, or preparation for career changes. This program offers nonresident students who are unable to attend college full time the opportunity to enroll in Yale College courses for credit. The Nondegree Students program is open to graduates of Yale College, and is also open to academically qualified persons who have attended other colleges and universities, or who have not continued their education beyond high school. Like all others enrolled in Yale College, students in this program are required to comply with the academic regulations.

Nondegree students may enroll in from one to five courses in any academic term. Nondegree students may not take more than a total of eighteen course credits in the Nondegree Students program.
1. **Academic requirements.** Nondegree students are required to meet all of the academic obligations of any course in which they enroll. At the end of a term, the record of any nondegree student who does not have at least a C average for that term will be reviewed, and that student may not be permitted to enroll in a subsequent term. To remain in academic good standing, a student is furthermore expected to complete at least one course per term. Withdrawal from all courses in any given term may jeopardize good standing and enrollment in a subsequent term. Students who plan not to enroll in courses in any given term must apply for a leave of absence on or before the tenth day of the term in question. A leave of absence can be granted for no more than two terms. Any student who does not enroll in courses in a term and does not apply for a leave of absence may be removed from the program.

2. **Registration and enrollment.** All nondegree students register for courses with Dean William Whobrey, 55 Whitney Avenue, Suite 430, 432-2430. In general, admission to limited-enrollment courses is not available to nondegree students. Nondegree students are not eligible for enrollment in individual tutorial courses; nor are they eligible, while in the Nondegree Students program, for enrollment in courses in the graduate or the professional schools. Those interested in enrolling in such courses should apply directly to the Graduate School or to the particular professional school in whose courses they wish to enroll.

3. **Tuition.** The tuition for nondegree students during 2008–2009 is $3,500 per course credit; Yale employees and their spouses are entitled to a tuition reduction as determined by the Office of Human Resources. Tuition must be paid in full to the Office of Student Financial Services before registration. Yale provides no financial assistance for nondegree students. Students withdrawing from a course may be eligible for a refund of all or a portion of the tuition fees, in accordance with the tuition refund policy: (a) a student who drops a course for any reason on or before the last day of the course selection period will be refunded the tuition fees paid for that course; (b) a student who drops a course for any reason after the course selection period but on or before the day of midterm (Friday, October 24, for fall 2008, and Friday, March 6, for spring 2009) will be refunded one-half the tuition paid for that course; (c) a student who drops a course after midterm will not be refunded any portion of the tuition.

Fees for late submission of course schedules apply as outlined in section E of this chapter. Please note that payments completed after the registration deadline may be subject to late payment fees. Late payments will be accepted (with the addition of a late payment fee) no later than September 29, 2008, for fall 2008, and February 5, 2009, for spring 2009. Any student who has not completed payment in full for courses by these dates will not be permitted to enroll for that term.

4. **Facilities and services.** Nondegree students are entitled to use the library system and other facilities that are required for the courses in which they are enrolled, such as laboratories, computers, and the like. For a fee, they are entitled to purchase gymnasium membership and Yale Health Plan coverage. Nondegree students are not eligible for undergraduate housing and they may not serve as freshman counselors.

5. **Regulations.** Nondegree students are governed by the academic regulations of Yale College and by the rules contained in the **Undergraduate Regulations.** In disciplinary matters, nondegree students are subject to the jurisdiction of the Yale College Executive Committee.
6. **Yale students.** Students who have withdrawn from Yale College or who did not complete degree requirements within the number of terms of enrollment for which they were admitted may not return to Yale College to complete degree requirements as nondegree students. This rule includes former Yale College students who are currently employees of the University. Students on leave of absence may not be admitted to the Nondegree Students program.

7. **Yale graduates.** Graduates of Yale College who have received the bachelor’s degree after eight terms of regular enrollment are eligible to apply as nondegree students either on a full-time or on a part-time basis. But Yale College graduates who have taken degrees after fewer than eight terms of regular enrollment are eligible to apply as nondegree students only on a full-time basis until they have completed the equivalent of eight terms of enrollment in Yale College. Thus a student who took a seven-term degree must be a full-time student for the first term in which he or she is a nondegree student, but may be a part-time nondegree student in a subsequent term. For example, a student who has completed degree requirements at the end of a fall term after eight terms of regular enrollment is eligible to apply as a nondegree student either on a full-time basis or on a part-time basis during the subsequent spring term, but a student who has completed degree requirements at the end of a fall term after seven terms of regular enrollment is eligible to apply as a nondegree student during the subsequent spring term only on a full-time basis. Please note that any courses taken by a former Yale College student in the Nondegree Students program will appear on the undergraduate transcript.

8. **Transfer students.** Students who have been accepted for admission as transfer students may not attend Yale as nondegree students before their first term of enrollment at Yale.

9. **Application deadlines.** For students not currently enrolled in another college, applications are due on October 1, 2008, for spring term 2009, and on May 1, 2009, for fall term 2009. For students who are currently enrolled in another college, the deadline is October 1, 2008, for the spring term and July 1, 2009, for the fall term. Yale employees require permission of their supervisors to apply. Nondegree enrollment may begin in either the fall or the spring term.

Further information and application forms are available at [www.yale.edu/admit/other/nondegree/index.html](http://www.yale.edu/admit/other/nondegree/index.html).

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**O. CREDIT FROM OTHER UNIVERSITIES**

A student may not employ course credits earned at another college or university to reduce the expected number of terms of enrollment in Yale College. Under the conditions described below, a student may apply as many as two course credits earned at another college or university toward the 36-course-credit requirement for graduation from Yale College. Forms on which to request the award of credit for study that has been completed elsewhere are available at the offices of the residential college deans. Before undertaking such outside study, the student should consult the residential college dean about both the institution to be attended and the course to be taken there. Courses in Yale Summer Session are not considered outside courses, and there is no limit on the number of such courses that a student
may offer toward the requirements of the bachelor’s degree; see “Courses in Yale Summer Session” in section K. Similarly, courses taken in the Yale College program at the Paul Mellon Centre in London, or in the Peking University–Yale University Joint Undergraduate Program in Beijing, are Yale courses and do not count as outside credit.

1. Approval of credit. In order for credit to be given for courses taken elsewhere, all of the following conditions must be met:

(a) The director of undergraduate studies in the subject of a course taken elsewhere must approve the award of credit at Yale for the course.

(b) A student who has studied at an American university, or abroad on a program sponsored by an American university, must provide the office of the residential college dean with an official transcript of the work completed. A student who has enrolled at a foreign university should supply an official transcript if the university issues transcripts; if it does not, then the student must furnish an official certificate of enrollment, showing if possible the course or courses completed.

(c) Students seeking outside credit should be prepared to furnish a copy of the course syllabus, as well as essays and examinations written in the course. In some cases, a letter from the instructor of the course may be required, or the student may be asked to pass an examination on the material of the course. Such information may be particularly necessary in the case of study at a foreign university.

(d) Study undertaken in the United States must be at a four-year accredited institution that grants a bachelor’s degree in the arts and sciences. Foreign study must be completed at a university or other approved institution. Credit may be awarded only for work done while a student was officially enrolled at such an institution, and cannot be given for any work completed independently of such formal enrollment.

(e) A grade of A or B is expected; a grade of C is acceptable. Credit cannot be given for a mark of Credit on a Credit/D/Fail option, nor for a grade of Pass on a Pass/Fail option, if the student had the choice of taking the course for a letter grade.

(f) In order for credit to be given for a course completed at another college or university, the course must carry a value of at least three semester credit hours; if the course is taken at an institution on the quarter system, it must carry a value of at least four-and-one-half quarter units.

2. Work done while in secondary school. Course credit or distributional credit cannot be given for any college or university course taken while the student was still enrolled in secondary school. Work done after graduation from secondary school but before matriculation at Yale may be accepted on recommendation from the appropriate director of undergraduate studies.

As a regular exception to this rule, students who earned credits while still enrolled in secondary school as members of the Nondegree Students program in Yale College or as students in Yale Summer Session may apply such credits toward the requirements of the bachelor’s degree.

3. Limit of two course credits. Credit cannot be given for more than two course credits earned at another institution. An exception of one additional
course credit may be made only by action of the Committee on Honors and Academic Standing upon the student’s petition, normally after the final term of enrollment.

4. Distributional requirements. With permission, course credit earned at another college or university may be applied toward the distributional requirements for the bachelor’s degree and to those for the sophomore and junior years whether or not it is counted toward the 36-course-credit requirement for graduation; students should consult with the residential college dean to be directed to the appropriate authority for such approval. Credit from outside Yale may not be applied toward the distributional requirements for the freshman year. Note particularly that Yale does not award course credit or distributional credit for courses completed at another college or university before the student graduated from secondary school.

5. The foreign language requirement and courses taken elsewhere. Students who have taken a course in a foreign language at another institution and who wish to offer that course toward fulfillment of the foreign language distributional requirement must pass a foreign language examination administered at Yale by the appropriate director of undergraduate studies or the director of the Center for Language Study.

6. Major requirements. At the discretion of the director of undergraduate studies in a student’s major, work done at another institution may be counted as fulfilling a requirement of the student’s major program. This may be done whether or not a course is credited toward the 36-course-credit requirement.

7. Year or Term Abroad. Students receiving credit for foreign study on a Year or Term Abroad are not eligible to apply additional credit from outside Yale toward the 36-course-credit requirement, but may apply such credit toward the distributional requirements for the bachelor’s degree or toward a requirement of the student’s major program (see points 4 and 6 above).

8. Transfer students. Students admitted by transfer from another college or university may receive course credit from outside Yale only for work done before matriculation at Yale; transfer students may not receive course credit for any outside courses taken after they have enrolled in Yale College. An exception may under certain circumstances be made in the case of course credits earned by transfer students on a Year or Term Abroad. See section L, “Transfer Students.” Transfer students must enroll in Yale College proper for at least four terms, and earn therein at least eighteen course credits.

9. Correspondence courses, internships, and the like. Course credit cannot be given for a course taken by correspondence even if it is sponsored by another university, including accredited four-year institutions granting a bachelor’s degree. It also cannot be given for such programs as internships, field studies, workshops, or “distance learning” arrangements, unless such programs include as a component a full, regular, academic course of instruction, and are certified by a transcript from an accredited four-year institution granting a bachelor’s degree.

10. Yale transcript. Outside courses may be entered on a student’s Yale transcript only if they are applied to the 36-course-credit requirement, the distributional requirements, or the requirements of a major program. Such courses must be entered on the Yale transcript if they are to be applied toward any of these requirements. Except for transcripts of transfer students (on which see section L, “Transfer Students”), courses that are applied toward the 36-course-credit requirement are listed by title with indication of
the credit units earned, but without grades. Courses that are applied toward the distributional requirements only are listed without grades and with the designation “for distributional credit only.” Courses that are applied toward the requirements of a major program only are listed without grades and with the designation “for credit toward the major only.” Once a course has been entered on a student’s Yale transcript at the student’s request, the entry may not subsequently be removed at the student’s request.


P. ACCELERATION POLICIES

ACCELERATION BY THE EARLY ACCUMULATION OF THIRTY-SIX COURSE CREDITS ALL EARNED AT YALE

A student may accelerate progress toward graduation by accumulating thirty-six course credits in fewer than eight terms of enrollment. Such a student must earn all thirty-six course credits at Yale and may not offer course credits earned at another institution in order to reduce the number of terms of enrollment at Yale.

1. Study abroad. Terms spent on a Year or Term Abroad count as if they were terms of enrollment in Yale College, but course credits earned therein may not be applied to acceleration by the early accumulation of thirty-six course credits because all such credits must be earned at Yale. A spring term at the Yale College program at the Paul Mellon Centre in London or a fall or spring term at the Peking University–Yale University Joint Undergraduate Program in Beijing is, in fact, a term of enrollment in Yale College, and credits earned in either program may be applied to such acceleration. Attendance at Yale Summer Session or the summer program at the Paul Mellon Centre in London does not count as a term of enrollment, but course credits earned in these summer programs may be applied toward acceleration by the early accumulation of thirty-six credits all earned at Yale. See “Courses in Yale Summer Session” and “Yale-in-London Summer Program” in section K.

2. Patterns of attendance. While students employing acceleration credits in order to acquire an accelerated degree are required to attend Yale in certain patterns of attendance (see below), no particular pattern of attendance is required from a student accelerating by the early accumulation of thirty-six course credits all earned at Yale.

3. Six or seven terms of enrollment. Either a six-term degree or a seven-term degree may be acquired by the accumulation of thirty-six course credits earned at Yale; graduation after fewer than six terms of enrollment in Yale College by such an early accumulation of course credits is not permitted.

4. Notification by the student. A student intending to accelerate through the early accumulation of thirty-six course credits all earned at Yale must notify the Committee on Honors and Academic Standing through the residential college dean of that intention by the day on which the student’s course schedule is due in the final term of enrollment. Such notification must include written certification from the student’s director of undergraduate studies that the student will have completed all of the requirements of the major program, and from the residential college dean that the student will have fulfilled the distributional requirements at the conclusion of that term. Failure to do so will result in the student’s being charged a fine of $100.
5. **Deceleration.** A student may subsequently decelerate and take an eight-term degree. A reversion to an eight-term degree will not affect a student’s academic good standing or eligibility for eight terms of financial aid.

**ACCELERATION BY USE OF ACCELERATION CREDITS**

For the definition of acceleration credits and the criteria for their award, see chapter II, “Freshman Placement and Acceleration.” For the sake of equity and fairness, **no exceptions can be made to the regulations governing the use of acceleration credits.** Inquiries about acceleration may be addressed to the residential college dean or to Chair of the Committee on Advanced Placement and Acceleration, Registrar’s Office, 246 Church Street, 432-2331.

1. **Eligibility.** The following charts list the number of total credits needed to accelerate by one or two terms during a given term of enrollment:

<table>
<thead>
<tr>
<th>Acceleration by One Term</th>
<th>Minimum Total Credits</th>
<th>Minimum Yale Course Credits</th>
<th>Activated Acceleration Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the third term</td>
<td>12</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>In the fourth term</td>
<td>16</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>In the fifth term</td>
<td>21</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>In the sixth term</td>
<td>26</td>
<td>22</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Acceleration by Two Terms</th>
<th>Minimum Total Credits</th>
<th>Minimum Yale Course Credits</th>
<th>Activated Acceleration Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the third term</td>
<td>17</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>In the fourth term</td>
<td>21</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>In the fifth term</td>
<td>26</td>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

2. **Application deadline.** Application to accelerate is made by submission of the required form to the office of the residential college dean. The deadline for applying for acceleration is the last day of classes in the respective term of enrollment given in the eligibility charts above. As a special exception, a student accelerating by one or two terms who wishes to complete a term of study abroad as early as during the third term of enrollment would have to petition to accelerate before the third term of enrollment. Such a student should consult with the residential college dean. The absolute and final deadline for applying for acceleration by one term is the last day of classes in the sixth term of enrollment. The absolute and final deadline for applying for acceleration by two terms is the last day of classes in the fifth term of enrollment.

3. **Course credit requirement for graduation.** A student accelerating by two terms must earn at least twenty-seven course credits at Yale, and a student accelerating by one term must earn at least thirty-two course credits at Yale. Therefore, with the exception of credit earned through enrollment in the Year or Term Abroad program, a student accelerating by use of acceleration credits may not apply any credit earned at another college or university toward the 36-course-credit requirement for the bachelor’s degree.

4. **Enrollment requirements, including required patterns of attendance.** A student intending to accelerate by two terms must complete six terms of full-time enrollment in Yale College. Those six terms may be in any pattern of enrollment as long as the student’s sixth and final term of enrollment is a spring term.
A student intending to accelerate by one term must complete seven terms of full-time enrollment in Yale College. Those seven terms may be in any pattern of enrollment as long as the student’s seventh and final term of enrollment is a spring term.

A student accelerating by two terms may not combine acceleration credits and course credits to graduate in fewer than six terms; six terms of enrollment is the minimum as well as the maximum requirement for acceleration by two terms. Likewise, a student accelerating by one term may not combine acceleration credits and course credits to graduate in fewer than seven terms; seven terms of enrollment is the minimum as well as the maximum requirement for acceleration by one term.

5. Deceleration. A student accelerating by two terms or one term may subsequently apply to decelerate by submitting the required form to the office of the residential college dean. A student who is considering whether to decelerate should consult with the residential college dean as soon as possible. A student accelerating by two terms who subsequently decides to accelerate by only one term must meet the requirements for acceleration by one term. A student accelerating by two terms or one term may subsequently decide to decelerate completely and take an eight-term degree. Since by definition an eight-term degree is not an accelerated degree, such a student will lose the use of acceleration credits. A reversion to an eight-term degree will not adversely affect a student’s academic good standing or eligibility for eight terms of financial aid.

6. Reacceleration. A student who has declared an intention to decelerate and to relinquish the use of acceleration credits is permitted to accelerate again through the use of acceleration credits as long as the student meets the eligibility requirements and application deadline for one or two terms of acceleration given in points 1 and 2 above.

GENERAL RULES RELATING TO THE USE OF ACCELERATION CREDITS

1. Notification. The chief responsibility for ascertaining eligibility and for meeting the deadline to apply for acceleration rests with the students themselves. However, the Registrar’s Office will make reasonable efforts to inform students, at the beginning of the third term of enrollment, of their eligibility to accelerate by one or two terms.

It is not the responsibility of the Registrar’s Office or Yale College to remind students who have declared an intention to accelerate of the rules on the pattern of attendance stipulated for the use of acceleration credits. Students who are accelerating are themselves responsible for planning to meet these rules, and if a student’s pattern of attendance does not conform to them, it will be concluded that the student has decided to relinquish the use of acceleration credits and not to accelerate. Such a student will be automatically decelerated.

2. Interruption of studies by leave or withdrawal. Terms of enrollment need not be consecutive. A student accelerating by one or two terms has the same privileges of leave of absence or withdrawal that a nonaccelerating student has.

3. A third term of leave of absence. A student taking an accelerated degree by use of acceleration credits who has had two terms of leave of absence may receive a third term of leave if it is needed to bring the student’s pattern of
attendance into conformity with the pattern of attendance stipulated for an accelerated degree. See “Leave of Absence” in section J; a student who has received long-term loans through Yale or who is receiving financial aid from Yale should particularly note paragraph 8 under “Leave of Absence.”

4. Withdrawal. If a student withdraws from a term after the date on which course schedules for that term are due, the uncompleted term counts as a term of enrollment, both in the determination of the student’s eligibility to accelerate and in the calculation of the number of terms in which the student has been in attendance at Yale. As an exception to this rule, if an accelerating student withdraws from Yale College on the recommendation of the University Health Services without having successfully completed a term, the student has the option of not counting the uncompleted term as one of the six or seven terms of enrollment.

5. Enrollment in Yale Summer Session or the Yale-in-London summer program. Attendance at Yale Summer Session or the summer program at the Paul Mellon Centre in London does not constitute a term of enrollment. Thus a student accelerating by one term may not offer attendance at Yale Summer Session or the summer program at the Paul Mellon Centre in London as one of the required seven terms of enrollment in Yale College. Course credits earned by attendance at these summer programs, however, may be applied toward the requirements for the bachelor’s degree by accelerating students, provided that such students meet the conditions specified for acceleration by one or two terms. See also “Courses in Yale Summer Session” and “Yale-in-London Summer Program” in section K.

6. Course credit from outside Yale. A student accelerating by two terms must earn at least twenty-seven course credits at Yale, and a student accelerating by one term must earn at least thirty-two course credits at Yale. Therefore, an accelerating student may not apply any credit earned at another college or university toward the 36-course-credit requirement for the bachelor’s degree. A student, whether accelerating or not, may be permitted to apply course credits earned at another college or university toward the requirements of the student’s major program or toward any of the distributional requirements other than those for the freshman year. See section O, “Credit from Other Universities.”

(Please note that attendance at the Yale College program at the Paul Mellon Centre in London during the spring term counts just as if it were a term of enrollment at Yale College in New Haven, as does attendance at the Peking University–Yale University Joint Undergraduate Program in Beijing. Attendance at the Paul Mellon Centre during the summer, however, does not count as a term of enrollment. See “Yale-in-London Summer Program” in section K.)

7. Year or Term Abroad. A Year Abroad counts as two terms and a Term Abroad counts as one term of enrollment in Yale College. Credits earned on a Year or Term Abroad count as the equivalent of Yale course credits.

Note that after a Year or Term Abroad all students must attend two subsequent terms in Yale College; see “Year or Term Abroad” in section K. In many cases a student must relinquish the use of acceleration credits and decelerate in order to take a Year or Term Abroad. As a special exception, a student accelerating by one or two terms who wishes to complete a term of study abroad as early as during the third term of enrollment would have to petition to accelerate before the third term of enrollment. A student who wishes to accelerate and to take a Year or Term Abroad should consult with
the residential college dean and the Office of International Education and Fellowship Programs at the earliest opportunity.

An accelerating student who wishes also to complete a Year or Term Abroad must conform to one of the following schemes:

<table>
<thead>
<tr>
<th>Terms of Acceleration</th>
<th>Total Terms at Yale</th>
<th>Terms on YA/TA</th>
<th>Acceleration Credits</th>
<th>Minimum Course Credits Earned at Yale</th>
<th>Maximum Course Credits Earned on YA/TA</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
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<td>4</td>
<td>2</td>
<td>9</td>
<td>18</td>
<td>9</td>
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</tbody>
</table>

8. Distributional requirements. Acceleration credits may not be employed to meet the distributional requirements for the freshman, sophomore, or junior years, or the distributional requirements for the bachelor's degree, including the foreign language requirement. With permission, an accelerating student may apply course credit earned at another college or university toward the distributional requirements for the bachelor's degree and to those for the sophomore and junior years; students should consult with the residential college dean to be directed to the appropriate authority for such approval.

9. Major requirements. With the permission of the director of undergraduate studies, an accelerating student may apply credit earned at another university toward the requirements of the student's major program.

10. Makeup of course credit deficiency. If an accelerating student's record at the end of a term of enrollment shows a deficiency for promotion, academic good standing, or graduation, the student will be allowed to repair the deficiency without forfeiting the use of acceleration credits only through enrollment in Yale Summer Session if the credit earned is to be applied toward the 36-course-credit requirement for the bachelor's degree. See section D, “Promotion and Good Standing.”

11. Enrollment after graduation as a nondegree student. Accelerating students who have qualified for the award of the bachelor's degree are eligible, as are all Yale College graduates, for full-time enrollment in Yale College as nondegree students. Because such students will have graduated, they will not be eligible for financial aid. See section N, “Nondegree Students Program.”

12. Transfer students. Students admitted by transfer from other colleges and universities are not eligible for acceleration by the use of acceleration credits.

Q. AMENDMENTS

The University reserves the right to amend or supplement these regulations at any time upon such notice to students as it deems appropriate.
A subject marked with an asterisk may be taken only as a second major.
<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>Full Name</th>
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<tbody>
<tr>
<td>ACCT</td>
<td>Accounting</td>
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<tr>
<td>AFAM</td>
<td>African American Studies</td>
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<td>AFST</td>
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<td>CLCV</td>
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<td>YORU</td>
<td>Yorùbá</td>
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<td>YPKU</td>
<td>Yale–Peking University</td>
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<td>ZULU</td>
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</table>
ACCOUNTING

ACCT 170a or b, Financial Accounting. Larry Schiffres.
MW 9-10.15 (32)

Contemporary accounting and corporate financial reporting. Preparation, interpretation, and analysis of the earnings statement; the statement of financial position and the statement of cash flows. Open to seniors and juniors as space allows.

AFRICAN AMERICAN STUDIES

Director of undergraduate studies: Emilie Townes, Rm. 103, 81 Wall St., 432-1170, emilie.townes@yale.edu

FACULTY OF THE DEPARTMENT OF AFRICAN AMERICAN STUDIES

Professors
Elizabeth Alexander, Elijah Anderson, David Blight, Hazel Carby, Thomas DeFrantz (Visiting), Glenda Gilmore, Ezra Griffith, Jonathan Holloway, Matthew Jacobson, Gerald Jaynes, Christopher L. Miller, Patricia Pessar (Adjunct), Joseph Roach, Robert Stepto, John Szwed (Emeritus), Robert Thompson, Emilie Townes

Associate Professors
Daphne Brooks (Visiting), Kamari Clarke, Michael Veal

Assistant Professors
Jafari Allen, Khalilah Brown-Dean, Terri Francis, Paige McGinley, Alondra Nelson, Naomi Pabst, Edward Rugemer

Lecturers
Mary Barr, Kathleen Cleaver, William Casey King, Flemming Norcott, Michele Stepto, Deborah Thomas, Jennifer Wood, Laurie Woodard

The African American Studies major examines, from numerous disciplinary perspectives, the experiences of people of African descent in Black Atlantic societies, including the United States, the Caribbean, and Latin America. Students in the department explore the historical, cultural, political, economic, and social development of Black Atlantic societies. The major demands that students acquire both an analytic ability rooted in a traditional discipline and interdisciplinary skills of investigation and research.

African American Studies offers training of special interest to those considering admission to graduate or professional schools and careers in education, journalism, law, business management, city planning, international relations, politics, psychology, publishing, or social work. The interdisciplinary structure of the department offers students an opportunity to satisfy the increasingly rigorous expectations of admissions committees and prospective employers for a broad liberal arts perspective that complements specialized knowledge of a field.

African American Studies can be taken either as a primary major or as one of two majors, in consultation with the director of undergraduate studies. Appropriate majors to combine with African American Studies might include, but are not limited to, American Studies, Anthropology, Economics, English, Ethnicity, Race, and Migration, History, History of Art, Music, Political Science, Psychology, Sociology, Theater Studies, and foreign languages. Regulations concerning the completion of two majors can be found in chapter III, section K, of this bulletin.

Requirements of the major: The major in African American Studies requires twelve term courses including a yearlong history sequence (AFAM 160a, 162b), one course in the humanities relevant to African American Studies.
(e.g., AFAM 112a, 172b, 178b, 200b, 238a, 279a, 294a, 367a, 400a, 408a, or 427a), one course in the social sciences relevant to African American Studies (e.g., AFAM 229b, 250b, 326a, 332b, 347a, or 415b), the junior seminar (AFAM 410b), the senior colloquium (AFAM 480a), and the senior essay (AFAM 491a or b). These courses examine ideas and problems that may originate in many fields but that have a common concern—the black experience. The distribution of requirements is intended to provide students with a broad interdisciplinary experience. Students are strongly encouraged to complete the history sequence by the end of their sophomore year.

Area of concentration. Students majoring in African American Studies are required to choose an area of concentration, comprising five courses. This cluster of interrelated courses is intended to ground the student's learning experience in one area of investigation. Often students will choose an area of concentration in a traditional discipline such as political science, sociology, American studies, history, or English language and literature. (This strategy is especially helpful for students planning to fulfill the requirements of two majors.) Students can also construct interdisciplinary areas of concentration that span traditional departments and encompass broader theoretical frameworks such as race and ethnicity, cultural studies, or feminism and gender studies. All majors are encouraged to take upper-level courses as part of their concentration, especially those courses centering on research and methodology. None of the seven required courses in African American Studies may be counted among the five electives in the area of concentration.

Junior seminar. In their junior year students must take the junior seminar (AFAM 410b, Interdisciplinary Approaches to African American Studies). This course provides majors with theoretical and methodological bases for the work they will do during their research-oriented senior year.

Senior requirement. As seniors, students participate in a colloquium (AFAM 480a) that gives them an opportunity to exchange ideas with each other and with more advanced scholars; students submit a prospectus, compile a working bibliography, begin or continue research, and write the first eight to ten pages of the senior essay. After completing the colloquium, each student carries out the remaining research and writing of a senior essay (AFAM 491b or, in exceptional cases, 491a) under the guidance of a faculty member in the chosen discipline or area of concentration.

Students are strongly encouraged to use the summer between the junior and senior years for research directly related to the senior essay. For example, field or documentary research might be undertaken in urban or rural communities throughout the Black Atlantic diaspora. The particular research problem and design are to be worked out in each case with a faculty adviser.

Procedures. Students considering a program of study in African American Studies should consult the director of undergraduate studies as early as possible. Areas of concentration and schedules for majors must be approved by the director of undergraduate studies.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 12 term courses (incl senior req)
Specific courses required: AFAM 160a, 162b, 410b
Distribution of courses: 1 relevant humanities course and 1 relevant social science course, both approved by DUS; 5 courses in area of concentration
Substitution permitted: Relevant course with DUS permission
Senior requirement: Senior colloq (AFAM 480a) and senior essay (AFAM 491a or b)
afam 110a/amst 161a, FREEDOM AND IDENTITY IN BLACK CULTURES.
   Elizabeth Alexander.
   MW 11.35-12.50, 1 HTBA  Hu, So (34)
Introduction to major themes and topics in African American experiences; basic methods of interdisciplinary analysis and interpretation in African American studies. Topics include black economic, political, and social institutions; self-identity and social status; literature, art, film, and music; and political and social issues and their relationship to changing social structures.

For description see under History of Art.

afam 160a/hist 184a, AFRICAN AMERICAN HISTORY: 1500–1888.
   Edward Rugemer.
   For description see under History.

afam 162b/amst 162b/hist 187b, AFRICAN AMERICAN HISTORY: FROM EMANCIPATION TO THE PRESENT.  Jonathan Holloway.
   MW 10.30–11.20, 1 HTBA  WR, Hu (33)
An examination of the African American experience since 1861. Emphasis on African Americans in the Civil War and Reconstruction; the thought and leadership of Booker T. Washington, Ida B. Wells-Barnett, Du Bois, Garvey, King, and Malcolm X; the urban experience of African Americans; the civil rights movement and its aftermath.

For description see under History.

afam 178bG/afst 188bG/hsar 378bG, FROM WEST AFRICA TO THE BLACK AMERICAS: THE BLACK ATLANTIC VISUAL TRADITION.
   Robert Thompson.
   For description see under History of Art.

*afam 200b/film 270b, SPIKE LEE.  Terri Francis.
   For description see under Film Studies.

afam 229b/amst 229b/erem 231b/socy 198b/wgss 229b, HEALTH SOCIAL MOVEMENTS.  Alondra Nelson.
   TTh 10.30-11.20, 1 HTBA  So (23)
Examination of how and why groups coalesce around issues of health and illness. Issues include racial discrimination and health; women's health and reproductive rights; sickle-cell anemia; environmental justice; breast cancer; and HIV/AIDS.

afam 238a/musi 266a, FUNK: THE RE-AFRICANIZATION OF AMERICAN POPULAR SONG.  Michael Veal.
   For description see under Music.

*afam 247b/hist 171Jb, INTERRACIAL IDENTITY.  Laurie Woodard
   T 1:30-3:20  WR, Hu (0)
The representation of hybrid or interracial identity in literature from the fifth century B.C. to the present. Questions of identity formation, representation, the “other,” and the creation and perpetuation of stereotypes. Authors include Cleobulus, Shakespeare, Langston Hughes, and Philip Roth.
AFAM 250b, BLACKS AND THE LAW. Flemming Norcott.
MW 4:30-5:45 So (37)
An exploration of the ways in which legislative and judicial policy has affected the legal and socioeconomic status of African Americans from slavery to the present. Constitutional concepts of equality and integration.

AFAM 257b/ HIST 172Jb, PERFORMING BLACK WOMANHOOD: AFRICAN AMERICAN WOMEN’S IDENTITY IN TWENTIETH-CENTURY POLITICS AND CULTURE. Laurie Woodard.
M 1:30-3:20 WR, Hu (0)
How African American women have attempted to define themselves and to claim control of their bodies, representations, and rights as U.S. citizens. Close scrutiny of the lives and images of Josephine Baker, Suzan Lori Parks, and other African American women. Primary sources include novels, film, music, autobiographies, play scripts, and poetry.

AFAM 279a/ AMST 273a/ WGSS 342a, BLACK WOMEN’S LITERATURE. Naomi Pabst.
Th 3:30-5:20 Hu (0)
Examination of black women’s literary texts from the post–civil rights era. Exploration of the ways writers construct and contest the cultural, ideological, and political parameters of black womanhood. Topics include narrative strategy, modes of representation, and textual depictions of the intersections of race, gender, sexuality, color, ethnicity, nationality, class, and generation. Texts placed within the context of black women’s literary legacies.

AFAM 292a/ AMST 292a, INTERRACIAL LITERATURE. Naomi Pabst.
Th 1:30-3:20 Hu (0)
Examination of interracial and black subjectivity as represented within a selection of postemancipation literary texts. Focus on black/white color line crossing, the trope of the tragic mulatto, and theories of difference and hybridity.

AFAM 294a/ ENGL 294a, AFRICAN AMERICAN LITERATURE I: 1740–1900. Michele Stepto.
MW 11:35-12:50 Hu (0)
The literary reaction to slavery; the evolution in form from slave narratives to autobiographies and fictions; the incorporation of folk and popular materials into formal literature. Authors include Phyllis Wheatley, Jupiter Hammon, Frederick Douglass, Harriet Jacobs, Frances Ellen Watkins Harper, Charles Chesnutt, Paul Laurence Dunbar, and James Weldon Johnson.

AFAM 307b/ AMST 432b, HARLEM RENAISSANCE. Jennifer Wood.
W 3:30-5:30 Hu (0)
A study of the literature created during or concerning the Harlem, or New Negro, Renaissance. Some consideration of the Jazz Age. Writers include Zora Neale Hurston, Nella Larsen, Claude McKay, F. Scott Fitzgerald, Gertrude Stein, Carl Van Vechten, Langston Hughes, and James Weldon Johnson.

AFAM 308a, ORAL HISTORY AND THE AFRICAN AMERICAN EXPERIENCE. Mary Barr.
T 7-8:30 p.m. Hu (0)
An introduction to oral history as a research method, especially with regard to its potential to augment historical understandings of African American life. Readings focus on lived experiences of slavery, Jim Crow segregation, and Hurricane Katrina. Students conduct oral history interviews.

W 3.30-5.20  Meets RP (o)  
The transnational history of the civil rights movement in the United States in the mid-twentieth century; relationships with the Cold War and with international decolonization and liberation movements.

*AFAM 322a, RACE, CLASS, AND EDUCATION. Mary Barr.  
M 3.30-5.30 (o)  
Systems of schooling as they maintain or alleviate inequality. Relationships among privilege, power, and schooling; links between schools and societal stratification; contributions of educational institutions to both social mobility and the preservation of the prevailing social order.

*AFAM 326a/*SOCI 324a, AFRICAN AMERICANS AND SOCIAL THOUGHT. Alondra Nelson.  
T 2.30-4.20  So (o)  
Exploration of historical and contemporary writings by theorists of African American life, focusing on kinship, root-seeking, and diaspora.

AFAM 332b/PLSC 223b, ETHNIC POLITICS IN THE UNITED STATES. Khalilah Brown-Dean.  
For description see under Political Science.

[AFAM 339b/AMST 339b/ER&M 343b/LITR 272b, CARIBBEAN FICTION]  

*AFAM 347a, CARIBBEAN LIVES: PSYCHOSOCIAL ASPECTS. Ezra Griffith.  
W 2.30-4.20  So (o)  
A study of the development over time of individuals living in the English-speaking Caribbean. Attention both to the portraiture of the lives and to the psychosocial context in which the individuals lived. Discussion of the unique elements in Caribbean life that facilitated or inhibited the developmental process.

*AFAM 351a/*THST 379a, PRODUCTION SEMINAR: CANE. Thomas DeFrantz.  
For description see under Theater Studies.

[AFAM 352a/AMST 438a/ER&M 291a/LITR 295a/WGSS 343a, CARIBBEAN DIASTORIC LITERATURE]  

*AFAM 354a/*SOCI 353a, TECHNOLOGY, IDENTITY, AND CULTURE. Alondra Nelson.  
W 1.30-3.20  (o)  
The social dynamics of information technology, focusing on issues of labor, class, gender, and race. Readings are drawn from the sociology of scientific knowledge, sociology of science and technology, and contemporary cultural theory.

*AFAM 367a/*AMST 431a/*ER&M 344a/*WGSS 455a, REPRESENTATION AND THE BLACK FEMALE. Hazel Carby.  
T 2.30-4.20  Hu (o)
Examination of how some black women have responded to the racialization of societies and to the culture and politics of gendering and sexuality in the twentieth century in Europe, the Caribbean, and the Americas. Forms and media include fiction, poetry, autobiography, paintings, sculpture, performance art and film, and music.


Th 3.30-5.20 Hu (0)

Examination of mixed-race matters in both literary and critical writings, primarily within the black/white schema. Historical and current questions of black and interracial identity; the contemporary “mixed race movement” and the emerging rubric of “critical mixed race studies”; historical genealogy of interraciality and hybridity. Analysis of long-standing debates on race mixing in the realms of legal classification, transracial adoption, census taking, grassroots movements, the discursive, the ideological, and the popular.

★AFAM 369a/★AMST 370a/★ENGL 364a/★LITR 271a/★THST 369a, African American Theater. Paige McGinley.

For description see under Theater Studies.


Th 9.25-11.15 WR, Hu (0)

Exploration of the patterns of interaction that developed among communities bordering the Atlantic Ocean between the 1440s and the 1790s. Consideration of both the precedents and the new dynamics that emerged in the period and gave rise to the modern world.

★AFAM 374b/★AMST 374b/★ER&M 333b, Black Travel and Transnationality. Naomi Pabst.

Th 1.30-3.20 Hu (0)

Examination of literary and critical writings on African American and black diasporic travel and transnational movement. Emphasis on representation and narrative strategy. The history of black transnational border crossing and its influence on the cultural, political, and ideological parameters of black identity. Forms, varieties, conflicts, and dilemmas of black transnational movement, travel, and tourism.

★AFAM 383a/★AFST 476a/★FREN 376a, The Two Congos: Literature and Culture in the Heart of Africa. Christopher L. Miller.

For description see under French.

★AFAM 387b/★AMST 398b/★MUSI 398b, The Electric Music of Miles Davis. Michael Veal.

For description see under Music.

★AFAM 400a/★ER&M 336a/★FILM 422a, Black American Paris. Terri Francis.

WF 1-2.15; screenings Th 7 P.M. Hu (36)

Histories and representations of African American cultural production in Paris, France. The phenomenon of African American migration, expatriation, and success in Paris from the early eighteenth century to the present. Topics include the Harlem Renaissance, the Black Atlantic, surrealism, negritude, race and ethnicity, colonialism, primitivism and modernism, and equality.
**afam 403a**/**er&m 331a**/**thst 431a**, Black Feminist Musical Subcultures. Daphne Brooks.

Th 2.30-4.30 Hu (0)

Interrogation of subculture theories through the dual prisms of race and gender. Ways in which black female cultural producers have stylized and innovated counter-hegemonic performance practices within the context of American popular music culture, from the postbellum era to the present.


T 1.30-3.20 Hu (0)

The African American practice of poetry between 1900 and 1960, especially of sonnets, ballads, sermonic, and blues poems. Poets studied include Paul Laurence Dunbar, Langston Hughes, Sterling Brown, Gwendolyn Brooks, Margaret Walker, and Robert Hayden. Includes sessions at the Beinecke Library for inspection and discussion of original editions, manuscripts, letters, and other archival material.

**afam 410b**/**wgss 410b**, Interdisciplinary Approaches to African American Studies. Deborah Thomas.

Th 1.30-3.20 Hu, So (0) Junior sem

An interdisciplinary, theoretical approach to the study of race, nation, and ethnicity in the African diaspora. Topics include class, gender, color, and sexuality; the dynamics of Pan-Africanism, neocolonialism, and contemporary black nationalism.

**afam 414b/wgss 438b**, Women, Law, and the Black Freedom Movement

**afam 415b**/**amst 415b**/**er&m 345b**/**socy 366b**, Race, Racisms, and Social Theory. Alondra Nelson.

For description see under Sociology.

**afam 417b**/**thst 411b**, Black Performance Theory. Thomas DeFrantz.

For description see under Theater Studies.

**afam 435a**/**thst 420a**/**wgss 344a**, Concert Dance in the Africanist Tradition. Thomas DeFrantz.

For description see under Theater Studies.


htba (0)

Independent research under the direction of a member of the department on a special topic in African American studies not covered in other courses. Permission of the director of undergraduate studies and of the instructor directing the research is required. A proposal signed by the instructor must be submitted to the director of undergraduate studies by the end of the second week of classes. The instructor meets with the student regularly, typically for an hour a week, and the student writes a final paper or a series of short essays. May be elected for one or two terms.


Th 1.30-3.20 (0)
A seminar on issues and approaches in African American studies. The colloquium offers students practical help in refining their senior essay topics and developing research strategies. Students discuss assigned readings and share their research experiences and findings. During the term, students are expected to make substantial progress on their senior essays; they are required to submit a prospectus, an annotated bibliography, and a draft of one-quarter of the essay.

**AFAM 4913 or b, THE SENIOR ESSAY.** Emilie Townes.

HTBA (0)

Independent research on the senior essay. The senior essay form must be submitted to the director of undergraduate studies by the end of the second week of classes. The senior essay should be completed according to the following schedule: (1) end of the sixth week of classes: a rough draft of the entire essay; (2) end of the last week of classes (fall term) or three weeks before the end of classes (spring term): two copies of the final version of the essay.

**COURSES IN OTHER DEPARTMENTS THAT COUNT TOWARD THE MAJOR**

**ENGL 4203, THE LITERATURE OF THE MIDDLE PASSAGE.** Shameem Black, Caryl Phillips.

**PLSC 245a, URBAN POLITICS AND POLICY.** Cynthia Horan.

**Socy 143a, RACE AND ETHNICITY.** Averil Clarke.

**Socy 385b/EPSE 309b/RACE, GENDER, AND THE AFRICAN AMERICAN EXPERIENCE.** Averil Clarke.

For description see under Sociology.

**THST 335a/AFST 433a, CONTEMPORARY DANCE OF AFRICAN EXPRESSION.** Reggie Wilson.

For description see under Theater Studies.

**THST 427b/JAPN 300b, GESTURE IN JAPANESE AND AFRICAN AMERICAN PERFORMANCE.** Reginald Jackson.

For description see under Theater Studies.

**AFRICAN LANGUAGES**

*(See under African Studies.)*

**AFRICAN STUDIES**

Director of undergraduate studies: Ann Biersteker, 142 LUCE, 432-9902, ann.biersteker@yale.edu; director of the Program in African Languages: Karie Wa’Njogu, 493 College St., 432-0110, john.wanjogu@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF AFRICAN STUDIES**

**Professors**

David Apter (Emeritus) (Political Science), Roberta Brilmayer (Law School), Owen Fiss (Law School), William Foltz (Emeritus) (Political Science), Sara Suleri Goodyear (English), Robert Harms (History), Andrew Hill (Anthropology), John Middleton (Emeritus) (Anthropology), Christopher L. Miller (French), Lamin Sanneh (History, Divinity School), Ian Shapiro (Political Science), Robert Thompson (History of Art), Christopher Udry (Economics), David Watts (Anthropology), Elisabeth Wood (Political Science)
ASSOCIATE PROFESSORS
Ann Biersteker (Adjunct) (Linguistics), Kamari Clarke (Anthropology), Keith Darden (Political Science), Lawrence King (Sociology), Michael R. Mahoney (History), Michael Veal (Music)

ASSISTANT PROFESSORS
Christopher Blattman (Political Science), Adria Lawrence (Political Science), Michael McGovern (Anthropology), Ato Kwamena Onoma (Political Science)

LECTURERS
Maxwell Amoh (African Studies), Kana Dower (Anthropology), Anne-Marie Foltz (Epidemiology & Public Health), David Simon (Political Science)

SENIOR LECTOR II
Sandra Sanneh

SENIOR LECTOR
Kiarie Wa’Njogu

LECTOR
Oluseye Adesola

The program in African Studies enables students to undertake interdisciplinary study of the arts, history, cultures, politics, and development of Africa. As a foundation, students in the program gain a cross-disciplinary exposure to Africa. In the junior and senior years, students develop analytical ability and focus their studies on research in a particular discipline such as anthropology, art history, history, languages and literatures, political science, or sociology.

African Studies provides training of special interest to those considering admission to graduate or professional schools, or careers in education, journalism, law, business management, city planning, politics, psychology, international relations, creative writing, or social work. The interdisciplinary structure of the program offers students an opportunity to satisfy the increasingly rigorous expectations of admissions committees and prospective employers for a broad liberal arts perspective that complements specialized knowledge of a field.

Requirements of the major. The program in African Studies consists of thirteen term courses including (1) a course in African history and one in anthropology; (2) two years of an African language (Arabic, Kiswahili, Yorùbá, or isiZulu), unless waived by examination; (3) four term courses in one of the following disciplines: anthropology, art history, history, languages and literatures, political science, sociology, or in an interdisciplinary program such as African American Studies; Ethnicity, Race, and Migration; or Women’s, Gender, and Sexuality Studies; and (4) the junior seminar on research methods, AFST 401a. Students are expected to focus their studies on research in a particular discipline.

The required courses represent the core of the program and are intended to expose the student both to the interdisciplinary nature of African studies and to the methodologies currently being brought to bear on the study of African cultures and societies. Students are encouraged to include upper-level courses, especially those centering on research and methodology.

Senior requirement. Students have the option of writing a senior essay, AFST 491a or b, under the guidance of a faculty member in the discipline of concentration and taking the senior seminar, AFST 464a, or taking the senior seminar and an additional senior seminar in another department in lieu of writing a senior essay.

Language requirement. African Studies majors are required to complete two years of college-level study of an African language or the equivalent, and
they are encouraged to continue beyond this level. For the major's language requirement to be waived, a student must pass a placement test for admission into an advanced-level course or, for languages not regularly offered at Yale, an equivalent test of speaking, listening, reading, and writing skills administered through the Center for Language Study. Students should begin their language study as early as possible.

Program in African Languages. The language program offers instruction in three major languages from sub-Saharan Africa: Kiswahili (eastern and central Africa), Yorùbá (West Africa), and isiZulu (southern Africa). African language courses emphasize communicative competence, using multimedia materials that focus on the contemporary African context. Course sequences are designed to enable students to achieve advanced competence in all skill areas by the end of the third year, and students are encouraged to spend a summer or term in Africa during their language study.

Courses in Arabic are offered through the department of Near Eastern Languages and Civilizations. Noncredit instruction in other African languages is available by application through the Directed Independent Language Study program at the Center for Language Study. Contact the director of the Program in African Languages for information.

Procedure. Students planning to major in African Studies should consult the director of undergraduate studies as early as possible.

M.A. program. The African Studies program does not offer the simultaneous award of the B.A. and M.A. degrees. However, students in Yale College are eligible to complete the M.A. in African Studies in one year of graduate work if they begin the program in the third and fourth undergraduate years. Students interested in this option must complete eight graduate courses in the area by the time of the completion of the bachelor’s degree. Only two courses may be counted toward both graduate and undergraduate degrees. Successful completion of graduate courses while still an undergraduate does not guarantee admission into the M.A. program.

REQUIREMENTS OF THE MAJOR

**Prerequisites:** None
**Number of courses:** 13 term courses (incl senior req)
**Distribution of courses:** 1 course in African hist; 1 course in anthropology; 2 years of an African lang; 4 term courses in area of concentration
**Specific course required:** AFST 401a
**Senior requirement:** Senior sem (AFST 464a); senior essay (AFST 491a or b) or addtl senior sem in another dept

*AFST 110a, Introduction to an African Language I.*
Kiariie Wa’Njogu and staff.

MTWTTh 9.25-10.15 L 1 \( \frac{1}{2} \) C Credits (32)
Beginning instruction in an African language other than those regularly offered. Courses offered depend on availability of instructors. Methodology and materials vary with the language studied. Credit only on completion of AFST 120b. Students may also study an African language through the noncredit Directed Independent Language Study program, described in chapter I of this bulletin. (Formerly AFST 198a)

*AFST 120bG, Introduction to an African Language II.*
Kiariie Wa’Njogu and staff.

5 HTBA L 2 \( \frac{1}{2} \) C Credits (50)
Continuation of AFST 110a. After AFST 110a. (Formerly AFST 199b)
The societies and communities of Africa, both today in a period of globalization and in the “traditional” past. Social organization in rural and urban communities, associated forms of cultural behavior, and their place in the total Africa, which is presented as a part of world society, not as a marginal, isolated continent.
Disciplinary and interdisciplinary research methodologies in African studies, with emphasis on field methods and archival research in the social sciences and humanities. Research methodologies are compared by studying recent works in African studies.

**AFST 403b/**EP&E 373b/**PLSC 403b, The Politics of Human Rights.**
Ato Kwamena Onoma.
For description see under Political Science.

**AFST 407b/**FREN 407b, World Literature in French.**
Christopher L. Miller.
For description see under French.

**AFST 420a/**EP&E 347a/**PLSC 430a, The Politics of Development Assistance.**
David Simon.
For description see under Political Science.

**AFST 421bG, Comparative Perspectives on African Literatures.**
Ann Biersteker.

W 1.30-3.20 Hu (o)
Introduction to a wide range of topics in African literature through English translations of works composed both in African and in European languages. Readings include poetry, novels, plays, essays, nonliterary texts, and autobiographies. Consideration of the symbiotic relationship between printed text and oral performance and between composition and transmission.

**AFST 430bG, Language Planning in Sub-Saharan Africa.**
Kiirie Wa’Njogu.

W 1.30-3.20 Hu (o)
Examination of language policies in selected sub-Saharan African countries. Analysis of language use in different contexts; assessment of the impact of globalization on African languages.

**AFST 435a/**THST 335a, Contemporary Dance of African Expression.**
Reggie Wilson.
For description see under Theater Studies.

**AFST 447b/**PLSC 447b, The Rwandan Genocide in Comparative Context.**
David Simon.
For description see under Political Science.

**AFST 464aG/**ANTH 422aG/**PLSC 434aG, Africa and the Disciplines.**
Kamari Clarke.

W 1.30-3.20 Hu, So (o) Senior sem
A broad survey of Africa’s relation to academic discourse, as seen in a variety of disciplines. Examination of how Africa is represented and discussed in different fields; how disciplinary formations, language, popular conceptions, and related intellectual practices of the various disciplines have affected academic approaches to studies of Africa; and how these approaches have reinvented particular African geographies, such as sub-Saharan vs. North African, Francophone vs. Anglophone, South Africa vs. the rest of Africa, and contemporary diasporic articulations.

**AFST 471a and 472b, Independent Study.**
Staff.
HTBA (o)
Independent research under the direction of a faculty member in the program on
a special topic in African Studies not covered in other courses. Permission of the
director of undergraduate studies and of the instructor directing the research is
required. A proposal signed by the instructor must be submitted to the director of
undergraduate studies by the end of the second week of classes. The instructor
meets with the student regularly, typically for an hour a week, and the student
writes a final paper or a series of short essays. Either term or both terms may be
elected.

*AFST 476a/AFAM 383a/FREN 376a, The Two Congos: Literature and
Culture in the Heart of Africa. Christopher L. Miller.
For description see under French.

*AFST 486a/HIST 388Ja, Slavery and the Slave Trade in Africa.
Robert Harms.
For description see under History.

*AFST 487a/HIST 387Ja, West African Islam: Jihad Tradition and
Its Pacifist Opponents. Lamin Sanneh.
For description see under History.

*AFST 488b/HIST 393Jb, International Development in Historical
Perspective. Michael R. Mahoney.
For description see under History.

*AFST 491a or b, The Senior Essay. Staff.
HTBA (0)
Independent research on the senior essay. The senior essay form must be sub-
mited to the director of undergraduate studies by the end of the second week
of classes. The senior essay should be completed according to the following
schedule: (1) end of the sixth week of classes: a rough draft of the entire essay;
(2) end of the last week of classes (fall term) or three weeks before the end of
classes (spring term): two copies of the final version of the essay.

SWAH 110a, Elementary Kiswahili I. Kiarie Wa’Njogu.
MTWThF 9.25-10.15 L1 1½ C Credits (32)
A beginning course with intensive training and practice in speaking, listening,
reading, and writing. Initial emphasis is on the spoken language and conversa-
tion. Credit only on completion of SWAH 120b.

SWAH 120b, Elementary Kiswahili II. Kiarie Wa’Njogu.
MTWThF 9.25-10.15 L2 1½ C Credits (32)
Continuation of SWAH 110a. Texts provide an introduction to the basic structure
of Kiswahili and to the culture of the speakers of the language. Prerequisite:
SWAH 110a.

SWAH 130a, Intermediate Kiswahili I. Kiarie Wa’Njogu.
MTWThF 11.35-12.25 L3 1½ C Credits (34)
Further development of students’ speaking, listening, reading, and writing skills.
Prepares students for further work in literary, language, and cultural studies as
well as for a functional use of Kiswahili. Study of structure and vocabulary is
based on a variety of texts from traditional and popular culture. Emphasis on
command of idiomatic usage and stylistic nuance. After SWAH 120b.

SWAH 140b, Intermediate Kiswahili II. Kiarie Wa’Njogu.
MTWThF 11.35-12.25 L4 1½ C Credits (34)
Continuation of SWAH 130a. After SWAH 130a.
swah 150aG, Advanced Kiswahili I. Kiari Wa’Njogu.

TT 4-5.15 L5 (27)

Development of fluency through readings and discussions on contemporary issues in Kiswahili. Introduction to literary criticism in Kiswahili. Materials include Kiswahili oral literature, prose, poetry, and plays, as well as texts drawn from popular and political culture. After swah 140b.

swah 160bG, Advanced Kiswahili II. Kiari Wa’Njogu.

TT 4-5.15 L5 (27)

Continuation of swah 150a. After swah 150a.

swah 170aG or bG, Topics in Kiswahili Literature.
Ann Biersteker.

3 HTBA L5, Hu (50)

Advanced readings and discussion with emphasis on literary and historical texts. Reading assignments include materials on Kiswahili poetry, Kiswahili dialects, and the history of Kiswahili. After swah 160b.

yoru 110aG, Elementary Yorùbá I. Oluseye Adesola.

MTWRH 10.30-11.20 L1 ½ C Credits (33)

Training and practice in speaking, listening, reading, and writing. Initial emphasis is on the spoken aspect, with special attention to unfamiliar consonantal sounds, nasal vowels, and tone, using isolated phrases, set conversational pieces, and simple dialogues. Multimedia materials provide audio practice and cultural information. Credit only on completion of yoru 120b.

yoru 120bG, Elementary Yorùbá II. Oluseye Adesola.

MTWRH 10.30-11.20 L2 ½ C Credits (33)

Continuing practice in using and recognizing tone through dialogues. More emphasis is placed on simple cultural texts and role playing. Prerequisite: yoru 110a.


MTWRH 11.35-12.25 L3 ¾ C Credits (34)

Refinement of students’ speaking, listening, reading, and writing skills. More natural texts are provided to prepare students for work in literary, language, and cultural studies as well as for a functional use of Yorùbá. After yoru 120b.

yoru 140bG, Intermediate Yorùbá II. Oluseye Adesola.

MTWRH 11.35-12.25 L4 ¾ C Credits (34)

Students are exposed to more idiomatic use of the language in a variety of interactions, including occupational, social, religious, and educational. Cultural documents include literary and nonliterary texts. After yoru 130a.

yoru 150aG, Advanced Yorùbá I. Oluseye Adesola.

3 HTBA L5 (50)

An advanced course intended to improve students’ aural and reading comprehension as well as speaking and writing skills. Emphasis is on acquiring a command of idiomatic usage and stylistic nuance. Study materials include literary and nonliterary texts; social, political, and popular entertainment media such as movies and recorded poems (ewi); and music. After yoru 140b.

yoru 160bG, Advanced Yorùbá II. Oluseye Adesola.

3 HTBA L5 (50)
Continuing development of students’ aural and reading comprehension and speaking and writing skills, with emphasis on idiomatic usage and stylistic nuance. Study materials are selected to reflect research interests of the students. After YORU 150a.

ZULU 110aG, ELEMENTARY ISIZULU I. Sandra Sanneh.
MNTHF 11:35-12:25 L1 1 1/2 C Credits (34)
A beginning course in conversational isiZulu, using Web-based materials filmed in South Africa. Emphasis on the sounds of the language, including clicks and tonal variation, and on the words and structures needed for initial social interaction. Brief dialogues concern everyday activities; aspects of contemporary Zulu culture are introduced through readings and documentaries in English. Credit only on completion of ZULU 120b.

ZULU 120bG, ELEMENTARY ISIZULU II. Sandra Sanneh.
MNTHF 11:35-12:25 L2 1 1/2 C Credits (34)
Development of communication skills through dialogues and role-play. Texts and songs drawn from traditional and popular literature. Students research daily life in selected areas of South Africa. Prerequisite: ZULU 110a.

ZULU 130aG, INTERMEDIATE ISIZULU I. Sandra Sanneh.
MNTHF 9:25-10:15 L3 1 1/2 C Credits (32)
Development of fluency in speaking, listening, reading, and writing, using Web-based materials filmed in South Africa. Students describe and narrate spoken and written paragraphs. Review of morphology; concentration on tense and aspect. Materials are drawn from contemporary popular culture, folklore, and mass media. After ZULU 120b.

ZULU 140bG, INTERMEDIATE ISIZULU II. Sandra Sanneh.
MNTHF 9:25-10:15 L4 1 1/2 C Credits (32)
Students read longer texts from popular media as well as myths and folktales. Prepares students for initial research involving interaction with speakers of isiZulu in South Africa and for the study of oral and literary genres. After ZULU 130a.

ZULU 150aG, ADVANCED ISIZULU I. Sandra Sanneh.
3 HTBA L5 (50)
Development of fluency in using idioms, speaking about abstract concepts, and voicing preferences and opinions. Excerpts from oral genres, short stories, and dramas made for television. Introduction to other South African languages and to issues of standardization, dialect, and language attitude. After ZULU 140b.

ZULU 160bG, ADVANCED ISIZULU II. Sandra Sanneh.
3 HTBA L5 (50)
Readings may include short stories, a novel, praise poetry, historical texts, or contemporary political speeches, depending on student interests. Study of issues of language policy and use in contemporary South Africa; introduction to the Soweto dialect of isiZulu. Students are prepared for extended research in South Africa involving interviews with isiZulu speakers. After ZULU 150a.

AKKADIAN

(See under Near Eastern Languages and Civilizations.)
AMERICAN STUDIES

Director of undergraduate studies: Alicia Schmidt Camacho, 233 HGS, 432-1188, alicia.camacho@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF AMERICAN STUDIES

Professors
Jean-Christophe Agnew (History), Elizabeth Alexander (African American Studies, English), David Blight (History, African American Studies), Jon Butler (History, Religious Studies), Hazel Carby (African American Studies), George Chauncey (History), Edward Cooke, Jr. (History of Art), John Demos (History), Michael Denning (English), Wai Chee Dimock (English), Kathryn Dudley (Anthropology), John Mack Faragher (History), Glenda Gilmore (History), Langdon Hammer (English), Dolores Hayden (Architecture), Jonathan Holloway (African American Studies, History), Amy Hungerford (English), Matthew Jacobson (Chair) (African American Studies, History), Daniel Kevles (History), Joanne Meyerowitz (History), Charles Musser (Film Studies), Alexander Nemerov (History of Art), Patricia Pessar (Adjunct) (Anthropology), Stephen Pitti (History), Sally Promey (Divinity School), Joseph Roach (English, Theater Studies), Christopher Ryan (History, African American Studies), Harry Stout (Religious Studies, History), John Warner (History of Medicine), Michael Warner (English), Laura Wexler (Women’s, Gender, & Sexuality Studies)

Associate Professors
Alicia Schmidt Camacho, Mary Lui (History), Michael Veal (Music, African American Studies)

Assistant Professors
Seth Fein (History), Zareena Grewal (Ethnicity, Race, & Migration), Paige McGinley (Theater Studies), Alyssa Mt. Pleasant (History), Alondra Nelson (African American Studies), Naomi Pabst (African American Studies), Caleb Smith (English), Kariann Yokota

Senior Lecturers
James Berger, Ron Gregg (Film Studies)

Lecturers
Michael Kerbel (Film Studies), Denise Khor (Ethnicity, Race, & Migration), David Musto (History), Joel Silverman, Rebecca Tannenbaum (History), Deborah Thomas (African American Studies)

The American Studies program encourages the interdisciplinary study of the cultures and politics of the United States, the changing representations of national identity, and the construction of borderland and diasporic cultures over time. Each student in the major combines foundation lecture courses, seminars, other American Studies courses, and classes from other relevant disciplines (literature, history, the arts, and the social sciences) to explore these broad topics from local, national, and global perspectives. Through the selection of an area of concentration, each student develops a focus for course work in the major. The program encourages scholarly work in non-traditional combinations of disciplines; at the same time, however, it assumes and requires a substantial foundation of knowledge in the history and culture of the United States. Students interested in the major are encouraged to consult with the director of undergraduate studies or the sophomore adviser as early as possible.

Requirements of the major: All students majoring in American Studies must take fourteen term courses approved by the program’s faculty. Although a good deal of freedom in course selection is permitted, it is expected that all students will acquaint themselves with the materials, skills, and perspectives of cultural studies. Accordingly, the major requires completion—preferably by the end of the sophomore year, but no later than the end of the junior
year—of at least two foundation courses in cultural history (AMST 188a, 189a, 190a, or 191b), one broad survey course in American literature, and one course preparatory for work in the student’s area of concentration, to be selected in consultation with the director of undergraduate studies. One of these four courses must address material produced before the Civil War. An additional five concentration courses from diverse disciplines must be taken for a letter grade, one of which must incorporate a comparable topic from a non–U.S. perspective. Two electives chosen from the American Studies course offerings are also required.

Students must take two upper-level seminars (AMST 400–490, excluding 471a and 472b) during their junior year. At least one of the seminars must fall within the student’s area of concentration, described below. Students are expected to produce a significant paper of twenty to twenty-five pages in each of the seminars. Students may elect to take AMST 390b, an interdisciplinary methods course, in place of one of the required upper-level seminars. Sophomores contemplating a junior term abroad are urged to take either AMST 390b or an upper-level seminar in the spring term of their sophomore year.

Area of concentration. Each American Studies major selects an area of concentration, normally in the fall of the junior year, from five possible choices: (1) national formations, (2) the international United States, (3) material cultures and built environments, (4) politics and American communities, and (5) visual, audio, literary, and performance cultures. A concentration in national formations explores historic migrations, settlements, and encounters among peoples who have formed the American nation, with an emphasis on Native American history and the construction of America’s frontiers and borderlands. The international United States concentration focuses on historic and contemporary diasporas, the role of the United States outside its national borders, and the flows of American peoples, ideas, and goods throughout the globe. Students in the material cultures and built environments concentration examine the formation of the American landscape from the natural to the man-made, including the development of American architecture, and the visual and decorative arts. The concentration in politics and American communities investigates the emergence of social groups and their political struggles at the local and national levels, emphasizing the themes of power, inequality, and social justice. Majors with a concentration in visual, audio, literary, and performance cultures study American consumer culture, popular culture, representations, and media in relation to U.S. literatures. Students may also petition the director of undergraduate studies to develop an independent concentration.

Senior requirement. During the senior year, each student in the major completes work in the area of concentration in one of three ways. First, the student may enroll in an upper-level seminar within the area of concentration (AMST 400–490, excluding 471a and 472b). Students should apply interdisciplinary methods and undertake original research to produce a final paper of twenty to twenty-five pages. Students must complete all course requirements to fulfill the senior requirement.

Second, the student may complete a one-term senior project or essay (AMST 491a or b). The product should be a thirty-page essay or its equivalent in another medium. All students writing a one-term senior essay participate in a proseminar on theory and method. To apply for admission to AMST 491a or b, a student should submit a prospectus, signed by the faculty adviser, to the director of undergraduate studies.
Third, the student may enroll in the intensive major (AMST 493) and work independently for two terms. The intensive major offers an opportunity for significant original research leading to a substantial senior project. AMST 493 carries two terms of credit; its final product should be a sixty-page essay or its equivalent in another medium. All students in the intensive major participate in a yearlong proseminar on theory and method. One term of the two-term project may count as a course in the area of concentration. To apply for admission to AMST 493, a student should submit a prospectus, signed by the faculty adviser, to the director of undergraduate studies.

As a multidisciplinary program, American Studies draws on the resources of other departments and programs in the University. The following list of courses is meant to be suggestive only: apart from those courses required for the major, it is neither restrictive nor exhaustive. Students are encouraged to examine the offerings of other departments in both the humanities and the social sciences, as well as residential college seminars, for additional relevant courses. The stated area of concentration of each student determines the relevance and acceptability of other courses.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 14 term courses (incl senior req)
Distribution of courses: 2 courses from AMST 188a, 189a, 190a, 191b; 1 course in American lit; 1 course preparatory for work in area of concentration; 1 course from preceding in pre–Civil War; 5 addtl courses in area of concentration for letter grades, one in a related non-American subject (one of the concentration courses may be one term of two-term senior project); 2 junior sems; 2 electives
Substitution permitted: AMST 390b for 1 junior sem; other substitutions with DUS permission
Senior requirement: 1 upper-level sem or 1 term of independent research (AMST 491a or b) related to area of concentration leading to essay or equivalent
Intensive major: Same, except two-term senior project (AMST 493) replaces AMST 491a or b

FOUNDATION COURSES

AMST 188a/HIST 115a, The Colonial Period of American History.
   John Demos.
   For description see under History.

   Kariann Yokota.
   TH 2.30–3.20, 1 HTBA Hu (27)
   An introduction to the cultural, social, and political history of the United States from the era of the revolution through the Civil War and Reconstruction, with special attention to the emergence of a national culture and its relationship to the subcultures of different regions, races, genders, and classes.

[AMST 190a/HIST 112a, The Formation of Modern American Culture, 1876–1919]

   Matthew Jacobson.
   TH 11.35–12.50, 1 HTBA Hu (24)
An introduction to the cultural history of the United States in the modern and postmodern eras, with special attention to the development of the culture industries, the popular cultures of working peoples, and the political and social meanings of cultural conflict.

NATIONAL FORMATIONS

[amst 003b, AMERICAN LITERATURE AND WORLD RELIGIONS]

*amst 004b, Narrations of Native America. Alyssa Mt. Pleasant.  
WF 9-10.15 WR, Hu (o) Fr sem  
Introduction to contemporary and historic writing by American Indian authors of nonfiction and fiction. Focus on the varied ways American Indians have employed literacy and recorded oratory as means to document, interpret, represent, and comment on their histories and experiences. Use of materials from the Beinecke Library. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

For description see under History.

For description see under African American Studies.

amst 213a/er&m 286a/hist 183a, Mexicans, Mexican Americans, and the U.S.–Mexico Borderlands since 1848. Stephen Pitti.  
For description see under History.

*amst 258a, Wilderness in the North American Imagination. April Merleaux.  
T 3,30-5.20 Hu (o)  
The idea of wilderness in American history, art, film, public policy, and literature, from the Puritans to the present. Authors include Thoreau, Faulkner, Jack London, Mary Rowlandson, Aldo Leopold, and Rachel Carson. A weekend field trip is held early in the term.

amst 272a/er&m 282a/hist 183a, Asian American History, 1800 to the Present. Mary Lui.  
MW 10.30-11.20, 1 HTBA Hu (33)  
An introduction to the history of East, South, and Southeast Asian migrations and settlement to the United States from the late eighteenth century to the present. Major themes include labor migration, community formation, U.S. imperialism, legal exclusion, racial segregation, gender and sexuality, cultural representations, and political resistance.

[amst 391b/arch 351b/er&m 380b, MAPPING NEW YORK CITY]

*amst 409b/*er&m 447b/*hist 163jb, Northeastern Native America, 1850 to Today. Alyssa Mt. Pleasant.  
W 2,30-4.20 Hu (o)  
Investigation of American Indian experiences in northeastern North America. Various disciplinary approaches are applied to the study of American Indian peoples and nations in the region.
**AMST 410a**/HIST 166Ja, ASIAN AMERICAN WOMEN AND GENDER, 1830 TO THE PRESENT. Mary Lui. For description see under History.

**AMST 412b**/ER&M 410b/FILM 405b/HIST 164Jb, FILM AND HISTORY. Seth Fein. For description see under History.

**AMST 459b**/HIST 157Jb, TOPICS IN SOUTHERN CALIFORNIA HISTORY. John Mack Faragher. For description see under History.

**AMST 478a**, RACE AND CULTURE IN COLONIAL AMERICA. Gabrielle Guise.

T 1.30-3.20 Hu (0)

An interdisciplinary exploration of race and culture in Anglo-America during the colonial period. Ways that problems of race are expressed culturally. Readings include primary texts, images, and objects from the period.

**ER&M 200b**, INTRODUCTION TO ETHNICITY, RACE, AND MIGRATION. Alicia Schmidt Camacho.

THE INTERNATIONAL UNITED STATES

**AMST 192a**/ER&M 190a, WORK AND DAILY LIFE IN GLOBAL CAPITALISM. Michael Denning.

TTh 1-2.15 WR, Hu (26)

An introduction to the worlds of twentieth-century capitalism, from Ford to Sony and from Unilever to Microsoft, with particular attention to transformations in work and daily life. Topics include the metal-working cities and industrial plantations of the first decades of the century; the social and cultural upheavals of global depression and world war; the midcentury challenges of communism, social democracy, and decolonization; the rise of service economies and the shifts in women's work; the popular uprisings and cultural revolutions of the 1960s and 1970s; and the conflicts over globalization and neoliberalism in the last quarter century.

**AMST 222a**/FILM 432aG, WORLD DOCUMENTARY. Charles Musser. For description see under Film Studies.

**AMST 230b**/ER&M 223b/HIST 137b, INTERNATIONAL HISTORY OF THE UNITED STATES IN THE TWENTIETH CENTURY. Seth Fein. For description see under History.

**AMST 304b**/HIST 154Jb, AMERICAN CULTURE IN THE REVOLUTIONARY ERA. Kariann Yokota.

T 1.30-3.20 Hu (0)

The creation of early American identities analyzed through the prism of transatlantic material and consumer culture. Social relations as they were articulated through the production, acquisition, and consumption of domestic and imported objects.

**AMST 321b**/AFAM 368b, INTERRACIALITY AND HYBRIDITY. Naomi Pabst. For description see under African American Studies.
AMST 325A/ER&M 322A/HIST 143Ja, INDIAN-COLONIAL RELATIONS IN COMPARATIVE PERSPECTIVE. Alyssa Mt. Pleasant.
WG 9-10.15 Hu (o)
Intensive survey of American Indian nations and their relationships with colonial regimes. Regional studies are brought together into a continental examination of the structure and significance of colonialism for American Indian peoples up to the early nineteenth century. Emphasis on colonial regimes operating within the political boundaries of the contemporary United States.

For description see under African American Studies.

Th 1:30-4:30 Hu (o)
Interconnections of displacement, knowledge, and discovery of cultural difference through travel, as shown in ethnographic, documentary, and feature films. The cultural observation, witnessing, and critique that films make possible. The ethics of producing and consuming representations of cultural difference. Insights into the paradoxical ways in which the story of the observer meshes with the story of the observed. Screenings in class.

For description see under History.

For description see under African American Studies.

For description see under Ethnicity, Race, & Migration.

HSAR 378bG/AFAM 178bG/AFST 188bG, FROM WEST AFRICA TO THE BLACK AMERICAS: THE BLACK ATLANTIC VISUAL TRADITION.
Robert Thompson.
For description see under History of Art.

MATERIAL CULTURES AND BUILT ENVIRONMENTS

AMST 002A, AMERICAN CONSUMER CULTURE IN THE TWENTIETH CENTURY. Jean-Christophe Agnew.
Th 1-2.15 WR, Hu (o) Fr sem
An interdisciplinary introduction to twentieth-century American consumer culture, exploring the rise (and fall) of mass consumption and its impact on the experience of family, faith, citizenship, community, gender, race, ethnicity, and politics. Topics include the changing moral valuations of consumption; the effect of consumerism on ritual life; the Americanization of immigrants and the marketing of race and ethnicity; consumer culture’s reciprocal relations with literature and the arts; the politics of consumer resistance; suburbanization; and the consumer model of citizenship. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
AMST 007a/HSAR 002a, Furniture and American Life.
Edward Cooke, Jr.
For description see under History of Art.

AMST 207a/ARCH 340a, American Cultural Landscapes: An Introduction to the History of the Built Environment.
Dolores Hayden.
MW 10.30-11.20, 1 HTBA WR, Hu, So (33)
Introduction to land use, transportation, town planning, and vernacular building patterns in the United States. After a brief review of Native American and colonial settlement patterns, the first section of the course (1800–1920) deals with traditional towns and large cities, the second (1920–2000) with peripheral growth that has transformed downtowns and shaped diffuse metropolitan regions.

AMST 214b/ARGC 214b/HSAR 214b, Anglicization of America: Architecture and Decorative Arts.
Edward Cooke, Jr.
For description see under History of Art.

AMST 350b/ARCH 350b, Suburbs and the Culture of Sprawl.
Dolores Hayden.
TH 1.30-3.20 Hu (0)
The shifting meanings of city, suburb, and countryside in the United States since 1921. Definition of sprawl as uncontrolled growth on metropolitan fringes, leading to the decline of older inner-city neighborhoods and small town centers. Readings from history, geography, architecture, and literature.

AMST 424a/HIST 156Ja, An Introduction to the Cultural History of Things.
Kariann Yokota.
W 1.30-3.20 (0)
An introduction to the use of goods and objects—from eighteenth-century tea sets to twentieth-century television sets—as primary sources in cultural history. Examination of the various ways material culture has been understood by historians, theorists, archaeologists, marketers, collectors, museums, and consumers.

Laura Wexler.
HTBA Hu (0)
Photographs as a source for the creation of public and private memory in the United States, 1839 to the present. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

Politics and American Communities

AMST 006b, Violence and Justice in America.
John Mack Faragher.
TH 1-2.15 Hu (0) Fr sem
The problem of violence and justice in American society, history, and culture. Introduction to the disciplinary approaches in social science, history, and cultural criticism that comprise the interdisciplinary practice of American Studies. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

AMST 121a/PLSC 205a, The American Presidency.
Stephen Skowronek.
For description see under Political Science.
amst 131a/hist 131a, U.S. Political and Social History, 1900–1945.
   Glenda Gilmore.
   For description see under History.

amst 135a/hist 127a/wgss 200a, U.S. Lesbian and Gay History.
   George Chauncey.
   For description see under History.

amst 161a/afam 110a, Freedom and Identity in Black Cultures.
   Elizabeth Alexander.
   For description see under African American Studies.

amst 229b/afam 229b/er&m 231b/socy 198b/wgss 229b, Health Social Movements.
   Alondra Nelson.
   For description see under African American Studies.

amst 322a/wgss 371a, Gender, Family, and Cultural Identity in Asia and the United States: A Dialogue.
   Geetanjali Singh Chanda.
   For description see under Women’s, Gender, & Sexuality Studies.

AMST 353b/*HIST 160Jb, Selected Topics in Lesbian and Gay History.
   George Chauncey.
   For description see under History.

AMST 415b/*AFAM 415bG/*ER&M 345b/*SOCY 366bG, Race, Racisms, and Social Theory.
   Alondra Nelson.
   For description see under Sociology.

AMST 429bG/*ANTH 404bG, American Communities.
   Kathryn Dudley.

   Consideration of the concept of community and an examination of various kinds of communities—ranging from those defined by social proximity to those defined by a common experience or ideology—that are part of the American experience, in order to understand the value Americans place on community itself, and the ways in which the pull of individualism exacts a toll on that commitment.

AMST 453b/*PLSC 276bG, American Political Thought.
   Stephen Skowronek.
   For description see under Political Science.

AMST 456b/*HIST 125Jb, Making America Modern, 1880–1930.
   Jean-Christophe Agnew.

   An exploration of the United States at the beginning of the twentieth century, with special attention to the different ways in which Americans looked to a new public sphere—corporate, consumerist, and imperial—to recast and update the social coordinates of their citizenship.

VISUAL, AUDIO, LITERARY, AND PERFORMANCE CULTURES

AMST 216a/HSAR 211a, American Art: Colonies to Cold War.
   Alexander Nemerov.
   For description see under History of Art.
amst 246a/engl 289a, Hemingway, Fitzgerald, Faulkner.
Wai Chee Dimock.
For description see under English Language & Literature.

★amst 259b/engl 425b, Colonial Literatures of America.
Michael Warner.
For description see under English Language & Literature.

Amy Hungerford.
For description see under English Language & Literature.

★amst 273a ★afam 279a ★wgss 342a, Black Women’s Literature.
Naomi Pabst.
For description see under African American Studies.

★amst 292a ★afam 292a, Interracial Literature.
Naomi Pabst.
For description see under African American Studies.

★amst 319a ★film 427a, American Documentary Films.
Michael Roemer.
M 2:30-5:20  Hu Meets RP (0)
The documentary film from Flaherty to cinéma-vérité and beyond. Films examined for aesthetic value as well as social and political relevance. Emphasis on individual films and filmmakers. Screenings in class. Enrollment limited to juniors and seniors majoring in American Studies or in Film Studies.

★amst 328b ★film 354b ★thst 328b, Stage and Screen.
Charles Musser.
For description see under Theater Studies.

★amst 341a ★film 420a ★hsar 413a, The Visual Culture of the American Home Front, 1941–1945.
Alexander Nemerov.
For description see under History of Art.

Ron Gregg.
For description see under Film Studies.

★amst 369a ★afam 369a ★engl 364a ★litr 271a ★thst 369a, African American Theater.
Paige McGinley.
For description see under Theater Studies.

★amst 375a ★film 375a ★wgss 375a, Introduction to Queer Cinema.
Ron Gregg.
For description see under Film Studies.

★amst 389b ★film 390b ★litr 390b, Genre Study: The Western.
Aaron Gerow.
For description see under Film Studies.

★amst 398b ★afam 387b ★musi 398b, The Electric Music of Miles Davis.
Michael Veal.
For description see under Music.
**amst 406b, The Spectacle of Disability.** James Berger.

Examination of how people with disabilities are represented in U.S. literature and culture. How these representations, along with the material realities of disabled people, frame society’s understanding of disability; the consequences of such formulations. Various media, including fiction, nonfiction, film, television, and memoirs, viewed through a wide range of analytical lenses.

**amst 416b/film 438b, U.S. Cinema from 1960 to the Mid-1970s.**

Michael Kerbel.

F Tu 1:30-3:20; screenings W 6:30 p.m. Hu Meets RP (0)

An examination of significant developments in American narrative cinema from 1960 to the mid-1970s through close analysis of representative films. Topics include the decline of the studio system; Hollywood’s departures from traditional genres, themes, structures, and styles; the treatment of previously forbidden subjects; the influence of avant-garde, documentary, and international film; the director’s ascendance; representations of race, ethnicity, gender, and sexuality; relations between films and American politics, society, and culture.

**amst 452b/afam 307b, Harlem Renaissance.** Jennifer Wood.

For description see under African American Studies.

**amst 460aG/afam 408aG/engl 443aG, Twentieth-Century African American Poetry.** Elizabeth Alexander.

For description see under African American Studies.

**amst 461b/film 452bG, D. A. Pennebaker and Contemporary Documentary.** Charles Musser.

T h 1:30-3:20 Hu Meets RP (0)


**amst 465a, Censorship and U.S. Culture.** Joel Silverman.

Th 1:30-3:20 Hu (0)

An analysis of American culture, from World War I to the present, through the lens of struggles over texts that discuss political, religious, and sexual themes. Source material includes banned or challenged novels, essays, photographs, films, and music.

**amst 477b, Photography and the City.** Francesca Ammon.

W 1:30-3:20 Hu (0)

The intertwined social and cultural histories of photography and the built environment of the American city and suburb. Photographic archives from the late nineteenth century to the present reveal ways in which photographs celebrate, document, critique, reform, mourn, and remake the changing city.


For description see under History of Art.

**musi 275a, Forms of Pop/Rock Music.** Daniel Harrison.
musi 399a, Analysis of Rock and Pop Music. Mark Spicer.

THE JUNIOR SEMINAR

[amst 390b, The Junior Seminar]

INDIVIDUAL RESEARCH AND SENIOR PROJECT COURSES

*amst 471a and 472b, Individual Reading and Research for Juniors and Seniors. Consult the director of undergraduate studies. Htba (c)

Special projects intended to enable the student to cover material not otherwise offered by the department. The course may be used for research or for directed reading, but in either case a term paper or its equivalent is required as evidence of work done. It is expected that the student will meet regularly with the faculty adviser. To apply for admission, a student should submit a prospectus signed by the faculty adviser to the director of undergraduate studies.

*amst 491a or b, Senior Project. Consult the director of undergraduate studies. Htba (c)

Independent research and proseminar on a one-term senior project. For requirements see under “Senior requirement” in the text above.

*amst 493, Senior Project for the Intensive Major. Staff. Htba (c)

Independent research and proseminar on a two-term senior project. For requirements see under “Senior requirement” in the text above.

ANTHROPOLOGY

Director of undergraduate studies: David Watts, Rm. 210, 10 Sachem St., 432-9597, david.watts@yale.edu

FACULTY OF THE DEPARTMENT OF ANTHROPOLOGY

Professors
E. Annamalai (Emeritus) (Visiting), Richard Burger, † Michael Dove, Kathryn Dudley, J. Joseph Errington, Andrew Hill, William Kelly (Chair), Enrique Mayer, Roderick McIntosh, John Middleton (Emeritus), † Patricia Pessar (Adjunct), † James Scott, Helen Siu, Kalyanakrishnan Sivaramakrishnan, David Watts, † Harvey Weiss

Associate Professors
Bernard Bate, Richard Bribiescas, Kamari Clarke, † Nora Groce, Eric Sargis

Assistant Professors
† Jafari Allen, Sean Brotherton, Marcello Canuto, Erik Harms, William Honeychurch, Michael McGovern, Karen Nakamura, Douglas Rogers

Lecturers
† Carol Carpenter, † Ashish Chadha, † Graeme Reid, † Gilles Tarabout

† A joint appointment with primary affiliation in another department.

The major in Anthropology gives a firm grounding in this comparative discipline concerned with the diverse cultural, social, and biological patterns of human societies. Anthropology deals not only with that small proportion of humankind in Europe and North America but with societies of the entire
world, from the remotest past to the present day. It is thus an essential part of a sound liberal education, helping us to see our world from a perspective free of ethnocentric assumptions. The major in Anthropology covers trends of biological and cultural evolution, world prehistory, forms of social organization and cultural behavior, and patterns of linguistic and nonlinguistic communication.

The subfields of anthropological inquiry—archaeology, biological anthropology, sociocultural anthropology, and linguistic anthropology—together offer a holistic perspective on humankind and its development.

Requirements of the major. Students are required to present twelve course credits toward their major, including introductory or intermediate courses in at least three subfields of anthropology, a senior essay, and three advanced seminars or courses (not including the Readings in Anthropology or senior essay courses). Three term courses may be selected from other departments, with approval by the director of undergraduate studies. These cognate courses should be chosen to expand the student’s knowledge in one of the subfields of anthropology or in an area of cross-disciplinary concentration. For example, cognate courses for biological anthropology can be found in the course listings of Biology, Geology and Geophysics, Psychology, and Forestry & Environmental Studies. Appropriate areas of cross-disciplinary concentrations include such topics as area studies (e.g., Africa), folklore, anthropological approaches to law and health, sex roles, or Pleistocene studies.

Senior essay. All majors are required to complete a substantial paper during the senior year, either in a seminar or in ANTH 491a or b. There are three options for completing the senior essay. First, students can write a paper for an advanced seminar. A seminar senior essay, more substantial than a typical term paper, is evaluated by the seminar instructor and a second reader drawn from the Yale faculty. Students must obtain written approval for this option from the seminar instructor no later than the third week of the term. Students fulfilling the requirements of two majors may not write a single seminar essay to complete the senior requirement for both majors. The deadline for a seminar senior essay is the senior essay deadline, not the term paper deadline.

The second option for the senior essay is an independent essay on a subject of the student’s choice, completed in ANTH 491a or b. Regardless of the term in which the essay is written, a student pursuing this option must choose a topic and identify an Anthropology faculty adviser by the third week of the fall term of the senior year. The student should also inform the director of undergraduate studies of a preferred second reader by this time. The adviser must have a faculty appointment in Anthropology, and the second reader must have a faculty appointment at Yale.

The third option for the senior essay is a yearlong paper, begun in ANTH 471a or 472b and completed in ANTH 491a or b. The yearlong essay is designed for students who wish to pursue more extensive independent projects than can be completed in a single term. Students must have their project approved by a faculty adviser who establishes the requirements for ANTH 471a or 472b; approval is required before the student registers for ANTH 471a or 472b, typically in the fall term of the senior year.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:** 12 course credits (incl senior essay)
Distribution of courses: At least 1 intro survey or intermediate course in each of 3 subfields of anthropology; 3 advanced sems or advanced courses (not incl ANTH 471a, 472b, 491a or b); up to 3 cognate courses in other depts or programs with DUS approval

Senior requirement: Senior essay

ARCHAEOLOGY: 150a, 171a, 232b, 233b, 277a, 278La, 279Lb, 301a, 347b, 363a, 410a, 440a, 473a

BIOLOGICAL ANTHROPOLOGY: 116a, 182b, 203a, 242b, 267b, 456a, 475a

SOCIOCULTURAL ANTHROPOLOGY: 010a, 110b, 114a, 170b, 202b, 207a, 209b, 210b, 213b, 228b, 234b, 254a, 282b, 303b, 308b, 325a, 356b, 357a, 358b, 369a, 379b, 382a, 389a, 402a, 404b, 422a, 438a

LINGUISTIC ANTHROPOLOGY: 120b, 413b

INTRODUCTORY COURSES

∗ANTH 010a, Urban Culture, Space, and Power. Erik Harms.
  MW 1-2.15 (0) Fr sem
  Urban environments as spatial landscapes infused with power relations. Anthropological perspectives are used to analyze spatial dimensions of cities and to understand how social life transforms, and is transformed by, the cities we live in. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

ANTH 110b, An Introduction to Cultural Anthropology. Staff.
  MW 2.30-3.45 So (37)
  Uniformity and variety in human group behavior as revealed in cultures. Tendencies of cultures to accumulate, grow, and change; cultures in contact, especially effects of Western industrial society on nonindustrial peoples.

ANTH 114a, Introduction to Medical Anthropology. Sean Brotherton.
  MW 1-2.15 So (36)
  Major theoretical orientations in medical anthropology. Examples of cross-cultural sickness, health, healing, and witchcraft.

  MW 11.35-12.50 Sc, So (34)
  Introduction to human and primate evolution, primate behavior, and human biology. Topics include a review of principles of evolutionary and population biology, the evolution of primates and people, and current thinking about the evolution of human behavior.

ANTH 120b, Language, Culture, and Identity. J. Joseph Errington.
  MWF 9.25-10.15 So (0)
  Introduction to the role of language in the constitution of gendered, class, ethnic, and national identities. Ethnographic and linguistic case studies are combined with theoretical and comparative approaches.

SURVEY COURSES

ANTH 150a/ARGC 100a/HUMS 376a/NELC 100a, The Genesis and Collapse of Old World Civilizations. Harvey Weiss.
  For description see under Humanities.
anth 170b, CHINESE CULTURE, SOCIETY, AND HISTORY. Helen Siu.
TH 11.30-12.50 So (24)
Anthropological explorations of basic institutions that shape the lives and attitudes of individuals in traditional Chinese society. Topics include family and marriage, kinship, lineage, community, economic organization, religion and ritual, medicine, social stratification, and state ideology and bureaucracy.

anth 171a/arcg 171a, GREAT CIVILIZATIONS OF THE ANCIENT WORLD. Marcello Canuto.
TH 2.30-3.45 So (27)
A survey of selected prehistoric and historical cultures through examination of archaeological sites and materials. Emphasis on the methodological and theoretical approaches by which archaeologists recover, analyze, and interpret the material remains of the past.

anth 182b, PRIMATE ECOLOGY AND SOCIAL BEHAVIOR. David Watts.
MW 2.30-3.45 So (37)
Socioecology of primates compared with that of other mammals, emphasizing both general principles and unique primate characteristics. Topics include life-history strategies, population dynamics and interactions, and ecological determinants of social organization.

INTERMEDIATE COURSES

anth 202b/film 326b, SOUTH ASIAN ANTHROPOLOGY THROUGH DOCUMENTARIES. Ashish Chadha.
TH 4-5.15 So (0)
The society, culture, and politics of contemporary South Asia as presented in contemporary documentary films. Some of the region’s founding myths explored through debates on democracy, development, environmentalism, secularism, secessionism, and nationalism. Issues of caste, class, religion, and gender.

anth 203a, PRIMATE CONSERVATION. David Watts.
TH 2.30-3.45 So (0)
A study of nonhuman primates threatened by deforestation, habitat disturbance, hunting, and other human activities; the future of primate habitats, especially tropical rainforests, as they are affected by local and global economic and political forces. Examination of issues in primate conservation, from the principles of conservation biology and rainforest ecology to the emergence of diseases such as AIDS and Ebola and the extraction of tropical resources by local people and by transnational corporations.

anth 207a/er&m 340a, PEOPLES AND CULTURES OF LATIN AMERICA. Enrique Mayer.
TH 11.30-12.50 So (24)
Ethnic, class, and cultural diversity in Latin America, with an emphasis on economic, religious, and health issues. Examination of the situation of Latin American immigrants in the United States.

anth 209b, AFTER THE SOVIET UNION. Douglas Rogers.
TH 1-2.15 So (0)
Changes in the lives of former Soviet citizens following the Soviet Union’s disintegration in 1991. Transformations in politics, culture, religion, gender, consumption patterns, and national identity, as well as how these issues are interconnected. Such changes viewed as windows onto global transformations of knowledge, power, and culture at the turn of the twenty-first century.
anth 210b/er&m 230b, Twentieth-Century Anthropological Theory. Staff.
MW 2:30-3:45  So (0)
The theoretical development of twentieth-century anthropology. Transformation of dominant understandings of culture and society from structural functionalism to more recent concerns with practice theory, discourse, and history. Topics include cosmology, time and space, kinship and social organization, exchange, and the production and representation of power and polity.

MW 10:30-11:20, 1 HTBA  So (0)
An introduction to the ethnographic study of capitalism. Focus on how markets and commodities are embedded in social and cultural contexts. Discussion of whether capitalism can be understood in a way that does justice to how people have embraced, reinterpreted, and resisted it worldwide.

anth 228b, Culture, Power, and Identity in the Caribbean.
Sean Brotherton.
MW 1-2:15  So (36)
An anthropological approach to Caribbean history, politics, culture, and society, and to Caribbean peoples and their descendants in the diaspora.

anth 232b/argc 232bG, Ancient Civilizations of the Andes.
Richard Burger.
TTh 1-2:15  So (26)
Survey of the archaeological cultures of Peru and Bolivia from the earliest settlement through the late Inca state.

anth 233bG/argc 233bG, Ancient Civilizations of Mesoamerica.
Marcello Canuto.
TTh 11:35-12:50  So (24)
The Indian civilizations of Mexico and Central America from earliest times through the Spanish Conquest.

*anth 234b, Disability and Culture. Karen Nakamura.
TTh 11:35-12:50  So Meets RP (0)
Exploration of disability from a cross-cultural perspective, using examples from around the globe. Disability as it relates to identity, culture, law, and politics. Case studies may include deafness in Japan, wheelchair mobility in the United States, and mental illness in the former Soviet republics.

anth 242b, Biology and Life History. Richard Bribiescas.
MW 11:35-12:50  Sc, So (34)
An examination of the range of human physiological adaptability across environments and ecologies. Effects of energetic constraints on growth, reproduction, and behavior within the context of evolution and life history theory, with special emphasis on traditional non-Western societies.

anth 254a, Japan: Culture, Society, Modernity.
Karen Nakamura.
TTh 11:35-12:50  WR, So (24)
Introduction to Japanese society and culture. The historical development of Japanese society; family, work, and education in contemporary Japan; Japanese aesthetics; and psychological, sociological, and cultural interpretations of Japanese behavior.
anth 267b/arCG 267b, HUMAN EVOLUTION. Andrew Hill.
   TTh 11.35-12.30 So (24)
Examination of the fossil record of human evolution, including both paleontological and archaeological evidence for changes in hominid behavior during the Pleistocene. **Prerequisite: an introductory course in biological anthropology or biology.**

**anth 277aG/arCG 277aG, Archaeological Field Techniques.**
   Roderick McIntosh.
   MW 4-5.15 So (0)
An introduction to the practice and techniques of modern archaeology, including methods of excavation, recording, mapping, dating, and ecological analysis. **Must be taken concurrently with anth 278La.**

**anth 278LaG/arCG 278LaG, Archaeology Laboratory I.**
   Roderick McIntosh.
   Sa 8.30-5 So (0)
Instruction in the field at an archaeological site in Connecticut in stratigraphy, mapping, artifact recovery, and excavation strategy. **Must be taken concurrently with anth 277a.**

**anth 279LaG/arCG 279LaG, Archaeology Laboratory II.**
   Roderick McIntosh.
   W 1-4 So (0)
A practical introduction to processing and analysis of excavated artifacts. Emphasis on familiarity with a range of methods and materials. Intensive study and written report on one group of artifacts.

anth 282b, Sport, Society, and Culture. William Kelly.
   MW 10.30-11.20, 1 htba WR, So (33)
Examination of how sports are shaped by the society and culture in which they are found. Topics include race, gender, and ethnicity; sports and media; sports nationalism and globalization; and sports as a profession. Consideration of four cases in detail: Caribbean cricket, Japanese baseball, Argentine soccer, and Kenyan distance running.

**Advanced Courses, including seminars, reading courses, and research courses**

**anth 301aG/arCG 301aG, Foundations of Modern Archaeology.**
   Richard Burger.
   TTh 1-2.15 So (0)
Discussion of how method, theory, and social policy have influenced the development of archaeology as a set of methods, an academic discipline, and a political tool. **Background in the basics of archaeology equivalent to one introductory course is assumed.**

**anth 303b, Field Methods in Cultural Anthropology.** Staff.
   Th 9.25-11.15 So (0)
Exploration of the fundamentals of cultural anthropology methods. The foundations of fieldwork approaches, including methods, theories, and the problem of objectivity.

**anth 308bG/wGSS 308b, Queer Ethnographies.** Karen Nakamura.
   T 1.30-3.20 So Meets RP (0)
Exploration of both classic and contemporary ethnographies of gender and sexuality. Emphasis on understanding anthropology’s contribution to and relationship with gay and lesbian studies and queer theory.

**ANTH 325a**, **SOCIETY AND POLITICS IN MODERN INDIA.**
Kalyanakrishnan Sivaramakrishnan.
M 2.30-4.20 So (0)
Examination of Indian society and politics through the analytical lens of paired concepts such as nation/state, faith/secularism, capital/labor, citizen/subject, and public/culture. Focus on understanding the major sociopolitical processes of change in the twentieth century. Discussion of key political events and related social transformations: the formation of independent India, caste and democracy, religion and the public sphere, and the social aspects of economic liberalization.

**ANTH 347b/G*, **ARCHAEOLOGY OF HOUSEHOLDS AND DAILY LIFE.**
Marcello Canuto.
W 2.30-4.20 (0)
Although households and everyday life are at the core of human existence, social scientists have assigned them a passive position in human societies. Examination of households in past and present societies throughout the world in order to discuss how people experience and construct the world around them.

**ANTH 366b/AFST 323b/WGSS 323b, HIV AND AIDS IN AFRICA.**
Graeme Reid.
For description see under Women’s, Gender, & Sexuality Studies.

**ANTH 357a**, **ANTHROPOLOGY OF THE BODY.**
Sean Brotherton.
T 9.25-11.15 So (0)
Theoretical debates about the body as a subject of anthropological, historical, psychological, medical, and literary inquiry. The persistence of the mind-body dualism, experiences of embodiment and alienation, phenomenology of the body, Foucauldian notions of biopolitics, biopower and the ethic of the self, the medicalized body, and the gendered body.

**ANTH 358b/AFST 363b/WGSS 363b, BEAUTY, FASHION, AND SELF-STYLING.**
Graeme Reid.
For description see under Women’s, Gender, & Sexuality Studies.

**ANTH 363a/G*, **ARCHAEOLOGIES OF EMPIRE.**
Harvey Weiss.
For description see under Near Eastern Languages & Civilizations.

**ANTH 369a**, **ECONOMIC ANTHROPOLOGY.**
Enrique Mayer.
T 1.30-3.20 So (0)
An introduction to understanding economic systems in other cultures and societies. How work and leisure are organized, who gets what and how, and how economic concerns tie into other aspects of social life. Major debates and controversies examined, and examples from different parts of the world presented. No prior background in economics or anthropology assumed.

**ANTH 370b/AFST 376bG, **AFRICAN SOCIETY.**
John Middleton.
For description see under African Studies.

**ANTH 382a/EVST 345a/F&ES 384a, **ENVIRONMENTAL ANTHROPOLOGY.**
Carol Carpenter.
For description see under Environmental Studies.
*ANTH 388aG, Politics of Southeast Asia. Erik Harms.
   Th 9.25-11.15 So (0)
The promotion of national culture as part of political and economic agendas in Southeast Asia. Cultural and political diversity as a method for maintaining a country's cultural difference in a global world.

   For description see under Political Science.

*ANTH 402aG, Visual Anthropology and Ethnographic Film.
   Karen Nakamura.
   Th 2.30-3.45 Hu, So Meets RP (0)
A study of visual anthropology production, with readings from core texts in the analysis of visual culture and visual anthropology field methods. The history, philosophy, ethics, production, and consumption of ethnographic film and photo-ethnography in both the field of anthropology and popular culture.

*ANTH 404bG/AMST 429bG, American Communities.
   Kathryn Dudley.
   For description see under American Studies.

*ANTH 410aG/ARCg 410aG, Ethnohistory and Archaeology.
   Roderick McIntosh.
   MW 1-2.15 So (36)
Review of the major problems and methodologies associated with the use of ethnohistory by archaeologists. The construction of a historical imagination. Sources include colonial and “visitor” documents, peoples’ written descriptions of themselves, oral traditions, classic ethnographies, and writings in art history.

*ANTH 413bG, Language, Culture, and Ideology.
   J. Joseph Errington.
   T 9.25-11.15 So Meets RP (0)
Review of influential anthropological theories of culture, with reference to theories of language that inspired or informed them. Topics include American and European structuralism; cognitivist and interpretivist approaches to cultural description; and the work of Bakhtin, Bourdieu, and various critical theorists.

*ANTH 414bG, Urban Anthropology and Global History.
   Helen Siu.
   W 1.30-3.20 So Meets RP (0)
A structural analysis of urbanization in agrarian societies undergoing modern transformation. Topics include the nature of migration, rural and urban adaptive strategies, ethnicity, political organization, and cultural conflict.

*ANTH 422aG/AFST 464aG/PLSC 434aG, Africa and the Disciplines.
   Kamari Clarke.
   For description see under African Studies.

*ANTH 438aG, Culture, Power, Oil.
   Douglas Rogers.
   M 1.30-3.20 So (0)
The production, circulation, and consumption of petroleum as illustrations of topics in globalization, empire, cultural performance, natural resource extraction, and the nature of the state. Case studies from the United States, Saudi Arabia, Nigeria, Venezuela, and the former Soviet Union.
*ANTH 440aG/ARC G 440aG, Topics in Maya Archaeology. Marcello Canuto.
W 1.30-3.20 (o)
Examination of current problems in Maya archaeology, epigraphy, iconography, and ethnohistory. Topics include the preclassic, classic, and postclassic periods, the development and collapse of classic Maya civilization, economic and political organization, warfare, and external relations.

W 1.30-3.20 So (o)
Examination of methods for obtaining data relevant to ecological factors that have affected human evolutionary change, such as changes in climate, competition with other animals, and availability and kinds of food supply. Evaluation of techniques for obtaining ecological data in such fields as geology, paleobotany, and paleozoology. Ethnographic, primatological, and other biological models of early human behavior.

*ANTH 471a and 472b, Readings in Anthropology. Consult the director of undergraduate studies.
HTBA (o)
For students who wish to investigate an area of anthropology not covered by regular departmental offerings. The project must terminate with at least a term paper or its equivalent. No student may take more than two terms for credit. To apply for admission, a student should present a prospectus and bibliography to the director of undergraduate studies no later than the third week of the term. Written approval from the faculty member who will direct the student’s reading and writing must accompany the prospectus.

Th 2.30-4.20 Hu, So (o)
Collapse documented in the archaeological and early historical records of the Old and New Worlds, including Mesopotamia, Mesoamerica, the Andes, and Europe. Analysis of politicoeconomic vulnerabilities, resiliencies, and adaptations in face of abrupt climate change; anthropogenic environmental degradation; resource depletion; “barbarian” incursions; and class conflict.

M 1.30-3.20 (o)
Examination of kinship and dominance as organizing principles of primate social groups; feeding competition and risk of predation as determinants of group size; mating strategies and sexual dimorphism; dispersal, transfer, and the permeability of social boundaries; the structure of primate communities; and the role of primates in ecological community function. Prerequisite: ANTH 182b.

*ANTH 491a or b, The Senior Essay. Consult the director of undergraduate studies.
HTBA (o)
Supervised investigation of some topic in depth. The course requirement is a long essay to be submitted as the student’s senior essay. By the end of the third week of the fall term, the student must present a prospectus and a preliminary bibliography to the director of undergraduate studies. Written approval from an Anthropology faculty adviser and an indication of a preferred second reader must accompany the prospectus.
COURSE OF INTEREST IN ANOTHER DEPARTMENT

*MGRK 212a/GMST 212a/LITR 328a, Folktales and Fairy Tales.
Maria Kaliambou.
For description see under Hellenic Studies.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Graduate seminars in anthropology are open to qualified undergraduates. Descriptions are available in the departmental office, 10 Sachem St. Permission of the instructor and of the director of graduate studies is required.

APPLIED MATHEMATICS

Director of undergraduate studies: Daniel Spielman, 201 AKW, 436-1264, daniel.spielman@yale.edu; senior coordinator: Andrew Barron, 24 Hillhouse Ave., 432-0634, andrew.barron@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF APPLIED MATHEMATICS

Professors
Donald Andrews (Economics, Statistics), James Aspnes (Computer Science), Andrew Barron (Statistics), Donald Brown (Economics), Joseph Chang (Statistics), Ronald Cowman (Mathematics, Computer Science), Gustave Davis (School of Medicine), Eric Denardo (Operations Research), Julie Dorsey (Computer Science), Stanley Eisenstat (Computer Science), Michael Fischer (Computer Science), John Hartigan (Emeritus) (Statistics), Theodore Holford (Public Health, Statistics), Roger Howe (Mathematics), Peter Jones (Mathematics), Gil Kalai (Computer Science, Mathematics), Ravindran Kannan (Computer Science), Willard Miranker (Computer Science), A. Stephen Morse (Computer Science, Electrical Engineering), Steven Orszag (Mathematics), Peter Phillips (Economics, Statistics), David Pollard (Statistics), Nicholas Read (Applied Physics, Physics), Vladimir Rokhlin (Computer Science, Mathematics), Holly Rushmeier (Computer Science), Herbert Scarf (Economics), Martin Schulz (Computer Science), Mitchell Smooke (Mechanical Engineering, Applied Physics), Daniel Spielman (Computer Science), Katepalli Sreenivasan (Adjunct) (Mechanical Engineering), Steven Zucker (Computer Science, Biomedical Engineering)

Associate Professors
Josephine Hoh (School of Medicine), Hannes Leeb (Statistics), Sekhar Tatikonda (Electrical Engineering, Statistics), Hongyu Zhao (School of Medicine)

Assistant Professors
Lisha Chen (Statistics), Eugenio Culurciello (Electrical Engineering), John Emerson (Statistics), Mokshay Madiman (Statistics)

J. W. Gibbs Assistant Professors
Dan Kushnir, Yoel Shkolinsky, Amit Singer, Mark Tygert

Mathematical models are widely used throughout science and engineering in fields as diverse as physics, bioinformatics, robotics, image processing, and economics. Despite the broad range of applications, there are a few essential techniques used in addressing most problems. The Applied Mathematics major provides a foundation in these mathematical techniques and trains the student to use them in a substantive field of application.

The interdisciplinary major permits a great deal of flexibility in design. It is intended to appeal to students who wish to study the more mathematical aspects of science or engineering as well as those whose primary interest is in mathematics and statistics and who wish to become acquainted with applications. Core courses are drawn from Computer Science, Mathematics, Statistics, and Engineering and Applied Science. Courses applying mathematics
may be drawn from participating programs in Astronomy, the biological sciences (Biology, Molecular Biophysics and Biochemistry), Chemistry, Computer Science, Economics, the various programs in engineering (Biomedical, Chemical, Electrical, Environmental, and Mechanical Engineering, as well as Applied Physics), Geology and Geophysics, Mathematics, Operations Research, Physics, and Statistics. The Applied Mathematics degree program requires a three-course concentration in a field in which mathematics is used.

Students may pursue a major in Applied Mathematics as one of two majors and can thereby equip themselves with mathematical modeling skills while being fully engaged in a field of application. In this case, the concentration requirement of the Applied Mathematics program is flexible in order to recognize the contribution of the other major. A two-course overlap is permitted in satisfying the requirements of the two majors.

Prerequisite and introductory courses. Multivariable calculus and linear algebra are required and should be taken before or during the sophomore year. This requirement may be satisfied by MATH 120a or b and MATH 222a or b or 223a or b, or equivalents. Computer programming skills are also required and may be acquired by taking ENAS 130b or CPS 112a or b.

Details of individual programs must be worked out in consultation with the director of undergraduate studies, whose signed permission is required.

Requirements of the major for the B.A. degree program. The program requires eleven term courses beyond the prerequisites, including the senior seminar, comprising a coherent program:

1. A course in differential equations (ENAS 194a or b or MATH 246a or b)
2. A course in probability (STAT 241a or c 238a)
3. A course in data analysis (STAT 361a or c 230b)
4. A course in discrete mathematics (AMTH 244a or CPS 202a)
5. Courses in at least three of the following areas: (a) optimization (AMTH 237a) or linear programming (AMTH 235a); (b) stochastic processes (STAT 251b); (c) statistics (STAT 242b); (d) algorithms (CPS 365b) or numerical computation (ENAS 440a or CPS 440b); (e) graphs and networks (AMTH 462a); (f) game theory (ECON 156b); (g) signals, dynamics, applications of differential or difference equations, or time series (AMTH 342a, ENAS 391a, EENG 310b, 397b, 436b, 450a, or ECON 163b) or in applied functional analysis (AMTH 260b); (h) image or vision analysis (BENG 445a or CPS 475b) or information theory (AMTH 364b); (i) computational biology (AMTH 464a or 465b)
6. At least three courses in a field of concentration involving the application of mathematics to that field, at least two of which are advanced courses. Programs in science, engineering, computer science, statistics, economics, and operations research are natural sources of concentration. Alternatively, when two majors are undertaken, if the second major is in participating program, then, recognizing that there can be an overlap of two courses, the student may take for the remaining course an additional choice relevant to the Applied Mathematics major such as listed in point 5 above or for the B.S. degree below. Details of a student’s program to satisfy the concentration requirement must be worked out in consultation with, and approved by the director of undergraduate studies
7. The senior seminar (AMTH 490b)

For the Class of 2011 and subsequent classes, a maximum of one course credit taken Credit/D/Fail may be counted toward the requirements of the major.
The B.S. degree program. In addition to the courses indicated for the B.A. major, the B.S. degree, which totals fourteen term courses beyond the prerequisites, must also include:

1. Topics in analysis (MATH 300b) or introduction to analysis (MATH 301a)
2. An additional course selected from the list in item 5 above
3. Another course numbered 300 or higher from the list above, or a mathematics, applied mathematics, statistics, or quantitative computer science or engineering course numbered 300 or higher, subject to the approval of the director of undergraduate studies

Alternatively, students may petition to receive a B.S. in Applied Mathematics by fulfilling the B.A. requirements in Applied Mathematics and the B.S. requirements in another program.

REQUIREMENTS OF THE MAJOR

Prerequisites: MATH 120a or b and MATH 222a or b or 225a or b, or equivalents; ENAS 130b or CPS 112a or b
Number of courses: B.A. — 11 term courses beyond prereqs (incl senior sem); B.S. — 14 term courses beyond prereqs (incl senior sem)
Specific courses required: B.A. — ENAS 194a or b or MATH 246a or b; STAT 238a or 241a; STAT 361a or 230b; AMTH 244a or CPS 202a; B.S. — same, plus MATH 300b or 301a
Distribution of courses: B.A. — at least 3 courses in a field of concentration concerning the application of math to that field, at least 2 of them advanced; 3 addtl courses as specified; B.S. — same, with 2 addtl courses as specified
Senior requirement: Senior sem (AMTH 490b)

INTRODUCTORY COURSES

AMTH 110a, Introduction to Quantitative Thinking: The Pleasures of Counting. Staff.

TH 9-10,15 QR (22)
Methods of quantitative inference and modeling are introduced via applications from a variety of different fields. Possible topics include data encryption, codes, scaling phenomena, traffic flow, warfare, and population growth. Some use of computing software such as Mathematica or MATLAB. No prior acquaintance with calculus or computing assumed.

AMTH 222a or b/MATH 222a or b, Linear Algebra with Applications.
Matt Feiszli [F], Peter Schultheiss [Sp].
For description see under Mathematics.

INTERMEDIATE AND ADVANCED COURSES

AMTH 235a/OPRS 235a, Optimization I. Eric Denardo.
For description see under Operations Research.

[AMTH 237a, Optimization and Convexity]

AMTH 244a/MATH 244a, Discrete Mathematics. Jayadev Athreya.
For description see under Mathematics.

AMTH 260b/MATH 260b, Basic Analysis in Function Spaces.
Ronald Coifman.
For description see under Mathematics.
\*AMTH 437a/\*EENG 437a, Optimization Techniques. A. Stephen Morse.

**MW 2.30-3.45 QR (37)**

Fundamental theory and algorithms of optimization, emphasizing convex optimization. The geometry of convex sets, basic convex analysis, the principle of optimality, duality. Numerical algorithms: steepest descent, Newton’s method, interior point methods, dynamic programming, unimodal search. Applications from engineering and the sciences. **Prerequisites:** MATH 120a or b and 222a or b, or equivalents. May not be taken after AMTH 237a.

**[AMTH 462aG/CPS 462aG, Graphs and Networks]**


**MW 2.30-3.45 SC (0)**

An overview of basic topics in computational biology, spanning scales from molecules to cells to networks. How cells process information (cell biology); how neurons sense the world and make decisions (neurobiology); and how genes control form (evolutionary biology). **Prerequisite:** MATH 120a or b or equivalent.


Thierry Emonet, Steven Kleinstein, Simon Mochrie, Xiao Jing Wang, Steven Zucker.

For description see under Biology.

\*AMTH 480a or b, Directed Reading. Daniel Spielman.

**HTBA (0)**

Individual study for qualified students who wish to investigate an area of applied mathematics not covered in regular courses. A student must be sponsored by a faculty member who sets the requirements and meets regularly with the student. Requires a written plan of study approved by the faculty adviser and the director of undergraduate studies.

\*AMTH 490b, Senior Seminar and Project. Andrew Barron.

**W 3.30-5.20 (0)**

Under the supervision of a member of the faculty, each student works on an independent project. Students participate in seminar meetings at which they speak on the progress of their projects. Some meetings may be devoted to talks by visiting faculty members or applied mathematicians.

\*AMTH 491a or b, Special Projects. Daniel Spielman.

**HTBA (0)**

Individual research. Requires a faculty supervisor and the permission of the director of undergraduate studies. The student must submit a written report about the results of the project. **May be taken more than once for credit.**
APPLIED PHYSICS

Director of undergraduate studies: Robert Grober, 415 BCT, 432-9653, robert.grober@yale.edu

FACULTY OF THE DEPARTMENT OF APPLIED PHYSICS

Professors
Charles Ahn,† Sean Barrett, William Bennett, Jr. (Emeritus), Hui Cao, Richard Chang (Emeritus), Michel Devoret, Paul Fleury,† Steven Girvin,† Leonid Glazman, Robert Grober, Victor Henrich, Arvid Herzenberg (Emeritus),† Marshall Long, †Iso-Ping Ma, Simon Mochrie, Daniel Prober, Nicholas Read, †Mark Reed, Robert Schoelkopf, †Ramamurti Shankar, †Mitchell Smooke, A. Douglas Stone, †John Tully, Robert Wheeler (Emeritus), Werner Wolf (Emeritus)

Associate Professors
Sohrab Ismail-Beigi,† Karyn Le Hur,† Janet Pan

Assistant Professor
† Jack Harris

†A joint appointment with primary affiliation in another department.

Physics is the study of the fundamental laws of nature. Applied physics uses these laws to understand phenomena that may have practical applications. Engineering in turn makes use of these phenomena for human purposes, forming a link between the fundamental laws of nature and their applications. Students majoring in Applied Physics take courses in both physics and engineering, as well as courses specifically in applied physics. Students completing the program in Applied Physics are prepared for graduate study in applied physics, in physics, in nanoscience, or in engineering, and, with appropriate prerequisites, in medicine; or they may choose careers in a wide range of technical and commercial fields or in fields like technical writing or patent law that draw on interdisciplinary subjects.

Contemporary physical science and engineering are becoming increasingly interdisciplinary. Traditional boundaries between fields have blurred, and new areas are constantly emerging, e.g., nanotechnology. The Applied Physics major provides a flexible framework on which students can build a curriculum tailored to their own interests, in consultation with the director of undergraduate studies.

Introductory courses. During the freshman year, students interested in Applied Physics should start by taking courses in mathematics, and physics if possible, appropriate to their level of preparation. The choice between different starting points is generally made on the basis of performance on Advanced Placement tests (see the Freshman Handbook).

The recommended sequence in mathematics for students interested in Applied Physics or Electrical or Mechanical Engineering is MATH 115a or b, 120a or b, 222a or b, and ENAS 194a or b. Either ENAS 151a or MATH 230 is an acceptable alternative to MATH 120a or b, and MATH 225a or b is an acceptable alternative to MATH 222a or b. Similarly, PHYS 301a may be substituted for ENAS 194a or b and MATH 222a or b.

The recommended starting courses in physics are PHYS 200a and 201b. These courses should be taken in the freshman year by students who have a strong preparation in mathematics and physics. Students with a strong background in physics and mathematics who may be interested in majoring in Physics may take PHYS 260a and 261b instead. Students who are less well
prepared in physics and mathematics may choose to take PHYS 180a and 181b during their freshman year, or PHYS 200a and 201b during their sophomore year after they have taken more mathematics courses. Two laboratory courses, such as PHYS 205La or Lb and 206La or Lb, should be taken at some time during the freshman or sophomore year.

Because computers are ubiquitous in the practical applications of physics, students interested in Applied Physics should also take a course on the use of computers early in their studies. ENAS 130b, Introduction to Computing for Engineers and Scientists, is recommended; a comparable course in computer science may be substituted with the approval of the director of undergraduate studies.

The multiplicity of choices facing students interested in this general area indicates the importance of informed advice for freshmen. Students should consult freely with directors of undergraduate studies and individual faculty members in their departments of interest to optimize choices and to ensure maximum flexibility at the time a major is selected.

The major in Applied Physics requires eight courses beyond the introductory sequence. Two of these must be APHY 471a, 472b. All majors are also required to take APHY 322b, 439a, and PHYS 420a, or equivalents. The three remaining advanced courses should focus on a particular area of concentration. For example, a student interested in solid-state and/or quantum electronics might choose from APHY 321b, 448a, 449b, EENG 320a, and 325b. A student interested in the physics of materials and/or nanoscience might choose from APHY 448a, 449b, CHEM 225b, 450b, and MENG 285a. Other concentrations are possible.

**Senior requirement.** Seniors must complete an independent research project, taken as APHY 471a and 472b. The independent research project is under the supervision of a faculty member in Applied Physics or in the departments of Physics, Computer Science, Electrical Engineering, or Mechanical Engineering. The project may be started in the junior year and continued into the senior year. Students planning to do a research project should contact the project coordinator as early as possible to discuss available options and general requirements.

A well-prepared student interested in solid-state and/or quantum electronics might elect the following course sequence:

**Freshman**  
PHYS 200a  
ENAS 130a

**Sophomore**  
ENAS 194a  
APHY 439a  
EENG 320a  
PHYS 420a

**Junior**  
APHY 472b  
APHY 449b

**Senior**  
PHYS 205Lb  
APHY 471a

A student starting physics in the sophomore year might elect:

**Freshman**  
MATH 115a

**Sophomore**  
PHYS 200a  
APHY 439a  
APHY 449b

**Junior**  
PHYS 420a

**Senior**  
APHY 448a  
APHY 471a  
EENG 320a

A student starting physics in the sophomore year might elect:

**Freshman**  
MATH 120b  
ENAS 130b

**Sophomore**  
PHYS 201b  
PHYS 206Lb  
APHY 322b  
APHY 472b

**Junior**  
MATH 222b
A typical program in physics of materials and/or nanoscience for a well-prepared student might be:

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<th>Freshman</th>
<th>Sophomore</th>
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<th>Senior</th>
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<tr>
<td>PHYS 200a</td>
<td>CHEM 118a</td>
<td>APHY 439a</td>
<td>APHY 448a</td>
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<tr>
<td>PHYS 205La</td>
<td>MATH 120a</td>
<td>CHEM 227a</td>
<td>APHY 471a</td>
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<td>PHYS 201b</td>
<td>APHY 322b</td>
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<td>PHYS 206Lb</td>
<td>MATH 222b</td>
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<td>ENAS 194b</td>
<td>CHEM 225b</td>
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A typical program in physics of materials and/or nanoscience for a student starting physics in the sophomore year might be:

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<td>APHY 472b</td>
<td>APHY 449b</td>
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<td>PHYS 181b</td>
<td>PHYS 206Lb</td>
<td>ENAS 130b</td>
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<tr>
<td>ENAS 194b</td>
<td>CHEM 450b</td>
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</table>

Approval of the programs. The Applied Physics major provides for various programs corresponding to a range of student interests. Substitutions of equivalent courses may be permitted. Students interested in an Applied Physics major should contact the director of undergraduate studies as early as possible, and in any case by the end of the sophomore year.

Select Program in Engineering. Qualified students majoring in Applied Physics may be eligible to apply for a special program that includes industry research experience. See under Engineering.

REQUIREMENTS OF THE MAJOR

Prerequisites: PHYS 180a, 181b, or 200a, 201b, with appropriate math coreqs and 2 lab courses as specified; MATH 120a or b, MATH 222a or b and ENAS 194a or b, or PHYS 301a; ENAS 130b

Number of courses: 8 term courses beyond prereqs (incl senior req)

Distribution of courses: 3 courses in physical or mathematical sciences or engineering focused on area of concentration, with DUS approval

Specific courses required: APHY 322b, 439a, PHYS 420a, or equivalents

Substitution permitted: Any relevant course approved by DUS

Senior requirement: APHY 471a and 472b


Th 2:30-3:45 Sc Meets RP (O) Fr sem

Examination of the science behind selected advances in modern technology. Focus on the scientific and contextual basis of each advance. Topics are developed by the participants with the instructor and with guest lecturers, and may include nanotechnology, quantum computation and cryptography, optical systems for communication and medical diagnostics, transistors, satellite imaging and global positioning systems, large-scale immunization, and DNA made to order. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
Electromagnetic Waves and Devices. Michel Devoret.

TTH 1-2.15 QR, Sc (26)
Introduction to electrostatics and magnetostatics, time varying fields, and Maxwell’s equations. Applications include electromagnetic wave propagation in lossless, lossy, and metallic media and propagation through coaxial transmission lines and rectangular waveguides, as well as radiation from single and array antennas. Occasional experiments and demonstrations are offered after classes. Prerequisites: PHYS 180a, 181b, or 200a, 201b.

Heterojunction Devices. Mark Reed.

For description see under Electrical Engineering.

Basic Quantum Mechanics. Sohrab Ismail-Beigi.

TTH 2.30-3.45 QR, Sc (27)
The basic concepts and techniques of quantum mechanics essential for solid-state physics and quantum electronics. Topics include the Schrödinger treatment of the harmonic oscillator, atoms and molecules and tunneling, matrix methods, and perturbation theory. Prerequisites: PHYS 181b or 201b, PHYS 301a, or equivalents, or permission of instructor.

Solid-State Physics I. Victor Henrich.

TTH 1-2.15 QR, Sc (26)
The first term of a two-term sequence covering the principles underlying the electrical, thermal, magnetic, and optical properties of solids, including crystal structure, phonons, energy bands, semiconductors, Fermi surfaces, magnetic resonances, phase transitions, dielectrics, magnetic materials, and superconductors. Prerequisites: APHY 322b, 439a.

Solid-State Physics II. Charles Ahn.

TTH 1-2.15 QR, Sc (26)
The second term of the sequence described under APHY 448a.

Principles of Optics with Applications. Hui Cao.

TTH 11.35-12.50 QR, Sc (24)
Introduction to the principles of optics and electromagnetic wave phenomena with applications to microscopy, optical fibers, laser spectroscopy, and nanostructure physics. Topics include propagation of light, reflection and refraction, guiding light, polarization, interference, diffraction, scattering, Fourier optics, and optical coherence. Prerequisite: PHYS 430b.

Special Projects. Consult the director of undergraduate studies.

HTBA (0)

*APHY 060b/ENAS 060b, Energy Technology and Society. Paul Fleury.
For description see under Engineering & Applied Science.

For description see under Engineering & Applied Science.

For description see under Electrical Engineering.
Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory). Students are expected to consult the director of undergraduate studies and appropriate faculty members to discuss ideas and suggestions for suitable topics. These courses may be taken at any appropriate time in the student's career; they may be taken more than once. Permission of the faculty adviser and of the director of undergraduate studies is required.

ARABIC

(See under Near Eastern Languages and Civilizations.)

ARCHAEOLOGICAL STUDIES

Director of undergraduate studies: Roderick McIntosh, Rm. 230, 10 Sachem St., 432-6649, roderick.mcintosh@yale.edu

COUNCIL ON ARCHAEOLOGICAL STUDIES

ANTHROPOLOGY
Richard Burger, Marcello Canuto, Andrew Hill, William Honeychurch, Roderick McIntosh, Eric Sargis

CLASSICS, HISTORY OF ART
Milette Gaifman, Diana Kleiner

GEOLOGY & GEOPHYSICS
Leo Hickey, Ronald Smith, Karl Turekian

HISTORY OF ART
Edward Cooke, Jr., Mary Miller (Chair), Tamara Sears, Lillian Tseng

NEAR EASTERN LANGUAGES & CIVILIZATIONS
John Darnell, Karen Foster, Eckart Frahm, Colleen Manassa, Harvey Weiss

This special interdepartmental major is supervised by the University’s Council on Archaeological Studies. Inquiries about the major may be addressed to the chair of the council, Mary Miller, Department of the History of Art, 56 High Street, or to the director of undergraduate studies.

The major in Archaeological Studies provides a program of interdepartmental offerings covering prehistoric, early historic, and medieval cultures and cultural developments in the Old and New Worlds, and introduces students to the analytic tools that facilitate archaeological studies. The major is designed to expose students to a variety of archaeological research perspectives (anthropological, historical, art historical, and physical science), while emphasizing substantive studies. These include: (1) study of such prehistoric–early historic transformations as the origins of agriculture, cities and states, and early empires, and (2) study of the material culture, art, and architecture of the prehistoric, early historic, and medieval cultures of the Old and New Worlds, including the iconography of ancient cultures, the relationship between art and society in ancient cultures, ancient writing systems, and American historical archaeology.

Requirements of the major. The major consists of thirteen term courses including the senior project. The following seven courses are normally required: an introductory survey such as ARCG 100a or 171a; the field techniques course ARCG 277a; the laboratory courses ARCG 278La and 279Lb; an advanced laboratory course; a theory course; and the senior research project ARCG 491a or b. Undergraduate majors should also acquire summer
experience in the field or laboratory. The remaining six courses required for the major must be distributed among the six subject areas represented by the departments and programs offering courses double-titled with Archaeological Studies, with three of those six courses falling in different departments and programs. The departments and programs are: Anthropology, Classics, Environmental Studies, Geology and Geophysics, History of Art, and Near Eastern Languages and Civilizations. Some courses may be applied to categories other than the ones in which they are listed below, upon application to the director of undergraduate studies. For three of the six archaeology electives students may, with permission of the director of undergraduate studies, substitute three courses from other departments in areas related to their research.

Students majoring in Archaeological Studies normally devote at least one summer to archaeological research in the field or the laboratory, or complete a summer field course in archaeology. Members of the Council faculty currently direct archaeological field projects in Syria, Egypt, Peru, Mali, and Honduras. Qualified majors are encouraged to apply for research positions with these projects.

Senior requirement. The final requirement for the major is a senior research project (ARCG 491a or b) in some field of archaeology, preferably one involving more than one area or discipline.

Students majoring in Archaeological Studies should consult with the director of undergraduate studies at the beginning of each term.

REQUIREMENTS OF THE MAJOR

Prerequisites:  None
Number of courses:  13 term courses (incl senior project)
Specific courses required:  ARCG 100a or 171a or equivalent; 277a, 278La, 279Lb
Distribution of courses:  1 advanced lab; 1 theory course; at least 1 course in each of 3 areas; 3 addtl courses in archaeology from related programs
Substitution permitted:  For 3 electives, 3 courses related to research, with DUS permission
Senior requirement:  Research project (ARCG 491a or b)

ARCG 100a/ANTH 150a/HUMS 376a/NELC 100a, The Genesis and Collapse of Old World Civilizations. Harvey Weiss.
For description see under Humanities.

ANTHROPOLOGY

ARCG 171a/ANTH 171a, Great Civilizations of the Ancient World.
Marcello Canuto.
For description see under Anthropology.

ARCG 232bG/ANTH 232b, Ancient Civilizations of the Andes.
Richard Burger.
For description see under Anthropology.

ARCG 233bG/ANTH 233bG, Ancient Civilizations of Mesoamerica.
Marcello Canuto.
For description see under Anthropology.

ARCG 267b/ANTH 267b, Human Evolution. Andrew Hill.
For description see under Anthropology.
Archaeological Studies

Archaeological Field Techniques.
Roderick McIntosh.
For description see under Anthropology.

Archaeology Laboratory I.
Roderick McIntosh.
For description see under Anthropology.

Archaeology Laboratory II.
Roderick McIntosh.
For description see under Anthropology.

Foundations of Modern Archaeology.
Richard Burger.
For description see under Anthropology.

The Archaeology of Households and Daily Life.
Marcello Canuto.
For description see under Anthropology.

Ethnohistory and Archaeology.
Roderick McIntosh.
For description see under Anthropology.

Topics in Maya Archaeology.
Marcello Canuto.
For description see under Anthropology.

Reconstructing Human Evolution: An Ecological Approach.
Andrew Hill.
For description see under Anthropology.

Civilizations and Collapse.
Harvey Weiss.
For description see under Anthropology.

Classical Civilization

Roman Architecture.
Diana Kleiner.
For description see under History of Art.

Environmental Studies

Global Environmental History.
Harvey Weiss.
For description see under Environmental Studies.

Geology and Geophysics

Stratigraphy.
Leo Hickey.
For description see under Geology & Geophysics.

Observing Earth from Space.
Ronald Smith and staff.
For description see under Geology & Geophysics.
HISTORY OF ART

**ART AND ARCHITECTURE OF MESOAMERICA.** Mary Miller.
For description see under History of Art.

**ROMAN ART: EMPIRE, IDENTITY, AND SOCIETY.** Diana Kleiner.
For description see under History of Art.

**ANGlicization OF AMERICA: ARCHITECTURE AND DECORATIVE ARTS.** Edward Cooke, Jr.
For description see under History of Art.

**THE ART OF ANCIENT PALACES.** Karen Foster.
For description see under History of Art.

**ART OF THE ANCIENT NEAR EAST AND AEGEAN.** Karen Foster.
For description see under History of Art.

**ECLAUDIA: WOMEN IN ANCIENT ROME.** Diana Kleiner.
For description see under History of Art.

NEAR EASTERN LANGUAGES AND CIVILIZATIONS

**EGYPTIAN RELIGION THROUGH THE AGES.** John Darnell.
For description see under Near Eastern Languages & Civilizations.

**ARCHAEOLOGIES OF EMPIRE.** Harvey Weiss.
For description see under Near Eastern Languages & Civilizations.

ADVANCED RESEARCH COURSES

**DIRECTED READING AND RESEARCH IN ARCHAEOLOGY.** Consult the director of undergraduate studies.

Qualified students may pursue special reading or research under the guidance of an instructor. A written statement of the proposed research must be submitted to the director of undergraduate studies for approval.

**SENIOR RESEARCH PROJECT IN ARCHAEOLOGY.** Members of the Council on Archaeological Studies.

Required of all students majoring in Archaeological Studies. Supervised investigation of some archaeological topic in depth. The course requirement is a long essay to be submitted as the student's senior essay. The student should present a prospectus and bibliography to the director of undergraduate studies no later than the third week of the term. Written approval from the faculty member who will direct the reading and writing for the course must accompany the prospectus.
ARCHITECTURE

Director of undergraduate studies: Sophia Gruzdys, 328 RUDOLPH, 432-8325, sophia.gruzdys@yale.edu

MEMBERS OF THE SCHOOL OF ARCHITECTURE TEACHING IN YALE COLLEGE

Professors
- Kent Bloomer (Adjunct), Turner Brooks (Adjunct), Peggy Deamer, Alexander Garvin (Adjunct), Steven Harris (Adjunct), Dolores Hayden, Dietrich Neumann (Visiting), Alan Plattus, Alexander Purves (Emeritus), Vincent Scully (Emeritus)

Associate Professors
- Michelle Addington, Keller Easterling

Assistant Professors
- Keith Krumwiede, Eeva-Liisa Pelkonen, Emmanuel Petit (Adjunct), Hilary Sample

Lecturers
- Karla Britton, Susan Farricielli, Anne Gilbert, Elihu Rubin

Critics
- Deborah Gans, Sophia Gruzdys, Adam Hopfner, Ariane de la Belleissue Lourie, Bimal Mendis, Dean Sakamoto, Thomas Zook

YALE COLLEGE FACULTY

Professor
- Karsten Harries (Philosophy)

Application to the Architecture major. Yale College students must apply to enter the major during the spring term of their sophomore year, after taking ARCH 150a, 152b, and 154b. An application to the major must be submitted to the office of the director of undergraduate studies no later than 4 P.M. on March 30, 2009, in Room 328 RUDOLPH (third floor). Applications must include the following information: name, address, telephone number, courses related to architecture already taken, and a statement of purpose. Portfolios representative of course work for ARCH 150a, 152b, and 154b must also be submitted for review as part of the application process by April 28, 2009. Applicants must stipulate their first, second, and third choices for the three concentrations (tracks) in the major. The tracks, described below, are architecture and design; architecture: history, theory, and criticism; and architecture and urban studies. Although qualified students and students who have fulfilled the prerequisites may be admitted into the Architecture major, they will not necessarily be admitted to their first-choice track. Applicants will be notified in writing regarding acceptance to the major by Tuesday, May 12, 2009. The major is limited to a maximum of fifty students inclusive of both junior and senior years.

Introduction to architecture. Introductory courses are ARCH 150a, 152b, and 154b. They are open to all Yale College students except freshmen, and are required for those interested in the Architecture major prior to application. Freshmen may consider courses such as STCY 176b, HSAR 112a, 115b, or an art course.

The standard major. The purpose of the undergraduate major is to include the study of architecture within a comprehensive liberal arts education, drawing from the broader academic and professional environment of the Yale School of Architecture. The curriculum includes work in design, in history, theory, and criticism of architecture, and in urban studies, and leads to a bachelor of arts degree.
The design track introduces complex processes involved in solving spatial and programmatic problems. Creative work is grounded in the study of history, culture, and the analysis of social conditions influencing architecture. Teaching formats include lectures, studio workshops, and individual presentations that culminate in a senior project design studio or in an independent senior project. The history, theory, and criticism track is intended to establish a broad historical and intellectual framework for the study of architecture. An interdisciplinary approach is encouraged through additional courses taken in various fields of humanities and possibly social sciences. Normally these interdisciplinary courses address subjects closely linked to architectural history, theory, and criticism. Such courses may include archaeology, history of religion, aesthetics, philosophy, or visual culture. Permission of the director of undergraduate studies is required if the courses fall outside the specified course of studies. During their senior year students complete a written senior essay on a topic approved by the faculty. History, theory, and criticism majors are urged to study a foreign language, and a term abroad is encouraged. The urban studies track encourages a broad, interdisciplinary investigation of the complex forces that shape the urban physical environment. The sequence of courses culminates in a senior essay that builds on course work, and either develops analysis and planning proposals for a specific site or furthers an individual research agenda.

Requirements of the major. Students majoring in Architecture are required to take sixteen course credits. Majors are expected to take a core of eight course credits and to base their studies in one of three areas of concentration: (1) architecture and design, (2) architecture: history, theory, and criticism, or (3) architecture and urban studies.

The core of courses required for all concentrations includes three prerequisites: ARCH 150a, 152b, and 154b. The remaining five course credits are taken after the student is accepted into the major. The core courses for the design track and for the history, theory, and criticism track are ARCH 249a, 250a, 251b, and one from HSAR 112a, 115b, or PHIL 334a. The core courses for the urban studies track are ARCH 249a, 250a, 251b, and one from ARCH 345b, 38a, or HSAR 320a. All majors are required to take ARCH 249a and 250a in the fall of their junior year.

For the architecture and design concentration, the following additional courses are required:

1. ARCH 450a
2. One basic science course from PHYS 150a, 180a, 200a, or ARCH 161b, or a calculus course
3. Two courses in History of Art including one survey course and one architecture history course, approved by the director of undergraduate studies (before senior year)
4. Two electives chosen from the following: ARCH 162b, 340a, 341a, 350b; CLCV 205a; STCY 176b; or any introductory studio art course approved by the director of undergraduate studies
5. ARCH 494b (the senior requirement)

For the history, theory, and criticism concentration, the following additional courses are required:

1. One course from ARCH 340a, 345b, 350b, STCY 176b
2. One basic science course from PHYS 150a, 180a, 200a, or ARCH 161b, or a calculus course
3. Two courses in art history, chosen from one survey course, one architecture history course, and one optional elective with the approval of the director of undergraduate studies.

4. Two theory courses, ARCH 162b and 751a, or chosen from courses in Anthropology or Classics (classical civilization, classical art and archaeology, or history of Greece and Rome), with the approval of the director of undergraduate studies.

5. ARCH 490a and 491b (the senior requirement)

For the architecture and urban studies concentration, the following additional courses are required:

1. One course from ARCH 340a, 341a, 350b, STCY 176b
2. One course in political science, economics, statistics, or PHYS 130a, 180a, 200a, ARCH 161b, or a calculus course
3. Four electives from Architecture, American Studies, Anthropology, Classics (classical civilization or history of Greece and Rome), Environmental Studies, Ethics, Politics, and Economics, History, History of Art, or Sociology, with the approval of the director of undergraduate studies.

4. ARCH 495a and 491b (the senior requirement)

Digital media orientation. All Architecture majors are required to complete orientation sessions in digital media workshop and materials laboratory. Students accepted into the major are required to complete these sessions at the beginning of their junior year. Access to the Digital Media Center for the Arts will not be allowed until the orientation has been completed. Questions should be addressed to the director of digital media, John Eberhart (432-9655, john.eberhart@yale.edu).

Library orientation. The Architecture department requires all majors to complete a ninety-minute introductory library research session. Students must take this session during the first term of their junior year. Failure to complete the required orientation will preclude completion of the major. Students may offer no substitutions for this orientation. Students should register on the Web at www.library.yale.edu/art/instruction/classesindex08.html. Questions should be addressed to the director of undergraduate studies.

Shop orientation. The Architecture department requires all majors to complete a three-hour woodshop and materials lab orientation session. Students accepted into the major are required to complete this session within the first three weeks of their junior year. Access to the woodshop and materials lab will not be allowed until the orientation has been completed. Questions should be addressed to the director of undergraduate studies or to the shop coordinator, Josh Rowley (432-7234, josh.rowley@yale.edu).

Senior requirement. Seniors in the design track take the senior project design studio (ARCH 494b). Majors in the design track may petition the director of undergraduate studies for permission to take ARCH 491b instead of 494b. Seniors in the history, theory, and criticism track take ARCH 490a, the senior research colloquium, and 491b, the senior project. Seniors in the urban studies track take ARCH 495a, the senior research colloquium in urban studies, and 491b, the senior project. Proposals for senior projects and essays are submitted in the fall term for review and approval by the senior project coordinator, and then distributed to faculty members for review before the faculty members agree to become senior advisers. Failure to meet deadlines will cause a student to be assigned to an advanced-level seminar or studio course to be arranged in conjunction with the director of undergraduate studies.
studies. In the spring term, all seniors must submit a portfolio of their work to the office of the director of undergraduate studies by Tuesday, May 5, 2009. For all majors, this portfolio must be representative of the student's design work including prerequisites and the senior project. History, theory, and criticism majors and urban studies majors must also include a copy of the senior essay and other appropriate texts.

*Studio courses in architecture.* Reviews may require more class time than that announced in course descriptions.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** ARCH 150a, 152b, 154b

**Number of courses:** 16 course credits incl prereqs and senior req

**Specific courses required:** *All tracks*—ARCH 249a, 250a (in fall of junior year); ARCH 251b, *Architecture and design*—ARCH 450a; 1 from HSAR 112a, 115b, 320a, or PHIL 334a; 1 from PHYS 150a, 180a, 200a, ARCH 161b, or a calculus course; *History, theory, and criticism*—1 from HSAR 112a, 115b, 320a, or PHIL 334a; 1 from ARCH 340a, 345b, 350b, STCY 176b; 1 from PHYS 150a, 180a, 200a, ARCH 161b, or a calculus course; *Architecture and urban studies*—1 from ARCH 345b, 385a, HSAR 320a, 1 from ARCH 340a, 341a, 350b, STCY 176b

**Distribution of courses:** *Architecture and design*—2 courses in art hist as specified; 2 electives as specified; *History, theory, and criticism*—2 or 3 courses in art hist as specified; 2 theory courses as specified; *Architecture and urban studies*—1 course in pol sci, econ, stat, architecture, physics, or calculus as specified; 4 electives approved by DUS

**Other:** Orientation sessions in digital media, library, and shop

**Senior requirement:** *Architecture and design*—ARCH 494b; *History, theory, and criticism*—ARCH 490a and 491b; *Architecture and urban studies*—ARCH 495a and 491b

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*ARCH 003b, Making an American Architecture.* Turner Brooks.  
TTH 9-10.15, 1 HTBA (o) Fr sem

Intensive study of the architecture of the end of the nineteenth century and the beginning of the twentieth. Focus on the work of Frank Furness, H. H. Richardson, Louis Sullivan, early Frank Lloyd Wright, McKim, Mead, and White, and other exponents of the Shingle Style. A series of field trips. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

*ARCH 150a, Introduction to Architecture.* Alexander Purves.  
MWF 9.25-10.15 Hu (o)


*ARCH 152b, Introduction to Spatial Language in Design.* Kent Bloomer.  
T 1:30-3.20 Meets RP (o)

Introduction to properties of design, especially architectural design, that can communicate such cultural ideas as memories, imaginations, social and mythic hierarchies, and particularities of location. *Not open to freshmen.*

*ARCH 154b, Drawing Architecture.* Sophia Gruzdys.  
W 2.30-4.20 (o)

Representation of architecture introduced through freehand drawing. The principal concepts of volume, depth, and surface joined to examination of an architectural subject. Rigorous drawing to develop the habit of representing ideas and creating perception. *Not open to freshmen.*
ARCH 161b, Introduction to Structures. Anne Gilbert.
TTh 1-2.15, 1 HTBA QR, SC (26)
Basic principles governing the behavior of building structures. Developments in structural form combined with the study of force systems, laws of statics, and mechanics of materials and members and their application to a variety of structural systems. Prerequisites: trigonometry and some knowledge of calculus. Enrollment limited to 30.

F 10.30-11.20; lab F 12-3 (0)
Science and technology of basic building materials studied together with historic and current design applications. Skills and processes required to create, shape, and connect materials experienced through hands-on projects. Technical notebooks, drawings, design and build exercises, and projects required. Enrollment limited to 20.

ARCH 163b, Environment, Energy, Building.
Michelle Addington.
TTh 11.35-12.50 (0)
An introduction to energy and environmental issues faced by the discipline of architecture. Global environmental issues, basic principles of energy generation and energy use, and fundamental climatic precursors and patterns. The complexity of developing solutions that address a wide range of local and global concerns. Recommended preparation: college-level physics.

ARCH 249a, The Analytic Model. Ariane de la Belleissue Lourie.
TTh 9-10.15 (0)
Introduction to the history and practice of architectural analysis. Students produce drawings, models, and diagrams of significant architectural works in order to facilitate a comprehensive understanding of specific architects, buildings, and contexts. Description of a variety of approaches and the reciprocal relationship between analysis and design. To be taken in the fall term of junior year. Required for all juniors entering the major. Enrollment limited to Architecture majors.

ARCH 250a, Methods and Form in Architecture I.
Peggy Deamer, Bimal Mendis.
MW 1-2.50, 1 HTBA 11/2 C Credits (0)
Analysis of architectural design of specific places and structures. Analysis is governed by principles of form in landscape, program, ornament, and space, and includes design methods and techniques. Readings and studio exercises required. Enrollment limited to 25. Open only to Architecture majors.

ARCH 251b, Methods and Form in Architecture II.
Sophia Gruzdys, Dean Sakamoto.
MW 12.30-2.20 1 1/2 C Credits (0)
Continuation of ARCH 250a.

For description see under American Studies.

MW 10.30-11.20, 1 HTBA Hu (0)
The role of global infrastructures and spatial products in transnational politics. Case studies include a resort in North Korea, golf courses in China, IT campuses in South Asia, high-speed rail in Saudi Arabia, cable and satellite networks in Africa, and automated ports. Discussion of the political dispositions and para-state functions of these spaces.

[ARCH 343b, Constructed Environments]

*ARCH 344a, Urban Life and Landscape. Elihu Rubin.

T 1:30-3:20 Hu (o)
The built environment as a text tool for constructing narratives of human activity, aspiration, and struggle. Methods of viewing the ordinary landscape of the twentieth-century American city: pulling apart its historical layers, examining social meanings, and observing its function today. Modes of inquiry include video, public presentations, field trips, photography, and writing.


MW 9:25-10:15, 1 HTBA Hu (o)
Introduction to the history, analysis, and design of the urban landscape. Principles, processes, and contemporary theories of urban design; relationships between individual buildings, groups of buildings, and their larger physical and cultural contexts. Case studies from New Haven and other world cities.

*ARCH 350b*/AMST 350b, Suburbs and the Culture of Sprawl. Dolores Hayden.

For description see under American Studies.


For description see under Humanities.


For description see under Political Science.

ARCH 430b, Film Architecture. Dietrich Neumann.

TT 11:35-12:25, 1 HTBA Hu (24)
The history of cinematic set design through the twentieth century, including the masterpieces, major movements, protagonists, and crucial theoretical debates. The depiction of the city through film, and the role of the movies as a reflection, commentary, and experimental laboratory for contemporary architecture.

*ARCH 450a, Senior Studio. Turner Brooks, Adam Hopfner.

MW 1-2:50, 1 HTBA 1 C Credits (o)
Advanced problems with emphasis on architectural implications of contemporary cultural issues. Exploration of the complex relationship among space, materials, and program. Emphasis on the development of representations—drawings and models—that effectively communicate architectural ideas. Exercises required.

To be taken before ARCH 491b or 494b. Enrollment limited to Architecture majors.

*ARCH 471a or b, Individual Tutorial. Consult the director of undergraduate studies.

HTBA (o)
Special courses may be established with individual members of the department only. The following conditions apply: (1) a prospectus describing the nature of
the studio program and the readings to be covered must be approved by both the 
instructor and the director of undergraduate studies; (2) regular meetings must 
take place between student and instructor; (3) midterm and final reviews are 
required.

**ARCH 490a, Senior Research Colloquium.** Karla Britton.


3 HTBA (0)

Examination of the skills, topics, and preparation required for the research that 
students in the history, theory, and criticism track undertake for their senior proj-
ect. Under the guidance of the instructor and members of the Architecture fac-
ulty and visitors, students present and define their proposals, complete basic 
readings, and seek criticism of individual research agendas.

**ARCH 491b, Senior Project.** Staff.


MW 1-2.15 (0)

An essay or project in the student’s area of concentration. Students in the history, 
theory, and criticism track or in the urban studies track pursue independent 
research with an adviser. This project must terminate in a senior essay. Students 
in the design track may also petition to pursue an independent design project 
with an adviser for a total of 1.5 credits.

**ARCH 494b, Senior Project Design Studio.** Steven Harris, 
Thomas Zook.


MW 12.30-2.20 1½ C Credits (0)

Individual design investigations, focusing on independence and precision in the 
deployment of design ideas. Reliance on visual and nonverbal presentations. 
Development of a three-dimensional component, such as large-scale mock 
details, or other visual means of presentation, which might include photography, 
film, video, or interactive media. Examination of the skills, topics, and prepara-
tion to support design research.

**ARCH 495a, Senior Research Colloquium for Urban Studies.** 
Karla Britton.


Th 11.35-12.50, 2 HTBA (0)

Development of frameworks and urban strategies for senior projects and/or 
papers through identification and elaboration of a research topic that synthesizes 
the interdisciplinary course work of the urban studies curriculum with individ-
ual interests. Requirements include proposal drafts, case study research, analyses, 
and graphic illustrations.

COURSES RELEVANT TO THE MAJOR IN OTHER DEPARTMENTS

**Architecture and Urban Studies Track**

CLCV 205a/HIST 205a, Introduction to Ancient Greek History.
Donald Kagan.
For description see under Classics.

CLCV 206a/HIST 217a, Introduction to Roman History: The 
Republic. William Metcalf.
For description see under Classics.

**Architecture and Design Track and History, Theory, and Criticism Track**

STCY 176b, Introduction to the Study of the City.
Alexander Garvin.
COURSES IN THE SCHOOL OF ARCHITECTURE

Unless otherwise indicated in the course descriptions, all courses in the School of Architecture are open to majors and nonmajors with permission of the instructor and the graduate registrar. They are not open to the Credit/D/Fail option. Students are admitted on the basis of their previous course work and previous performance.

ART

(DRAWING, FILMMAKING, GRAPHIC DESIGN, PAINTING, PHOTOGRAPHY, PRINTMAKING, AND SCULPTURE)

Director of undergraduate studies: Clint Jukkala, 122 GREEN, 432-2608, art.dus@yale.edu

MEMBERS OF THE SCHOOL OF ART TEACHING IN YALE COLLEGE

PROFESSORS
   Rochelle Feinstein, Richard Lytle (Emeritus), Samuel Messer (Adjunct), Tod Papageorge, Robert Reed, Jr., Michael Roemer (Adjunct), Jessica Stockholder, Robert Storr

ASSOCIATE PROFESSOR
   Joe Scanlan

ASSISTANT PROFESSOR
   Clint Jukkala

SENIOR CRITICS
   Gregory Crewdson, John Gambell, Pamela Hovland

CRITICS
   Sandra Luckow, Sarah Oppenheimer, Henk van Assen

LECTURERS
   Jonathan Andrews, Julian Bittiner, Alice Chung, Jon Conner, Daphne Fitzpatrick, Lisa Kereszi, John Lehr, Dan Michaelson, Phillip Pisciotta, Michael Queensland, George Rush, Rebecca Soderholm, Scott Stowell, Jeffrey Stuker

The program in Art offers courses in a variety of media that provide a background in visual arts as part of a liberal education and as a preparation for graduate study and professional work.

Courses in Art are open to all undergraduate students. In cases where student demand for entry into a course is greater than can be accommodated, priority will be given to School of Art students and declared Art majors. The director of undergraduate studies and members of the Art faculty will be present for counseling on Tuesday, September 2, adjacent to the School of Art Gallery at Holcombe T. Green, Jr., Hall, 1156 Chapel Street, between 10.30 a.m. and 2 p.m. Students seeking advice about course selection or the program in Art should come at that time. Others wishing to elect Art courses should go to the first meeting of the class, when each instructor will determine the class enrollment. Classes begin on Wednesday, September 3. For courses beginning in the spring term, counseling will be held on Monday, January 12, 2009, adjacent to the School of Art Gallery, from 12 to 1.30 p.m.; Art classes begin on Tuesday, January 13, 2009. All Art majors are required to register with the director of undergraduate studies at the beginning of each term at the time and place listed above in order to be enrolled or to continue in the major.
The prerequisites for acceptance into the major are a sophomore review, which is an evaluation of work from studio courses taken at the Yale School of Art, and five terms of introductory (100-level) courses. Four introductory courses must have been completed at the time of the sophomore review. Visual Thinking (ART 111a or b) and Basic Drawing (ART 114a or b) are mandatory. At the time of the review, the student should be enrolled in the fifth 100-level prerequisite course. In exceptional cases, arrangements for a special review during the junior year may be made with the director of undergraduate studies.

Requirements of the major. The Art major requires fourteen course credits, including the following: (1) five prerequisite courses at the 100 level (including Basic Drawing and Visual Thinking); (2) five courses at the 200 level or above; (3) the Junior Seminar (ART 395a or b) or Critical Theory in the Studio (ART 201b); (4) the Senior Project (ART 495a or b); and (5) two term courses in the history of art. Suggested program guidelines and specific requirements for the various areas of concentration are available from the director of undergraduate studies.

Art majors are eligible for the Ellen Battell Stoeckel Fellowship for study at the Yale University Summer School of Music and Art at Norfolk, Connecticut. Applicants for the program must be officially classified as junior Art majors and be returning to Yale for two terms of their senior year. The program awards up to four course credits for work successfully completed. These credits cannot be used toward the requirements of the Art major; however, they may be counted toward the 36-course-credit graduation requirement.

Course credits in studio art earned at other institutions may be applied toward the requirements of the major, at the discretion of the director of undergraduate studies and subject to a faculty review process.

All Art majors are charged a facilities access and user fee of $200 per term. Additional materials fees are levied in individual courses, as specified at the end of the course description.

REQUIREMENTS OF THE MAJOR

Prerequisites: Favorable faculty review of work done in studio courses before end of sophomore year; ART 111a or b and 114a or b; 3 other 100-level term courses

Number of courses: 14 term courses (incl prereqs and senior project)

Specific course required: ART 395a or b or 201b

Distribution of courses: 5 upper-level courses; 2 courses in history of art

Senior requirement: Senior project (ART 495a or b)

Unless otherwise indicated, spring-term classes in Art begin on Tuesday, January 13, 2009.

INTRODUCTORY COURSES

*ART 111a or b, Visual Thinking. Sarah Oppenheimer and staff.

Hu Meets RP (o)

111a: TTh 3:30-5:20
111b: TTh 1:30-3:20

An introduction to the language of visual expression, using studio projects to explore the fundamental principles of visual art. Students acquire a working knowledge of visual syntax applicable to the study of art history and popular culture, as well as art. Projects address all four major concentrations (graphic design, printing/printmaking, photography, and sculpture). Materials fee: $25. Open to all undergraduates. Required for Art majors.
**ART 114a or b, Basic Drawing.** Clint Jukkala, Samuel Messer, Robert Reed, Jr., George Rush, and staff.

Hu Meets RP (o)

114a–1: MW 8.25-10.15
114a–2: MW 1.30-3.20
114a–3: TTh 1.30-3.20
114b–1: MW 10.30-12.20
114b–2: MW 3.30-5.20
114b–3: TTh 3.30-5.20

An introduction to drawing, emphasizing articulation of space and pictorial syntax. Class work is based on observational study. Assigned projects address fundamental technical and conceptual problems suggested by historical and recent artistic practice. Materials fee: $25. *Open to all undergraduates. Required for Art majors.*

**ART 116a, Color.** Richard Lytle.

TTh 10.30-12.20 Hu Meets RP (o)

Study of the interaction of color, ranging from fundamental problem solving to individually initiated expression. The collage process is used for most class assignments. Materials fee: $25.

**ART 120a or b, Introductory Sculpture.** Joe Scanlan [F], Daphne Fitzpatrick [Sp].

Hu Meets RP (o)

120a: TTh 1.30-3.20
120b: MW 1.30-3.20

Exploration of the range of sculpture. Topics include current genres and issues in contemporary sculpture. Attention to understanding and articulating formal structure, both physical and conceptual. Group discussion complements the studio work. The shops and studio are available during days and evenings throughout the week. Materials fee: $75. *Enrollment limited to 12.*

**ART 122a, Mold Making and Casting.** Jon Conner.

T 3.30-7.20, 2 HTBA Hu Meets RP (o)

Instruction in the practical aspects of mold making and casting in a variety of materials and techniques. Discussion of contemporary issues in art and culture, including the use of traditional principles in sculpture in an age of mass production. Methods include waste molds, piece molds, life casts, and flexible molds. Materials fee: $75.

**ART 130a or b, Painting Basics.** Staff.

Hu Meets RP (o)

130a: MW 3.30-5.20
130b: MW 10.30-12.20

An introduction to basic painting issues, including the conventions of pictorial space and the language of color. Class assignments and individual projects explore technical, conceptual, and historical issues central to the language of painting. Materials fee: $75. *Intended for students not majoring in Art and for Art majors outside the painting concentration. Students who intend to pursue the painting concentration or take multiple courses in painting should take ART 230a and/or 231b.*

**ART 132a or b, Introductory Graphic Design.** Julian Bittiner, Pamela Hovland, Henk van Assen.

Hu Meets RP (o)

132a–1: MW 10.30-12.20
132a–2: TTh 10.30-12.20
132b–1: TTh 1.30-3.20
132b–2: TTh 3.30-5.20

A studio introduction to visual communication with an emphasis on visual organization of design elements as a means to transmit meaning and values. Topics include shape, color, visual hierarchy, word-image relationships, and typography. Development of a verbal and visual vocabulary to discuss and critique the designed world. Materials fee: $150.
**Art 136a or b, Introductory Photography.** Lisa Kereszi, Phillip Pisciotta, and staff.  
Hu  Meets RP  (o)  
136a–1: MW 10.30–12.20  136b–1: WF 10.30–12.20  

An introductory course in black-and-white photography concentrating on the use of 35mm cameras. Topics include the lensless techniques of photograms and pinhole photography; fundamental printing procedures; and the principles of film exposure and development. Assignments encourage the variety of picture-forms that 35mm cameras can uniquely generate. Student work is discussed in regular critiques. Readings examine the invention of photography and the “flaneur” tradition of small-camera photography as exemplified in the work of artists such as Henri Cartier-Bresson, Helen Levitt, Robert Frank, and Garry Winogrand. Materials fee: $150.

**Art 138a, Digital Photography.** John Lehr, Rebecca Soderholm.  
TTh 3.30–5.20  Hu  Meets RP  (o)  

An introductory exploration of the transition of photographic processes and techniques into digital formats. Students produce original work using a digital camera. Introduction to a range of tools including color correction, layers, making selections, and inkjet printing. Assignments include weekly critiques and a final project. Materials fee: $150.

**Art 141a or b, The Language of Film Workshop.** Michael Roemer [F], Sandra Luckow [Sp].  
Meets RP  (o)  
141a: M 9–12.30  141b: M 1.30–5  

Problems and aesthetics of film studied in practice as well as in theory. In addition to exploring movement, image, montage, point of view, and narrative structure, students photograph and edit their own short videotapes. The fall term emphasizes the writing and production of short dramatic scenes. Materials fee: $150. *Priority to majors in Art and Film Studies. Prerequisite for Film Studies majors: Film 150a.*

**Art 145a or b, Introduction to Digital Video.** Staff.  
MW 10.30–12.20  Meets RP  (o)  

Introduction to the basic tools of digital video production. Topics include DV camera operation, sound, and Mac-based editing with Final Cut Pro software. Individual and collaborative assignments explore the visual language and production challenges of DV. Emphasis on the spatial and visual aspects of the medium rather than the narrative. Screenings of experimental film, video art, and DV feature films. Materials fee: $150. *Enrollment limited to 12.*

**Art 201b, Critical Theory in the Studio.** Jeffrey Stuker.  
Th 3.30–5.20  Hu  (o)  

Key concepts in modern critical theory as they aid in the analysis of creative work in the studio. Psychoanalysis, Marxism, feminism, structuralism, and poststructuralism examined in relation to modern and contemporary movements in the visual arts, including cubism, surrealism, Arte Povera, pop, minimalism, conceptual art, performance art, the Pictures group, and the current relational aesthetics movement. Materials fee: $25.

**Art 210a, Sculpture as Object.** Daphne Fitzpatrick.  
MW 1.30–3.20  Hu  Meets RP  (o)
Introduction to concepts of design and form in sculpture. Exploration of the use of wood, including both modern and traditional methods of carving, lamination, assemblage, and finishing. Fundamentals of metal processes such as welding, cutting, grinding, and finishing may be explored on a limited basis. Group discussion complements the studio work. The shops and studio are available during days and evenings throughout the week. Materials fee: $75. Enrollment limited to 12.

INTERMEDIATE COURSES

*ART 223a and 224b, Figure Drawing. George Rush and staff.
   Meets RP (o)
   223a: MW 10.30-12.20 224b: MW 1.30-3.20
   A study of the human figure, using a range of approaches. Emphasis on observation, anatomy, and spatial structure. Historical examples from cave painting to contemporary art. Materials fee: $75 per term.

*ART 230a and 231b, Introductory Painting. Clint Jukkala, Robert Reed, Jr.
   Meets RP (o)
   230a: MWF 10.30-12.20 231b: TTHF 10.30-12.20
   An introduction to concepts and techniques in painting through observational study with emphasis on the language of color and the articulation of space. Study of pictorial syntax in historical painting; mastery of materials and techniques. Materials fee: $75 per term. Enrollment limited to 15. Prerequisite or corequisite: ART 114a or b.

*ART 237a or b, Medium-Format Photography. Lisa Kereszi.
   Hu Meets RP (o)
   237a: WF 3.30-5.20 237b: WF 1.30-3.20
   An intermediate class in black-and-white photography extending the concerns of ART 136a or b. Introduction to the use of medium-format cameras. Specialized topics include night photography, the use of flash, developing roll film, basic digital scanning, and grayscale printing techniques. Survey of the rich tradition of handheld photography and the production of artists such as Lartigue, Brassai, Diane Arbus, Lee Friedlander, and Robert Adams. Materials fee: $150. Prerequisite: ART 136a or b or equivalent. (Formerly ART 137a or b)

*ART 245a, Digital Drawing. Sarah Oppenheimer.
   TTH 1.30-3.20 Meets RP (o)
   Digital techniques and concepts as they expand the possibilities of traditional drawing. Topics include vector and bitmap imaging, the stylus and the scanner, printing and projection, and the creation of studies for other artworks. The second half of the course is focused on individual development and exploration. Materials fee: $150. Enrollment limited. Prerequisite: ART 111a or b or ART 114a or b or permission of instructor.

*ART 264a, Typography in Graphic Design I. Alice Chung.
   MW 3.30-5.20 Meets RP (o)
   An intermediate course concentrating on the fundamentals of typography, with emphasis on the way typographic form and visual arrangement create and support content. Focus on designing and making books, employing handwork and computer technology. Typographic history and theory discussed in relation to course projects. Materials fee: $150. Prerequisite: ART 132a or b.

*ART 265b, Typography in Graphic Design II. Henk van Assen.
   TF 10.30-12.20 Meets RP (o)
Continued studies in typography, incorporating more advanced and complex problems. Exploration of grid structures, sequentiality, and typographic translation, particularly in the design of contemporary books, and screen-based kinetic typography. Relevant issues of design history and theory discussed in conjunction with studio assignments. Materials fee: $150. **Prerequisite:** ART 264a.

**ART 330a and 331b, Painting Studio I.** Clint Jukkala, George Rush.  
*M 3:30-7:20, W 3:30-5:20* Meets RP (0)
Further exploration of concepts and techniques in painting, emphasizing the individuation of students’ pictorial language. Various approaches to representational and abstract painting. Studio work is complemented by in-depth discussion of issues in historical and contemporary painting. Materials fee: $150 per term. **Prerequisite:** ART 230a or 231b.

**ART 341a or b, Intermediate Film Workshop.** Michael Roemer [F], Jonathan Andrews [Sp].  
Meets RP (0)  
In the first half of the term, students write, stage, and edit three dramatic scenes, each four to five minutes long. During the second half they create somewhat longer projects. Focus on writing short dramatic scenes with a concrete understanding of the way they will be acted, directed, and photographed. Materials fee: $150. **Enrollment limited to 8. Priority to majors in Art and in Film Studies. Prerequisites:** ART 141a or b and FILM 150a.

**ART 342b, Intermediate Documentary Film Workshop.** Sandra Luckow.  
T 12:30-3:20 HU Meets RP (0)
The storytelling potential of the film medium explored through the making of documentary art. Focus on finding and capturing intriguing, complex scenarios in the world and then adapting them to the film form. Questions of truth, objectivity, style, and the filmmaker’s ethics considered using examples of the students’ work. **Limited enrollment. Priority to majors in Art and in Film Studies. Prerequisites:** ART 141a or b and FILM 150a.

**ART 345b, Intermediate Sculpture.** Michael Queenland.  
 mw 1:30-3:20 Meets RP (0)
Further investigation into the history of sculpture and questions pertinent to contemporary art. Exploration of new techniques and materials along with refinement of familiar skills. Focus on helping students become self-directed in their work. Individual and group discussion and visits to museums and galleries. Materials fee: $75. **Enrollment limited to 12. Prerequisite:** ART 120a or b or equivalent, or permission of instructor.

**ART 356a, Printmaking I.** Staff.  
TThF 3:30-5:20 Meets RP (0)
Presentation of a range of techniques in silkscreen and photo-silkscreen, from hand-cut stencils to prints using four-color separation. Students create individual projects in a workshop environment. Materials fee: $150. **Prerequisite:** ART 114a or b or equivalent.
Instruction in a diverse range of printmaking media. Students develop work in linocut, woodcut, collograph, drypoint, and etching. Methods in both color and black and white. Materials fee: $150. Prerequisite: ART 114a or b or equivalent.

*ART 359b, Lithography. Staff.  
**THF 3:30-5:20 Meets RP (o)**  
Basic techniques of stone and plate lithography. Students create prints utilizing drawing and/or photo-based imagery. Materials fee: $150. Prerequisite: ART 114a or b or equivalent. Recommended preparation: basic knowledge of Adobe Photoshop.

*ART 367a, Intermediate Graphic Design. Alice Chung.  
**MW 1:30-3:20 Meets RP (o)**  
Refinement of design skills as tools for effective visual communication. Concentration on issues of identity, branding, and design systems to help establish conceptual and formal consistency for multiple items, both two- and three-dimensional, within a design program. Materials fee: $150. Prerequisite: ART 132a or b.

*ART 377a, Color Photography. Phillip Pisciotta.  
**MW 1:30-3:20 Meets RP (o)**  
Examination of the unique aesthetic and technical challenges posed by color photography. Principles of color balance and basic procedures of digital color printing. Student work is discussed in regular critiques. Survey of color photography since the 1960s, from Helen Levitt’s street photographs to the work of contemporary artists such as William Eggleston, Stephen Shore, Philip-Lorca diCorcia, and Gregory Crewdson. Materials fee: $150. Prerequisites: ART 237a or b or permission of instructor, and, for those intending to photograph with a view camera, ART 379b.

*ART 379b, View Camera Photography. John Lehr.  
**TH 3:30-5:20 Meets RP (o)**  
A concentrated study of the operations required to employ stand cameras, or view cameras, effectively. Student work is discussed in regular critiques. Review of a photographic tradition practiced since the invention of the medium and employed in highly regarded photography being produced today. Introduction to various methods of contact printing, including platinum printing and other alternative processes. Students are encouraged to employ whatever digital training they have previously had. Materials fee: $150. Prerequisite: ART 237a or b or permission of instructor, or, for those intending to photograph in color, ART 377a.

*ART 395a or b, Junior Seminar. Jeffrey Stucker and staff.  
Meets RP (o)  
395a: W 1:30-3:20  
395b: Th 1:30-3:20  
Ongoing visual projects addressed in relation to historical and contemporary issues. Readings, slide presentations, critiques by School of Art faculty, and gallery and museum visits. Critiques address all four areas of study in the Art major. Prerequisite: at least four courses in Art. Required for Art majors.

ADVANCED COURSES

*ART 401a and 402b, Advanced Photography. Lisa Kereszi, Phillip Pisciotta.  
Meets RP (o)  
401a: WF 1:30-3:20  
402b: Th 10:30-12:20
An exploration of the practice of photography, either analog or digital. Student work is discussed in regular critiques, and lectures are framed around the aesthetic concerns that the work provokes. Materials fee: $150 per term. Prerequisites: ART 377a or 379b, and, for those working digitally, ART 138a. Required for Art majors concentrating in photography.

**ART 430a and 431b, Painting Studio II.** Robert Storr and staff.

M 3.30-7.20, W 3.30-5.20 Meets RP (O)

Development of individual themes through independent studio practice and projects. Studio work and discussion of pertinent topics in historical and contemporary painting. Senior Art majors in the painting concentration are encouraged to take ART 431b in conjunction with ART 495b. May be taken more than once. Materials fee: $75 per term. Prerequisites: ART 330a and 331b.

**ART 442/Film 483, Fiction Film Workshop.** Jonathan Andrews.

Th 12.30-3.20 (O)

A yearlong workshop designed primarily for Art and Film Studies majors making senior projects. Each student writes and directs a short fiction film. The first term focuses on the screenplay, production schedule, storyboards, casting, budget, and locations. In the second term students rehearse, shoot, edit, and screen the film. Materials fee: $150. Enrollment limited to 8. Priority to majors in Art and Film Studies. Prerequisite: ART 341a or b.

**ART 445b, Advanced Sculpture.** Michael Queenland.

MW 1.30-3.20 Meets RP (O)

Self-directed work in sculpture. Group discussion of student projects, with readings, slides, and videos that address current art practices. Regular individual and group critiques. Materials fee: $75. Enrollment limited to 12. Prerequisites: ART 345b and 346a or equivalents, or permission of instructor.

**ART 447b, Art and Collaboration.** Joe Scanlan.

Th 10.30-12.20 Meets RP (O)

The effect on modern and contemporary art of collaborative artistic creation. The gains and compromises of making art in groups. Studio activities and course projects based on collaborative efforts by students. Examples from the works of The Independent Group, The Guerrilla Girls, General Idea, and others serve as inspiration and points of departure. The shops and studios are available during days and evenings throughout the week. Materials fee: $75. Enrollment limited to 12. Prerequisite: ART 120a or b or equivalent, or permission of instructor.

**ART 448a, Sculpture and Questions of Definition.**

Jessica Stockholder.

MW 1.30-3.20 Meets RP (O)

A studio seminar that considers the nature of sculpture. The conventional definition of sculpture (being concerned with volume and mass in space) scrutinized in view of artwork that falls out of other categories into "sculpture." Through the work of students in the class, exploration of ways that the conventional categories of sculpture, painting, graphic design, and photography generate meaning. Additional topics include art's responsiveness to its context and questions of authorship, process, and vulnerability.

[ART 457b, Printmaking II]

**ART 468a and 469b, Advanced Graphic Design.** Julian Bittiner, Scott Stowell, Henk van Assen.

W 1.30-5.20 Meets RP (O)
A probe into questions such as how an artist can be present as an idiosyncratic individual in the work that he or she produces, and how that work can still communicate on its own to a broad audience. Concentration on making graffiti, i.e., the design of a set of outdoor marks and tours for New Haven. A technological component is included, both in the metaphor of designing outdoor interaction as a way to learn about screen-based interaction, and in the final project to design an interface for a handheld computer. Materials fee: $150 per term. *No prior technical experience required.* Prerequisite: ART 367a or permission of instructor.

**ART 471a and 472b, INDEPENDENT PROJECTS.** Consult the director of undergraduate studies.

HTBA Meets RP (o)

Independent work that would not ordinarily be accomplished within existing courses, designed by the student in conjunction with a School of Art faculty member. A course proposal must be submitted on the appropriate form for approval by the director of undergraduate studies and the faculty adviser. Expectations of the course include regular meetings, end-of-term critiques, and a graded evaluation.

**ART 495a or b, SENIOR PROJECT.** Clint Jukkala.

Meets RP (o)

495a: 2 HTBA

495b: T 7-8.50 P.M.

A project of creative work formulated and executed by the student under the supervision of an adviser designated in accordance with the direction of the student’s interest. Proposals for senior projects are submitted on the appropriate form to the School of Art Undergraduate Studies Committee (usc) for review and approval at the end of the term preceding the last resident term. Projects are reviewed and graded by an interdisciplinary faculty committee made up of members of the School of Art faculty. An exhibition of selected work done in the project is expected of each student. *Required for Art majors.*

For courses in art history see under History of Art.

**ASTRONOMY**

Director of undergraduate studies: Charles Bailyn, 270 JWG, 432-3022, charles.bailyn@yale.edu

**FACULTY OF THE DEPARTMENT OF ASTRONOMY**

Professors
Charles Bailyn, †Charles Baltay, Sarbani Basu, Paolo Coppi, Pierre Demarque (*Emeritus*), Jeffrey Kenney (*Chair*), Richard Larson, †Peter Parker, Sabatino Sofia, †C. Megan Urry, William van Altena (*Emeritus*), Pieter van Dokkum, Robert Zinn

Associate Professor
Priya Natarajan

Assistant Professors
Hector Arce, †Richard Easther, Marla Geha

Lecturer
Michael Faison

†A joint appointment with primary affiliation in another department.

The Department of Astronomy offers courses both for the nonscientist interested in learning about modern astronomy and for the student wishing to prepare for graduate work in astronomy or a related science. The
department offers two degree programs: the B.A. degree program in Astronomy and the B.S. degree program in Astronomy and Physics.

The department offers a variety of courses without prerequisites that provide an introduction to astronomy with particular attention to recent discoveries and theories. Courses numbered below 150, including ASTR 110a, 120b, and 130a, are intended for students who do not plan to major in the sciences but who desire a broad, nontechnical introduction to astronomy. These courses have no prerequisites, and a student may elect any or all of them and take them in any order. Courses with numbers between 150 and 199, including ASTR 155a, 160b, and 170a, are also intended for students who do not plan to major in the sciences, but they provide a more in-depth treatment and assume a somewhat stronger high school science background. ASTR 155a provides a hands-on introduction to astronomical observing, while ASTR 160b and 170a provide an introduction to topics in modern astrophysics and cosmology. For students with good preparation in high school mathematics and physics, ASTR 210a and 220b provide a more intensive introduction to astronomy with emphasis on topics of current interest, and ASTR 255a provides a more quantitative introduction to astronomical research techniques. These courses may be taken independently of each other.

Courses numbered 300 and above are open to students at the sophomore and higher levels who already have an elementary acquaintance with astronomy, and mathematics and physics as described in the course prerequisites. For advice about astronomy courses, students should consult the director of undergraduate studies.

In addition to the normal undergraduate courses, graduate courses in astronomy are open to qualified undergraduates who already have strong preparation in mathematics, physics, and astronomy. Students wishing to take a graduate course must first obtain the permission of the instructor and of the director of graduate studies.

B.A. degree program in Astronomy. The B.A. degree program is designed for students who may not intend to do graduate work in astronomy but who are interested in the subject as a basis for a liberal education or as a background for a career in medicine, teaching, journalism, business, law, or government. It allows greater flexibility in course selection than the B.S. program because the emphasis is on breadth of knowledge rather than on specialization. The prerequisites for the B.A. program are: either PHYS 150a and 151b, or 180a and 181b, or 200a and 201b; and MATH 112a or b and 115a or b. Ten term courses are required beyond these prerequisites, including the senior requirement. Five courses in astronomy must be completed, four of which must be numbered 200 or above, including ASTR 255a or 355b; ASTR 310a, or both ASTR 210a and 220b (ASTR 170a may substitute for 220b in the latter case); and a senior project or essay (ASTR 490a or 491b). Also required are MATH 120a or b and four additional courses in the natural or applied or mathematical sciences, at least two of which must have college-level prerequisites; these may include additional astronomy courses. The senior requirement consists of a senior essay or independent research project carried out for one term under the supervision of a faculty member (ASTR 490a or 491b).

Before entering the junior year, the student should consult the director of undergraduate studies.

B.S. degree program in Astronomy and Physics. This program is designed to provide a strong background in astronomy and in the relevant physics for
students interested in graduate study or a career in astronomy, physics, or a related science.

Prerequisite to the B.S. degree program is work in fundamental physics and mathematics. A student planning to major in Astronomy and Physics should complete this work by the end of the sophomore year. The prerequisites for the B.S. program are: one of the introductory physics sequences (PHYS 180a, 181b, or 200a, 201b, or 260a, 261b); one of the physics laboratory sequences (PHYS 165La, 166Lb or 205La or Lb, 206La or Lb); and the mathematics sequence MATH 112a or b, 115a or b, and 120a or b. ASTR 155a may be substituted for one term of the physics laboratory sequence.

Beyond the prerequisites, twelve term courses are required in astronomy, physics, and mathematics. In astronomy, the student should complete at least six courses including ASTR 255a or 355b; ASTR 310a; ASTR 320b or 343b, or a more advanced astrophysics course with the permission of the director of undergraduate studies; a two-term senior project (ASTR 490a and 491b); and one additional astronomy course numbered 200 or above. In physics, the student should complete at least four courses numbered 400 or above, normally PHYS 401a or 410a, 420a, 430b, and either 439a or 440b; the sequence PHYS 401a, 402b, 440b, and 441a may also fulfill this requirement. With the permission of the director of undergraduate studies, ASTR 440a may be substituted for PHYS 430b. In mathematics, the student should complete one course in mathematics numbered 200 or above, or PHYS 301a or ENAS 194a or b; and either an additional course in mathematics numbered 200 or above or a course in statistics or computing. The senior requirement consists of an independent research project in astronomy carried out for two terms under the supervision of a faculty member (ASTR 490a and 491b).

Before entering the junior year, the student should arrange a specific program of study in consultation with the director of undergraduate studies in Astronomy, whose approval of the program is needed, and should then also consult the director of undergraduate studies in Physics.

REQUIREMENTS OF THE MAJOR

ASTRONOMY, B.A.

Prerequisites: PHYS 150a, 151b, or 180a, 181b, or 200a, 201b; MATH 112a or b, 115a or b

Number of courses: 10 term courses beyond prereqs, incl senior req

Distribution of courses: 5 term courses in astronomy, 4 of them numbered 200 or above; 5 addtl courses in science or math (may include addtl astronomy courses)

Specific courses required: ASTR 255a or 355b; ASTR 310a, or both 210a and 220b; MATH 120a or b; 4 addtl courses in natural or applied or mathematical sciences, at least 2 with college-level prereqs

Substitution permitted: ASTR 170a for 220b

Senior requirement: Senior essay or senior research project (ASTR 490a or 491b)

ASTRONOMY AND PHYSICS, B.S.

Prerequisites: PHYS 180a, 181b, or 200a, 201b, or 260a, 261b; PHYS 165La, 166Lb or 205La or Lb, 206La or Lb; MATH 112a or b, 115a or b, 120a or b

Number of courses: 12 term courses beyond prereqs, incl senior req

Distribution of courses: 6 term courses in astronomy numbered 200 or above; 4 courses in physics numbered 400 or above, as specified; 2 courses in math or mathematical methods in science, as specified

Specific courses required: ASTR 255a or 355b; ASTR 310a; ASTR 320b or 343b; 1 course in math numbered 200 or above, or PHYS 301a or ENAS 194a or b; 1 addtl course in math numbered 200 or above, or a course in stat or computing
Substitution permitted: ASTR 155a for 1 term of prereq physics lab; ASTR 440a for PHYS 430b, with DUS permission; a more advanced astrophysics course for ASTR 330b or 343b, with DUS permission
Senior requirement: Senior independent research project (ASTR 490a and 491b)

*ASTR 030b, Search for Extraterrestrial Life. Hector Arce.
MW 1-2.15 Sc (0) Fr sem
Introduction to the search for extraterrestrial life. Review of current knowledge on the origins and evolution of life on Earth; applications to the search for life elsewhere in the universe. Discussion of what makes a planet habitable, how common these worlds are in the universe, and how we might search for them. Survey of past, current, and future searches for extraterrestrial intelligence. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

ASTR 110a, Planets and Stars. Michael Faison.
MW 2.30-3.45 QR, Sc (37)
For non–science majors. An introduction to stars and planetary systems. Topics include the solar system and extrasolar planets, planet and stellar formation, and the evolution of stars from birth to death. No prerequisite other than a working knowledge of elementary algebra.

ASTR 120b, Galaxies and the Universe. Michael Faison.
MW 2.30-3.45 QR, Sc (37)
For non–science majors. An introduction to stars and stellar evolution; the structure and evolution of the Milky Way galaxy and other galaxies; quasars, active galactic nuclei, and supermassive black holes; cosmology and the expanding universe. No prerequisite other than a working knowledge of elementary algebra.

ASTR 130a, Life in the Universe. Sabatino Sofia.
MW 1-2.15 Sc (36)
For non–science majors. An introduction to the astronomical and physical conditions that were conducive to life on Earth and the searches for similar conditions and for intelligent life elsewhere in the universe. Detailed survey of the objects making up the solar system as determined from astronomical observations and in situ planetary probes. No prerequisite other than a working knowledge of elementary algebra.

[ASTR 135b, Archaeoastronomy]

ASTR 155a, Introduction to Astronomical Observing.
Michael Faison.
T 2.30-3.45; lab HTBA Sc ½ C Credit (0)
A hands-on introduction to the techniques of astronomical observing. Observations of planets, stars, and galaxies using on-campus facilities and remote observing with Yale’s research telescopes. Use of electronic detectors and computer-aided data processing. Evening laboratory hours required. One previous college-level science laboratory or astronomy course recommended.

ASTR 160b, Frontiers and Controversies in Astrophysics.
Charles Bailyn.
TTh 9.25-10.15, 1 HTBA QR, Sc (22)
For non–science majors. A detailed study of three fundamental areas in astrophysics that are currently subjects of intense research and debate: (1) planetary systems around stars other than the sun; (2) pulsars, black holes, and the relativistic effects associated with them; (3) the age and ultimate fate of the universe. No prerequisite other than a working knowledge of elementary algebra.
astr 170a, INTRODUCTION TO COSMOLOGY. Staff.
TH 4-5.15 QR, Sc (27)
An introduction to modern cosmological theories and observations. Topics
include aspects of special and general relativity; curved space-time; the Big Bang;
inflation; primordial element synthesis; the cosmic microwave background; the
formation of galaxies; and large-scale structure. **Prerequisite:** a strong background
in high school mathematics and physics.

astr 210a, STARS AND THEIR EVOLUTION. Robert Zinn.
MW 1-2.15 QR, Sc (36)
An intensive introduction to planetary physics and stellar evolution. Star forma-
tion, nuclear processes, and the origin of the elements; supernovae, pulsars, and
black holes. **Prerequisite:** MATH 112a or b or equivalent and high school physics.

astr 220b, GALAXIES AND COSMOLOGY. Pieter van Dokkum.
MW 1-2.15 QR, Sc (36)
An intensive introduction to extragalactic astronomy. The structure and contents
of galaxies, evolution of galaxies, observational cosmology, and the history of the
universe. **Prerequisite:** a strong background in high school mathematics and physics.

astr 255a/phys 295a, RESEARCH METHODS IN ASTROPHYSICS.
Charles Bailyn.
MW 1-2.15 QR, Sc Meets RP (0)
The acquisition and analysis of astrophysical data, including the design and use
of ground- and space-based telescopes, computational manipulation of digitized
images and spectra, and confrontation of data with theoretical models. Examples
taken from current research at Yale and elsewhere.

astr 310a, GALACTIC AND EXTRAGALACTIC ASTRONOMY.
Richard Larson.
TH 4-5.15 QR, Sc (27)
Basic properties of stars and their distribution in space; stellar populations and
the structure of our galaxy; external galaxies and their structure and distribution
in the universe; evolution of galaxies; galaxy interactions and active galactic
nuclei; introduction to cosmology. **Prerequisites:** MATH 115a or b and PHYS 201b
or equivalents.

astr 320b, PHYSICAL PROCESSES IN ASTRONOMY. Paolo Coppi.
3 HTBA QR, Sc (50)
Introduction to the physics required for understanding current astronomical
problems. Topics include basic equations of stellar structure, stellar and cosmic
cosmology, radiative transfer, gas dynamics, and stellar dynamics. Numerical
methods for solving these equations. **Previous experience with computer pro-
gramming recommended. Prerequisites:** MATH 120a or b and PHYS 201b or equiva-
Ients, or permission of instructor. Taught in alternate years.

[ASTR 345b/PHYS 345b, GRAVITY, ASTROPHYSICS, AND COSMOLOGY]

[ASTR 355bG, OBSERVATIONAL ASTRONOMY]

astr 360aG, INTERSTELLAR MATTER AND STAR FORMATION.
Richard Larson.
MW 10.30-11.20, 1 HTBA QR, Sc Meets RP (33)
Observations of interstellar matter at optical, infrared, radio, and X-ray wave-
lengths; dynamics and evolution of the interstellar medium including inter-
actions between stars and interstellar matter; molecular clouds and processes of
star formation. Prerequisites: MATH 120a or b and PHYS 201b or equivalents. Taught in alternate years.

3 HTBA QR, Sc Meets RP (50)
The stellar populations of our galaxy and galaxies of the Local Group. Topics include the properties of stars and star clusters, stellar evolution, and the structure and evolution of our galaxy. Prerequisites: PHYS 201b and MATH 120a or b, and one astronomy course numbered above 200. Taught in alternate years.

3 HTBA QR, Sc (50)
Introduction to the theory and techniques of radio astronomy, including radio emission mechanisms, propagation effects, antenna theory, interferometry, and spectroscopy. Discussion of specific sources such as Jupiter, radio stars, molecular clouds, radio galaxies, ETI, and the microwave background. Includes observational exercises with a small radio telescope. Prerequisites: MATH 120a or b and PHYS 201b or equivalents.

**[astr 418b]**, Stellar Dynamics
**astr 420a**, Computational Methods for Astrophysics.
Paolo Coppi.
3 HTBA QR Meets RP (0)
The analytic, numerical, and computational tools necessary for effective research in astrophysics and related disciplines. Topics include numerical solutions to differential equations, spectral methods, and Monte Carlo simulations. Applications to common astrophysical problems including fluids and N-body simulations. Prerequisites: ASTR 320b, MATH 120a or b, 222a or b or 225a or b, and 246a or b.

**astr 430b**, Galaxies. Marla Geha.
TH 10.30-11.20, 1 HTBA QR, Sc Meets RP (0)
A survey of the contents, structure, kinematics, dynamics, and evolution of galaxies; galaxy interactions and the environments of galaxies; properties of active galactic nuclei. Prerequisites: PHYS 201b and MATH 120a or b, and one astronomy course numbered above 200. Taught in alternate years.

**[astr 440a]**, Radiative Processes
MW 10.30-11.20, 1 HTBA QR, Sc (33)
The physics of stellar atmospheres and interiors. Topics include the basic equations of stellar structure, nuclear processes, stellar evolution, white dwarfs, and neutron stars. Prerequisites: PHYS 201b and MATH 120a or b. Taught in alternate years.

**[astr 465a]**, The Evolving Universe
**astr 470b**, Cosmology

**[astr 490a and 491b]**, Independent Project in Astronomy. Consult the director of undergraduate studies.
HTBA (0)
Independent project supervised by a member of the department with whom the student meets regularly. The project must be approved by the instructor and by the director of undergraduate studies; the student is required to submit a complete written report on the project at the end of the term.
BIOCHEMISTRY

(See under Molecular Biophysics and Biochemistry and under Biology.)

BIOLOGY

Directors of undergraduate studies: Melinda Smith (Ecology and Evolutionary Biology), 101 OML, 432-3837, maureen.cunningham@yale.edu, www.eeb.yale.edu; Douglas Kankel (Molecular, Cellular, and Developmental Biology), 754 KBT, 432-3839, catherine.blackmon@yale.edu, www.biology.yale.edu

FACULTY OF THE DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Professors
Leo Buss, Michael Donoghue, Jacques Gauthier, Vivian Irish, Kenneth Kidd, Jeffrey Powell, Richard Prum, Oswald Schmitz, David Skelly, Stephen Stearns, J. Rimas Vaišnys, Günter Wagner

Associate Professors
Jon Moore (Visiting), Paul Turner

Assistant Professors
Suzanne Alonzo, Antonia Monteiro, Thomas Near, David Post, Melinda Smith, Jeffrey Townsend

Lecturers
Gisella Caccone, John Cooley, Marta Martínez Wells, Terri Williams

FACULTY OF THE DEPARTMENT OF MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY

Professors

Associate Professors
Savithramma Dinesh-Kumar, Scott Holley, Christine Jacobs-Wagner, Frank Slack, David Wells, Weimin Zhong

Assistant Professors
Thierry Emonet, Martín García-Castro, Elke Stein

Lecturers
Carol Bascom-Slack, Emile Boulaap, Iain Dawson, Akiko Iwasaki, Paula Kavathas, Mary Klein, Harvey Kliman, Maria Moreno, Kenneth Nelson, Aruna Pawashe, Barry Piekos, Mark Saltzman, William Segraves, Joseph Wolenski

†A joint appointment with primary affiliation in another department or school.

The major in Biology is offered jointly by the Departments of Ecology and Evolutionary Biology (EEB) and Molecular, Cellular, and Developmental Biology (MCDB), providing students with opportunities to take courses in both departments. There are two principal areas of concentration in the major and two directors of undergraduate studies.

The science of biology is extremely broad, ranging across the domains of molecules, cells, organisms, and ecosystems. Moreover, biology explores questions of evolutionary history and the processes of evolutionary change as well as the mechanisms by which cells, organisms, and ecosystems function. Students majoring in Biology receive a thorough yet varied liberal education
and preparation for professional careers in a diverse array of fields. Practical applications of biology include the development of pharmaceuticals, the practice of medicine, and the scientific bases for understanding the history and complexity of the environment and the need for its protection.

The major in Biology offers two areas of concentration. Area of concentration I, *ecology and evolutionary biology*, is intended for students wishing to concentrate in the basic sciences underlying ecological, evolutionary, organismal, computational, conservation, and environmental biology. Area of concentration II, *molecular; cellular; and developmental biology*, offers programs for students wishing to concentrate on molecular biology and genetics and their applications to problems in cell biology, development, neurobiology, and certain aspects of computational biology. Interdisciplinary opportunities are available within Area II in the *biotechnology* and *neurobiology* tracks.

Students who are primarily interested in plant science are invited to consult with an appropriate faculty member.

The Biology major offers opportunities for independent research in both laboratory and field work. With approval, research can be conducted under the supervision of faculty members in any Yale department. Some programs for study abroad are available to Biology majors and are especially appropriate for those in Area I; approved programs can fulfill some of the requirements for the major. Interested students should consult the director of undergraduate studies and the Office of International Education and Fellowship Programs (www.yale.edu/iefp).

Students majoring in Biology must take all courses in the major for a letter grade. College seminars do not count toward the requirements of the major. The Biology major should not be taken as one of two majors with Molecular Biophysics and Biochemistry.

**Prerequisites.** The basic science courses required of all Biology majors are MCDB 120a, E&EB 122b, and either MCDB 121La or E&EB 123Lb; CHEM 112a, 113b, or 114a, 115b, or 118a taken with their appropriate laboratories as well as one term of organic chemistry with laboratory (CHEM 124a, 125b, with 126La, 127Lb satisfies both chemistry requirements); two terms of PHYS 150a, 151b or higher; and one term of MATH 115a or b or above, but not MATH 190a. The second term of organic chemistry lecture, CHEM 221b or 227a, may be used as an elective in the major. Note that the prerequisites fulfill most of the usual premedical science requirements.

**Placement.** Students who have scored 710 or higher on the SAT subject matter Biology M test, or who have scored 5 on the Advanced Placement test in biology, may be exempt from taking MCDB 120a and its associated laboratory. Students scoring 5 on the Advanced Placement biology test may also be exempt from E&EB 122b and its associated laboratory, but beginning with the Class of 2010, students are no longer permitted to place out of E&EB 122b and 123Lb using the SAT subject matter test M or E. Students with equivalent scores on one of the corresponding chemistry tests may also be exempt from taking MCDB 120a, but should first discuss their preparation in biology with the director of undergraduate studies in MCDB.

Acceleration credit awarded in chemistry, mathematics, and physics, or completion of advanced courses in those departments, is accepted instead of the relevant prerequisites for the Biology major. Students who already have mathematics preparation equivalent to MATH 115a or b or higher are encouraged to take additional mathematics, such as MATH 120a or b, 222a or b, or 225a or b.
Placement in chemistry courses is arranged by the Chemistry department. Because the required chemistry courses are prerequisite to a number of biology courses, students are strongly urged to take general and organic chemistry in the freshman and sophomore years. Students who place out of general chemistry should take organic chemistry during their freshman year. Finishing the prerequisites early allows for a more adventurous program in later years.

**Requirements of the major:** Beyond the prerequisites, the B.A. degree requires seven lecture courses or seminars, two laboratories, and the senior requirement (E&EB 470a or b, MCDB 470a or b, E&EB 475a or b, MCDB 475a or b, or the senior essay); the B.S. degree requires seven lecture courses or seminars, two laboratories, and the senior requirement (two terms of E&EB 475a and b or MCDB 475a and b or 485). The intensive B.S. degree requires, in addition to the prerequisites, seven lecture courses or seminars, two laboratories, and the senior requirement (E&EB 495 or MCDB 495).

**Core requirements for Area I, ecology and evolutionary biology, Class of 2010 and subsequent classes.** Area I majors in the Class of 2010 and subsequent classes are required to take MCDB 202a, E&EB 210a or the equivalent, E&EB 220a, and 225b.

**Electives for Area I, ecology and evolutionary biology, Class of 2010 and subsequent classes.** In addition to the four core courses, students in the Class of 2010 and subsequent classes must take three electives, one of which must be a course in organismal diversity chosen from E&EB 246b, 250a, 255b, 264a, 272b, or MCDB 290b. Students who wish to take electives from other departments should obtain the approval of the director of undergraduate studies in EEB.

**Core requirements for Area I, ecology and evolutionary biology, Class of 2009.** Students in the Class of 2009 may fulfill the same core requirements as the Class of 2010, or they may take the core courses E&EB 160a, MCDB 202a, and E&EB 210a.

**Electives for Area I, ecology and evolutionary biology, Class of 2009.** Members of the Class of 2009 must take four electives, including at least one course from each of the following three subject areas:

- **Group A, ecology:** E&EB 220a, 230a, 326a, 365a
- **Group B, evolution:** E&EB 225b, G&G 250a
- **Group C, organisms:** E&EB 246b, 250a, 255b, 264a, 272b, MCDB 290b

In Groups A and B, the course listed first is the recommended first course in that subject. One additional EEB or MCDB course numbered 140 or higher is also required. Students who wish to draw on electives in other departments should obtain the approval of the director of undergraduate studies in EEB.

**Laboratory requirement.** For all classes, two laboratories beyond the prerequisites are required for the major.

**Core requirements for Area II, molecular, cellular, and developmental biology.** Biology majors in Area II are required to take MCDB 202a, 300a or its equivalent, and either 205b or 210b. (MCDB 210b is not a core course for the biotechnology track.) Equivalents for MCDB 300a are defined as either (a) both MB&EB 300a and 301b or (b) MB&EB 300a only, if the student took MCDB 120a or 200b prior to MB&EB 300a or has the permission of the director of undergraduate studies in MCDB. For this purpose, placing out of MCDB 120a is not the equivalent of having taken MCDB 120a.
Electives for Area II, molecular, cellular, and developmental biology. In addition to the prerequisites and core requirements, the standard degree program requires four electives, including three from MCDB (numbered 150 or above), EEB (numbered 140 or above), or MB&B (numbered 200 or above), and one upper-level MCDB elective numbered 350 or higher.

Two laboratories at the 200 level or higher are also required for the standard program, one of which can be selected from courses in EEB or MB&B.

The neurobiology track requires MCDB 320A, one MCDB course numbered 350 or above, and two courses chosen from BENG 410A, CPSC 475B, MCDB 240B, 310A, 315B, 410A, 415B, 425A, 430A, 440B, 460B, PSYC 270A, 320A, 376A, and either MCDB 215A or PSYC 200B. Other courses may be substituted with the approval of the student’s track adviser. (Students should note that PSYC 110A or B is a prerequisite for many psychology courses but does not substitute as an elective in the neurobiology track.) Two laboratories chosen from MCDB courses are also required as electives. Students interested in the neurobiology track should consult an adviser for the track.

Neurobiology track advisers:  P. Forscher, 222 KBT (432-6344)
                          H. Keshishian, 640A KBT (432-3478)
                          E. Stein, 232 KBT (432-8402)
                          D. Wells, 226 KBT (432-3481)
                          R. Wyman, 610A KBT (432-3475)
                          W. Zhong, 616 KBT (432-9233)

The biotechnology track requires MCDB 370B and three courses chosen from any MCDB course numbered 150 or above, MB&B 420A, 421B, 443B, BENG 351A, 352B, 410A, 435B, 457B, 464B, CENG 210A, 411A, 412B, CPSC 437A, 445B, 470A, or 475B. Two laboratories are required: either two from MCDB (including at least one from MCDB 341LA or LB to MCDB 345LB) or BENG 355L or CENG 412B. Students interested in the biotechnology track should consult an adviser for the track.

Biotechnology track advisers:  R. Breaker, 506 KBT (432-9389)
                              X. W. Deng, 352B OML (432-8908)
                              K. Nelson, 725 KBT (432-5013)
                              M. Snyder, 926 KBT (432-6139)
                              J. Wolenski, 330 KBT (432-6912)

Many of the courses in other departments listed immediately above have prerequisites; such prerequisites can be substituted for an upper-level elective with permission of the MCDB director of undergraduate studies.

For all tracks in Area II, if both MCDB 205B and 210B are taken, one counts as a core course and the other as an elective. If both MB&B 300A and 301B are taken, one counts as a core course (in place of MCDB 300A) and one as an elective. Two laboratory courses from MCDB 342LA, 343LA, 344LB, and 345LB can be used together as one elective credit. If used as an elective, these laboratories cannot also fulfill the laboratory requirement. A relevant intermediate or advanced course from another department in science, engineering, mathematics, or statistics may be accepted as an elective with permission of the director of undergraduate studies. College seminars cannot be substituted for electives.

Senior requirement. In addition to the course requirements described above, all students must satisfy a senior requirement undertaken during the senior year. A booklet listing the requirements of each track and degree is
available in the office of the director of undergraduate studies (101 OML for Area I, 754 KBT for Area II). All students must fill out a checklist of requirements and go over it with the undergraduate registrar, Maureen Cunningham (Area I) or Catherine Blackmon (Area II), by the spring term of their junior year. For the B.A. degree the requirement can be met in any one of three ways: by submitting a senior essay of fifteen to twenty pages evaluating current research in a field of biology; by successful completion of one term of tutorial work (E&EB 470a or b or MCDB 470a or b); or by successful completion of one term of individual research (E&EB 475a or b or MCDB 475a or b).

A senior choosing to fulfill the requirement with a senior essay must consult with a faculty adviser on the scope and literature of the topic and submit the adviser’s written approval to the appropriate director of undergraduate studies no later than the course selection period of the term in which the paper is due. The senior essay may be related to the subject matter of a course, but the essay is a separate departmental requirement in addition to any work done in a course and does not count toward the grade in any course. The senior essay must be completed and submitted to the office of the director of undergraduate studies by the last day of classes. Students electing this option should obtain an approval form from the office of the director of undergraduate studies.

B.S. degree. The requirements for the B.S. degree are the same as for the B.A. degree except for the senior requirement, which differs in its greater emphasis on individual research. The senior requirement is two consecutive terms of E&EB 475a or b or MCDB 475a or b, at least one of which must be taken during the senior year, or MCDB 485. Students are expected to spend ten hours per week conducting individual research. Ordinarily, both terms of E&EB 475a or b or MCDB 475a or b are taken during the senior year, but it is possible for a student to begin work toward the senior requirement in the spring of the junior year, continue it over the summer, and complete it during the final year, an arrangement that may be particularly useful for students doing fieldwork. Yale College does not grant academic credit for summer research unless the student is enrolled in an independent research course in Yale Summer Session.

Intensive B.S. degree. Requirements for the intensive B.S. degree are the same as for the B.A. degree except that students fulfill the senior requirement by taking E&EB 495 or MCDB 495, Intensive Research, which earns four course credits. Seniors in the intensive major are expected to spend twenty hours per week conducting individual research.

It should be noted that the research courses E&EB 475a or b and 495 and MCDB 475a or b, 485, and 495 exist primarily to fulfill the senior requirement. Some students may wish to take E&EB 475a or b or MCDB 475a or b earlier in their course of study. This contributes to the thirty-six course credits required for graduation, but does not substitute for any of the other requirements of the major including the senior requirement. Students may take up to three credits in E&EB 475a or b and MCDB 475a or b (MCDB 485 counts as two terms of MCDB 475a or b in this calculation) during their undergraduate career.

Laboratory preparation for research. Students concentrating in Area II or with an interest in molecular evolution and who are planning to undertake research are advised to take one or more of the following laboratories first: MCDB 341La or Lb, 342La, 343La, 344Lb, or 345Lb.
**Combined B.S./M.S. degree program.** Exceptionally able and well-prepared students may accelerate their professional education by completing a course of study leading to the simultaneous award of the B.S. and M.S. degrees after eight terms of enrollment. Completion in fewer than eight terms is not allowed. The requirements are as follows:

1. Candidates must satisfy the Yale College requirements for the B.S. degree. In addition to the three or four core requirements (depending on track) specified for the standard major, the three or four electives must be graduate-level courses designated “G.” One of these is a graduate seminar selected with the approval of the director of undergraduate studies. Students must earn a grade of A or A– in two graduate-level courses and a grade of B– or higher in the rest.

2. Six credits outside the major must be taken in the last two years, and at least two undergraduate courses in the last two terms.

3. In addition to the courses specified above, students must complete two graduate research courses for six course credits: (a) MCDB 585b or E&EB 585b, a two-credit course typically taken in the second term of the junior year. At the start of the course, each student forms a committee comprised of the adviser and two faculty members that meets to discuss the research project. Two of the members of this committee must be members of either the MCDB or EEB faculty, as appropriate to the thesis topic. At the end of the course, the student completes a detailed prospectus describing the thesis project and the work completed to date. The committee evaluates an oral and written presentation of the prospectus and determines whether the student may continue in the combined program; (b) MCDB 595/E&EB 595, a four-credit, yearlong course that is similar to MCDB 495 and E&EB 495 and is taken during the senior year. During the course, the student gives an oral presentation describing the work. At the end of the course, the student is expected to present his or her work to the department in the form of a poster presentation. In addition, the student is expected to give an oral thesis defense, followed by a comprehensive examination of the thesis conducted by the thesis committee. Upon successful completion of this examination, as well as all other requirements, the student is awarded the combined B.S./M.S. degree.

Students must also satisfy the requirements of Yale College for the simultaneous award of the bachelor’s and master’s degrees, including the following:

1. Students must apply in writing to the appropriate director of undergraduate studies and obtain departmental approval no later than the beginning of the second term of their junior year. Applications must be submitted by November 1 in the preceding term. Students must have the approval of both the director of undergraduate studies and the director of graduate studies to receive graduate credit for the graduate courses they select.

2. Students must have two-thirds A or A– grades in all of their courses and two-thirds A or A– grades in Biology courses, including prerequisites, in order to be admitted to the program.

**Advising.** Freshmen considering a major in Biology are invited to consult with one of the two directors of undergraduate studies and/or a faculty member in EEB or MCDB who is a fellow of their residential college. Once an area of concentration is chosen, students should find a faculty adviser in the appropriate department. For assistance in identifying a suitable adviser, students should contact the undergraduate registrar, Maureen Cunningham (Area I) or Catherine Blackmon (Area II). Students in the neurobiology or
biotechnology track should consult an adviser for their track (listed above). Students in EEB should consult one of the advisers assigned to their class. The course schedules of all Biology majors (including sophomores intending to major in Biology) must be signed by a faculty member in one of the two participating departments; the signature of the director of undergraduate studies is not required. Students whose regular adviser is on leave can consult the director of undergraduate studies to arrange for an alternate.

**Area I, ecology and evolutionary biology.**

**Class of 2009:** S. Alonzo, 427 OML (432-0690)
R. Prum, 164 ESC (432-9423)

**Class of 2010:** A. Monteiro, 326A OML (432-3109)
T. Near, 370A ESC (432-3002)

**Class of 2011:** J. Powell, 170 ESC (432-3887)
S. Stearns [Sp], 360 OML (432-8452)

**Class of 2012:** M. Smith, 426A OML (432-9422)

**Area II, molecular, cellular, and developmental biology.** Any member of the MCDB department can serve as a faculty adviser to majors. College faculty advisers available to freshmen:

- **BK**, J. Wolenski
- **BR**, S. Dinesh-Kumar
- **CC**, M. Mooscker, R. Wyman
- **DC**, P. Forscher, V. Irish
- **L. N. Ornston**, W. Zhong
- **TD**, S. Holley
- **JE**, T. Nelson, R. Breaker

- **MC**, X. W. Deng, H. Keshishian
- **K. Nelson**, T. Pollard, F. Slack [F]
- **PC**, J. Carlson, C. Crews
- **SY**, C. Jacobs-Wagner, S. Roeder
- **SM**, D. Dellaporta, T. Emonet, D. Wells
- **ES**, J. Rosenbaum, M. Snyder
- **TC**, S. Altman

**Requirements of the major**

**Prerequisites:** MCDB 120a, E&EB 122b; either MCDB 121La or E&EB 123lb; Chem 112a, 113b, or 114a, 115b, or 118a, with labs, and 1 term of organic chem with lab (Chem 124a, 125b with 126La, 127Lb satisfies both reqs); Phys 150a, 151b, or above; Math 115a or b or higher (except Math 190a); all courses taken for letter grades

**Number of courses:** B.A.—7 courses and 2 labs beyond prereqs taken for letter grades, totaling 8 or 9 course credits, incl senior req; B.S.—7 courses and 2 labs taken for letter grades, totaling 10 course credits, incl senior req; Intensive B.S.—7 courses and 2 labs taken for letter grades, totaling 12 course credits, incl senior req

**Specific courses required:** Area I: Ecology and evolutionary biology, Class of 2010 and later—E&EB 210a or equivalent, E&EB 220a, 223b, MCDB 202a; Area I: Ecology and evolutionary biology, Class of 2009—E&EB 160a, MCDB 202a, E&EB 210b; Area II: Molecular, cellular, and developmental biology—Standard track—MCDB 202a, 300a, and either 205b or 210b; Neurobiology track—MCDB 202a, 300a, 320a, and either 205b or 210b; Biotechnology track—MCDB 202a, 300a, 370b

**Distribution of courses:** Area I: Ecology and evolutionary biology, Class of 2010 and later—3 electives, 1 in organismal diversity; Area I: Ecology and evolutionary biology, Class of 2009—4 electives, incl 1 from each of 3 elective groups; Area II: Molecular, cellular, and developmental biology—Standard track—3 electives from EEB numbered 140 or above, MCDB numbered 150 or above, or MB&B numbered 200 or above, and 1 addtl MCDB course numbered 350 or above; Neurobiology and biotechnology tracks—3 electives as specified

**Substitutions permitted:** Area II—1 course relevant to biology in another dept, with DUS permission, except for college sems; higher-level courses for lower-level courses, with approval of adviser or DUS.
Senior requirement:  B.A. — MCDB 470A or B, or E&EB 470A or B, or MCDB 475A or B, or E&EB 475A or B, taken in senior year, or senior essay;  B.S. — 2 terms of MCDB 475A or B or E&EB 475A or B, at least 1 in senior year, or MCDB 485;  Intensive B.S. — MCDB 495 or E&EB 495

Because the length of laboratory sessions depends on the particular experiment, only the starting times of some laboratory courses are given. Students should allow several hours for each laboratory.

INTRODUCTORY COURSES WITHOUT PREREQUISITES

*MCDB 060, Topics in Reproductive Biology. Harvey Kliman.
m 2:30-4 Sc 1 C Credit (0) Cr/Year only Fr sem
An introduction to reproductive biology, focused on selected topics in reproductive system development; physiology and endocrinology; sexuality and gender differences; and assisted reproductive technologies. Exploration of primary literature in model system and human reproductive biology. Enrollment limited to freshmen with a score of 5 on the Advanced Placement test in Biology. May be applied as an elective toward the Biology major. Preregistration required; see under Freshman Seminar Program.

MCDB 105A or B/MB&B 105A or B, An Issues Approach to Biology.
Timothy Nelson, William Summers, David Wells [F], Ronald Breaker, A. Elizabeth Rhoades, Dieter Söll [Sp].
mwf 11:35-12:25 Sc (0)
Biological concepts taught in context of current societal issues, such as stem cell research and genetically modified organisms. Emphasis on biological literacy to enable students to evaluate scientific arguments.

tth 2:30-3:45 Sc (0)
An introduction to the fundamentals of human anatomy and physiology. Enrollment limited to freshmen and sophomores.

*MCDB 109B, Immunology and Microorganisms. Paula Kavathas.
tth 1-2:15 Sc Meets RP (0)
Introduction to the human immune system and infectious microorganisms such as influenza, Chlamydia trachomatis, and HIV. Host defense mechanisms used to fight infections; the evolution of strategies by pathogens to escape host defenses. Comparison of commensal bacteria in the intestine and their interaction with the host to illustrate that microorganisms can be beneficial to human health. Enrollment limited to freshmen and sophomores.

mwf 10:30-11:20 Sc (33)
An introduction to the basic ecological and evolutionary principles underpinning efforts to conserve Earth’s biodiversity. These principles examined in the context of efforts to halt the rapid increase in disappearance of both plants and animals. Case studies examined in detail. Discussion of sociological and economic issues.

E&EB 118A/ER&M 180A, Human Genetic Variation and Evolution.
Kenneth Kidd.
tth 2:30-3:45 Sc (27)
An introduction for non-science majors to the patterns of DNA sequence variation among modern humans and the causes of those patterns. Topics include the use of DNA variation in forensics and in genealogy.

**mcdb 120a, PRINCIPLES OF MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY.** John Carlson, Carol Bascom-Slack, Frank Slack.  
**MW1 11.35–12.25 SC (34)**
Introduction to biochemistry, genetics, cell biology, and development. Emphasis on the cell as the basic unit of life; its composition, functions, replication, and differentiation. Suitable as the first step in any biological sciences major, and also for any student wishing to understand the fundamentals of biology at the molecular and cellular level. *This course is a prerequisite to MCDB courses numbered 202 or higher.*

**mcdb 121La, LABORATORY FOR PRINCIPLES OF MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY.** María Moreno.  
**TWWW or F 1.30– Sc 1/3 C Credit (0)**
A survey of the experimental techniques used in molecular, cellular, and developmental biology with an emphasis on the utility of model organisms. Exercises in basic molecular biology techniques, protein chemistry, genetic analysis, cell fractionation, microbiology, microscopy and imaging, embryogenesis, and plant and animal development. *Concurrently with or after mcdb 120a.*

**e&eb 122b, PRINCIPLES OF EVOLUTION, ECOLOGY, AND BEHAVIOR.** Stephen Stearns.  
**MW1 11.35–12.25 WR, Sc (34)**
Principles of evolution, ecology, and behavior explained and illustrated by recent advances that have changed the field. Emphasis on major events in the history and key transitions in the organization of life. Ecological processes from organisms through populations and communities to the biosphere. Foraging, mating, and selfish and cooperative behavior placed in evolutionary and ecological context. *Recommended preparation: mcdb 120a or equivalent.*

**e&eb 123Lb, LABORATORY FOR PRINCIPLES OF EVOLUTION, ECOLOGY, AND BEHAVIOR.** Marta Martínez Wells.  
**TW or TH 1.30– Sc 1/3 C Credit (0)**
Experimental approaches to organismal and population biology, including study of the diversity of life. *Concurrently with or after e&eb 122b.*

**e&eb 125b/g&g 125b, HISTORY OF LIFE.** Derek Briggs, Jacques Gauthier, Leo Hickey.  
For description see under Geology & Geophysics.

**[mcdb 140b, DEVELOPMENTAL AND STEM CELL BIOLOGY]**

**mcdb 150bG, GLOBAL PROBLEMS OF POPULATION GROWTH.**  
Robert Wyman.  
**TH 2.30–3.45; disc. HTB  SC (27)**
e&eb 160a, Diversity of Life. Terri Williams.
MW 2:30-3:45 Sc (37)
A survey of the diversity of organisms on Earth with a focus on their evolutionary history, biology, and adaptations to their environment.

[e&eb 171b, The Collections of the Peabody Museum]
[e&eb 181a, Key Issues in Evolution]

INTERMEDIATE EEB COURSES

For description see under Statistics.

MWF 10:30-11:20 Sc (33)
A broad consideration of the theory and practice of ecology, including the ecology of individuals, population dynamics and regulation, community structure, ecosystem function, and ecological interactions at broad spatial and temporal scales. Topics such as climate change, fisheries management, and infectious diseases are placed in an ecological context. Prerequisite: MATH 112a or b or equivalent.

TTh 11:35-12:50 Sc (24)
The study of evolution from both a macro- and a microevolutionary perspective. Principles of population genetics, systematics, paleontology, and molecular evolution; application of evolutionary thinking to issues in animal behavior, ecology, and molecular biology. After e&eb 122b.

e&eb 226LbG, Laboratory for Evolutionary Biology.
Gisella Caccone.
W 1:30– Sc ½ C Credit (0)
The companion laboratory to e&eb 225b. Patterns and processes of evolution, including collection and interpretation of molecular and morphological data in a phylogenetic context. Focus on methods of analysis of species-level and population-level variation in natural populations. Concurrently with or after e&eb 225b or with permission of instructor.

*e&eb 230aG/EVST 221a/F&ES 221a, Field Ecology. John Cooley.
TTh 1-5 Sc (26)
A field-based introduction to ecological research. Experimental and descriptive approaches, comparative analysis, and modeling are explored through field and small-group projects. Concurrently with or after e&eb 220a or with permission of instructor.

MW 9-10:15, 1 HTBA WR, Sc (32)
An introduction to the study of animal behavior from an evolutionary and ecological perspective. History and methods of studying animal behavior. Topics include foraging, predation, communication, reproduction, cooperation, and the role of behavior in conservation. After e&eb 122b.

[e&eb 246b, Plant Diversity and Evolution]
[e&eb 247Lb, Laboratory for Plant Diversity and Evolution]
[E&EB 248bG, Insect Development and Evolution]

[E&EB 249Lb, Laboratory for Insect Development and Evolution]

TTh 11.35-12.50 Sc (24)
Evolutionary history and diversity of terrestrial arthropods (body plan, phylogenetic relationships, fossil record); physiology and functional morphology (water relations, thermoregulation, energetics of flying and singing); reproduction (biology of reproduction, life cycles, metamorphosis, parental care); behavior (migration, communication, mating systems, evolution of sociality); ecology (parasitism, mutualism, predator-prey interactions, competition, plant-insect interactions). After E&EB 122b.

E&EB 251aG, Laboratory for Biology of Terrestrial Arthropods. Marta Martínez Wells.
Th 11.35-12.50 Sc (24)
Comparative anatomy, dissections, identification, and classification of terrestrial arthropods; specimen collection; field trips. Concurrently with or after E&EB 250a.

E&EB 255bG, Invertebrates I. Terri Williams.
MW 11.35-12.50 (34)
A systematic treatment of the invertebrate phyla, with emphasis on anatomy, functional organization, and evolutionary history. After E&EB 122b or G&G 125b or with permission of instructor.

E&EB 256LbG, Laboratory for Invertebrates I. Terri Williams.
W 2- Sc ½ C Credit (0)
Study of the anatomy of representative living invertebrates accompanied by examination of museum specimens of living and fossil invertebrates. Concurrently with E&EB 255b.

MWF 1.30-2.20 Sc (36)
A survey of fish diversity, including jawless vertebrates, chimaeras and sharks, lungfishes, and ray-finned fishes. Topics include the evolutionary origin of vertebrates, the fossil record of fishes, evolutionary diversification of major extant fish lineages, biogeography, ecology, and reproductive strategies of fishes.

T 1.30-4 Sc ½ C Credit (26)
Laboratory and field studies of fish diversity, form, function, behavior, and classification. The course primarily involves study of museum specimens and of living and fossil fishes. Concurrently with E&EB 264a.

MWF 9.25-10.15 Sc (32)
A general overview of avian biology and evolution, including the structure, function, behavior, and diversity of birds. Topics include the evolutionary origin of birds, avian phylogeny, anatomy, physiology, neurobiology, breeding systems, and biogeography.

T 2.30- Sc ½ C Credit (0)
Laboratory and field studies of avian morphology, diversity, phylogeny, classification, identification, and behavior. *Concurrently with E&EB 272b.*

**ADVANCED E&EB COURSES**

- **E&EB 326a**, Molecular Ecology
- **E&EB 340b/G EVST 363b/F&ES 340b**, Community Ecology
- **E&EB 365a/EVST 365a/F&ES 365a**, Landscape Ecology. David Skelly. For description see under Environmental Studies.
- **E&EB 390b**, Evolution of Development

**E&EB 426a**, Phylogenetics and Macroevolution.
  Thomas Near. 
  TTh 2.30–3.45 Sc (27)
  Theory and methodology of phylogenetics and the application of phylogenetic trees to the comparative study of biological variation observed in living and fossil organisms. Topics include biogeography, speciation, adaptive radiation, estimation of divergence times and “molecular clock” methods, rates of lineage diversification, and phylogeny of genes, species, and higher taxa. *Prerequisite: E&EB 225b or permission of instructor.*

**E&EB 427La**, Phylogenetics Laboratory. Thomas Near. 
  T 1.30–Sc ½ C Credit (0)
  Introduction to methods of phylogeny reconstruction and evolutionary comparative analysis. Computer lab-based exercises and lessons in obtaining genetic data from Internet resources and building phylogenetic trees. Additional topics and methods include biogeographic analyses, estimating divergence times with molecular data, and independent contrast analysis. *Prerequisite: E&EB 225b or permission of instructor.*

**E&EB RESEARCH AND TUTORIALS**

- **E&EB 470a or b**, Tutorial. Marta Martínez Wells. 
  HTBA (0)
  Individual or small-group study for qualified students who wish to investigate an area of ecology or evolutionary biology not presently covered by regular courses. A student must be sponsored by a faculty member who sets requirements and meets weekly with the student. One or more written examinations and/or a term paper are required. To register, the student must submit a written plan of study approved by the faculty instructor to the director of undergraduate studies. Students are encouraged to apply during the term preceding the tutorial. The proposal must be submitted by Wednesday, September 17, for the fall term and Wednesday, January 28, for the spring term. The final paper is due in the hands of the director of undergraduate studies by Friday, December 5, for the fall term and Monday, April 27, for the spring term. In special cases, with approval of the director of undergraduate studies, this course may be elected for more than one term, but only one term will count as an elective for the major. Normally, faculty sponsors must be members of the EEB department. *One term of this course fulfills the senior requirement for the B.A. degree if taken in the senior year.*

- **E&EB 475a or b**, Research. Marta Martínez Wells. 
  HTBA (0)
One term of original research in an area relevant to ecology or evolutionary biology. This may involve, for example, laboratory work, fieldwork, or mathematical or computer modeling. Students may also work in areas related to environmental biology such as policy, economics, or ethics. The research project may not be a review of relevant literature but must be original. In all cases students must have a faculty sponsor who oversees the research and is responsible for the rigor of the project. Students are expected to spend ten hours per week on their research projects. Using the form available from the office of undergraduate studies or from the Classes server, students must submit a research proposal that has been approved by the faculty sponsor to the director of undergraduate studies. Proposals are due Wednesday, September 17, for the fall term and Wednesday, January 28, for the spring term. The final research paper is due in the hands of the director of undergraduate studies by Friday, December 5, for the fall term and Monday, April 27, for the spring term. Fulfills the senior requirement for the B.A. degree if taken in the senior year.

*e&eb 495, Intensive Senior Research. Marta Martínez Wells.

Two terms of intensive original research during the senior year done under the sponsorship of a faculty member. Similar to other research courses except that a more substantial portion of the student’s time should be spent on the research project (an average of twenty hours per week). A research proposal approved by the sponsoring faculty member using the form available from the office of undergraduate studies or from the Classes server must be submitted to the director of undergraduate studies before reading period of the term preceding the course, usually the spring term of the junior year. Interim oral reports and a final written research paper are required. The final paper is due Monday, April 27. Fulfills the senior requirement and leads to the intensive B.S. degree.

MCDB COURSES

MCDB 120a is a prerequisite for courses numbered 202 and above.


MWF 10.30-11.20 Sc (33) A study of the central dogma and fundamental principles of molecular biology, including a detailed discussion of model organisms and experimental methodologies in biological research. Topics include chemistry of biological macromolecules, DNA and RNA structure and function, chromosome and genome organization, transcriptional and translational regulation, protein structure and function, genomics, and bioinformatics. Designed to provide an accelerated venue for MCDB majors entering the department’s core curriculum. Prerequisite: score of 5 on the Advanced Placement test in Biology.

MCDB 201Lb, Molecular Biology Laboratory. Maria Moreno.

M or W 1.30-5.30 Sc ½ C Credit Meets RP (0) Basic molecular biology training in a project-based laboratory setting. Experiments analyze gene function through techniques of PCR, plasmid and cDNA cloning, DNA sequence analysis, and protein expression and purification. Instruction in experimental design, data analysis, and interpretation. For freshmen and sophomores. Concurrently with or after MCDB 200b. Special registration procedures apply. Students must contact the instructor prior to the first week of classes.

MCDB 202a, Genetics. Stephen Dellaporta, Jeffrey Powell, Shirleen Roeder.

TTh 11.35-12.50 Sc (0)
An introduction to classical, molecular, and population genetics of both prokaryotes and eukaryotes and their central importance in biological sciences. Emphasis on analytical approaches and techniques of genetics used to investigate mechanisms of heredity and variation. Topics include transmission genetics, cytogenetics, DNA structure and function, recombination, gene mutation, selection, and recombinant DNA technology.

**MCDB 203La, Laboratory for Genetics.** Iain Dawson, Gregory Fitzgerald.

*MT or W 1:45- Sc ½ C Credit (0)*

Introduction to laboratory techniques used in genetic analysis. Different genetic model organisms—bacteria, yeast, *Drosophila*, and *Arabidopsis*—are used to provide practical experience with various classical and molecular genetic techniques including cytogenetics, mutagenesis and mutant analysis, recombination and gene mapping, isolation and manipulation of DNA, and DNA sequence analysis. *Concurrently with or after MCDB 202a.*

**MCDB 205b, Cell Biology.** Thomas Pollard, Craig Crews.

*TTH 9-10.15; disc. HTBA Sc (22)*

A comprehensive introductory course in cell biology. Emphasis on the general principles that explain the molecular mechanisms of cellular function.

**MCDB 210b, Developmental Biology.** Vivian Irish, Douglas Kankel.

*TTH 9-10.15 Sc (0)*

Cellular differentiation and its genetic and molecular control; fertilization, cleavage, and morphogenesis of plants and animals; polarity and positional information; organogenesis and development of specialized tissues; evolution and development.


For description see under Statistics.

**MCDB 230b/MB&B 230b, Rain Forest Expedition and Laboratory.** Scott Strobel, Carol Bascom-Slack.

For description see under Molecular Biophysics & Biochemistry.

**MCDB 240b, Biology of Reproduction.** Hugh Taylor, Mary Klein.

*MWF 10.30-11.20 Sc (33)*

Introduction to reproductive biology, with emphasis on human reproduction. Development and hormonal regulation of reproductive systems; sexuality, fertilization, and pregnancy; modern diagnosis and treatment of reproductive and developmental disorders; social and ethical issues. *Prerequisite: MCDB 120a, score of 5 on the Advanced Placement test in Biology, or score of 710 or above on the SAT subject matter Biology M test.*

**MCDB 241Lb, Laboratory for Biology of Reproduction and Development.** Mary Klein.

*T or TH 1.30-5 Sc ½ C Credit (0)*

Laboratory investigation of reproductive and developmental processes. Emphasis on mammalian reproduction and embryonic development in classic vertebrate and invertebrate systems. Topics include gametogenesis, ovulation, hormonal control of reproduction, and investigation of embryogenesis in the frog and the fruit fly, *Drosophila*. *Enrollment limited. Concurrently with or after MCDB 240b or 210b. Not open to freshmen.*

*Special registration procedures apply.* Students must consult the instructor prior to the first week of classes.
MCDB 290b, Microbiology. Savithramma Dinesh-Kumar, Christine Jacobs-Wagner.

TH 1-2.15 Sc (26)
Microbial evolution and diversity, cell structure of microorganisms, bacterial genetics, microbial development, chemotaxis, bioremediation, microbial genomics, host defense systems, infectious diseases, viruses, and biological weapons. *After MCDB 300a and CHEM 220a, 221b, or with permission of instructor.*

MCDB 291Lb, Laboratory for Microbiology. Iain Dawson.

TH 2.30– Sc ½ C Credit (0)
Laboratory experiments to supplement lectures of MCDB 290b. Emphasis on practical approaches used when working with microbes, primarily bacteria. Topics include microscopy, culture techniques, biochemical/metabolic assays, and basic environmental and medical microbiology. *Concurrently with or after MCDB 290b.*

MCDB 300aG/MB&B 200a, Biochemistry. L. Nicholas Ornston, Ronald Breaker, Donald Engelman.

MWF 9.25-10.15; disc. 1 HTBA Sc (32)
An introduction to the biochemistry of animals, plants, and microorganisms, emphasizing the relations of chemical principles and structure to the evolution and regulation of living systems. *After one term of organic chemistry.*

MCDB 301La/MB&B 251La, Laboratory for Biochemistry. William Konigsberg, Aruna Pawashe.

For description see under Molecular Biophysics & Biochemistry.

MCDB 310aG/BENG 350aG, Physiological Systems. Mark Saltzman and staff.

For description see under Biomedical Engineering.

MCDB 315b, Biological Mechanisms of Reaction to Injury. Michael Kashgarian, Joseph Madri, Jon Morrow, Jeffrey Sklar, A. Brian West.

TH 11.35-12.50 Sc Meets RP (0)
Human biology and disease as a manifestation of reaction to injury. Topics include organ structure and function, cell injury, circulatory and inflammatory responses, disordered physiology, and neoplasia. *Enrollment limited; preference to junior and senior majors in MCDB or MB&B. Prerequisite: MCDB 205b, 300a, or 310a.*

MCDB 320aG, Neurobiology. Haig Keshishian, Paul Forscher.

MWF 11.35-12.25 Sc (34)
The excitability of the nerve cell membrane as a starting point for the study of molecular, cellular, and intercellular mechanisms underlying the generation and control of behavior. *After a year of chemistry; a course in physics is strongly recommended.* *(Formerly MCDB 360a)*


T or W 1.30– Sc ½ C Credit (0)
Optional laboratory. Introduction to the neurosciences. Projects include the study of neuronal excitability, sensory transduction, CNS function, synaptic physiology, and neuroanatomy. *Concurrently with or after MCDB 320a.* *(Formerly MCDB 361La)*
**MCDB 341L a or Lb, Laboratory in Electron Microscopy.**
Barry Piekos.

- Sc ½ C Credit Meets RP (○)
- 341La: T 1.30–341Lb: T or W 1.30–

Techniques in light and electron microscopy. Enrollment limited; preference given to senior Biology and MB&B majors in fall term only; students must devote two to three additional laboratory hours per week. Students should contact the instructor prior to the first week of classes. Recommended to be taken after or concurrently with MCDB 205b.

(Formerly MCDB 351L a or Lb)

**MCDB 342L a, Laboratory in Nucleic Acids I.** Kenneth Nelson.

- Th 1.30– Sc ½ C Credit (○)

A project from a research laboratory within the MCDB department, using many of the technologies from molecular and cell biology. Laboratories meet twice a week for the first half of the term. With or after MCDB 202a, 205b, or 300a. Enrollment limited.

Special registration procedures apply. Students must consult the instructor prior to the first week of classes. (Formerly MCDB 352L a)

**MCDB 343L a, Laboratory in Nucleic Acids II.** Kenneth Nelson.

- Th 1.30– Sc ½ C Credit (○)

Continuation of MCDB 342L a to more advanced methods and techniques in molecular and cell biology, including projects such as making and screening cDNA libraries or microarray screening and analysis. Laboratories meet twice a week for the second half of the term. After MCDB 342L a or with permission of instructor. Enrollment limited.

Special registration procedures apply. Students must consult the instructor prior to the first week of classes. (Formerly MCDB 353L a)

**MCDB 344L b, Experimental Techniques in Cellular Biology.**
Joseph Wolenski.

- MW 1.30–6.30 Sc ½ C Credit (○)

A problems-based approach to questions in cell and molecular biology, with emphasis on experimental strategies and techniques. Topics include SDS-page, immunoblots, column chromatography, mammalian cell culture, cell fractionation, light microscopy, drug studies, bacterial cultures, and methods of transfection and transformation. Prepares for MCDB 475a or b or 485 or 495. Enrollment limited. Prerequisite: MCDB 205b.

Special registration procedures apply. Students must contact the instructor by October of the fall term for spring registration. (Formerly MCDB 354L b)

**MCDB 345L b, Experimental Strategies in Cellular Biology.**
Joseph Wolenski.

- MW 1.30–6.30 Sc ½ C Credit (○)

Continuation of MCDB 344L b, with increased emphasis on experimental design and interpretation of data. Research projects are semi-independent. Focus on developing a research project in modern biomedical research. Students engage in multiple journal discussions and oral presentations of data. Prepares for MCDB 475a or b or 485 or 495. Enrollment limited. Prerequisite: MCDB 344L b.

Special preregistration procedures apply. Students must contact the instructor by October of the fall term for spring registration. (Formerly MCDB 355L b)

MCDB 347L b, Advanced Biological Techniques Lab.

- Michael Snyder, Xing-Wang Deng, Savithramma Dinesh-Kumar, Martín García-Castro, Kenneth Nelson.

- MW 1-5 (○)
Advanced students are familiarized with state-of-the-art laboratory technologies. Students carry out four or five research projects in genomics, proteomics, animal development, HTP chemical screening, and plant sciences, or bring their own projects.

[MCDB 356a, **Experimental Strategies in Molecular Cell Biology**]

**MCDB 361b**/**AMTH 465b**, **Systems Modeling in Biology.**  
Thierry Emonet, Steven Kleinstein, Simon Mochrie, Xiao Jing Wang, Steven Zucker.  
TTh 2:30-3:45 QR, Sc (0)  
Introduction to the techniques of integrating mathematics, physics, and engineering into the analysis of complex living systems. Use of these techniques to address questions about the design principles of biological systems. Discussion of experiments and corresponding mathematical models. Students build their own models using MATLAB. (Formerly MCDB 346b)

**MCDB 370b**, **Biotechnology.**  
Michael Snyder, Kenneth Nelson, Ronald Breaker, Joseph Wolenski.  
MW 11:35-12:50 Sc (34)  
The principles and applications of cellular, molecular, and chemical techniques that advance biotechnology. Topics include the most recent tools and strategies used by industrial labs, academic research, and government agencies to adapt biological and chemical compounds as medical treatments, as industrial agents, or for the further study of biological systems. Prerequisite: MCDB 200b or 202a.

**MCDB 375b**, **Advances in Plant Molecular Biology.**  
Vivian Irish.  
m 7-8.50 p.m. Sc (0)  
Discussion and critical evaluation of selected research papers emphasizing recent advances in plant molecular biology. Topics include molecular genetic approaches to dissecting signaling events, pattern formation, epigenetic control of plant growth, and plant biotechnology. Focus on higher plants and model plant systems. Intended for advanced students after completion of at least one MCDB core course or equivalent.

**MCDB 387b**, **The Eukaryotic Cell Cycle.**  
Iain Dawson.  
T or Th 7-8.50 p.m. Sc (0)  
The regulation and coordination of the eukaryotic cell cycle examined by means of a detailed critique of primary literature. Particular attention to the processes of development, differentiation, and oncogenic disease. Enrollment limited, with preference to juniors and seniors. Prerequisite or corequisite: MCDB 202a or 205b.  
Special registration procedures apply. Students must contact the instructor prior to the first week of classes.

**MCDB 410a**, **Molecular Basis of Development.**  
Xing-Wang Deng, Frank Slack, Weimin Zhong.  
TTh 2:30-3:45 Sc (27)  
The molecular mechanisms of cell signaling and development in multicellular organisms and their relevance to human diseases. Topics include the basics of cell signaling and experimental model organisms, cell proliferation and death, cell specification and determination, cell migration, hormonal regulation, and environmental regulation. Intended for advanced students after completion of at least one MCDB core course or equivalent.
MCDB 415bG, Cellular and Molecular Physiology.
Emile Boulpaep, Frederick Sigworth.

MWF 9.25-10.15 Sc (32)
Study of the processes that transfer molecules across membranes. Topics include the different classes of molecular machines that mediate membrane transport. Emphasis on interactions among transport proteins in determining the physiologic behaviors of cells and tissues. Intended for seniors majoring in the biological sciences. Recommended preparation: MCDB 205b, 310a, 320a, or permission of instructor.

Tian Xu, Michael Koelle, Shirleen Roeder, and staff.

For description see under Molecular Biophysics & Biochemistry.

Akiko Iwasaki, Ann Haberman, Kevan Herold, Susan Kaech, Ruslan Medzhitov, David Schatz, Brian Su.

MWF 9.25-10.15 Sc (32)
The development of the immune system. Cellular and molecular mechanisms of immune recognition. Effector responses against pathogens; autoimmunity. After MCDB 300a. (Formerly MCDB 330a)

MCDB 435a, Landmark Papers in Cell Biology: The Cytoskeleton and Disease.
Joel Rosenbaum, Mark Mooscker.

2 HTBA Sc (50)
Discussion and critical evaluation of selected research papers that were important in determining the directions of modern cell biological research. Emphasis on the nature of the problem, evaluation of the experimental approaches and results, and the authors’ interpretation of the results. Students should contact the instructor prior to the first week of classes. Prerequisites: courses in cell biology, biochemistry, and genetics, or permission of instructor.

MCDB 440bG, Brain Development and Plasticity.
Weimin Zhong, Elke Stein.

MW 2.30-3.45 Sc (37)
Recent advances in scientific understanding of brain development and plasticity, including neuronal determination, axon guidance, synaptogenesis, and developmental plasticity. Prerequisite: MCDB 320a or permission of instructor.

MCDB 452bG/CPSC 452b/MB&B 452bG, Genomics and Bioinformatics.
Mark Gerstein, Michael Snyder, and staff.

For description see under Molecular Biophysics & Biochemistry.

MCDB 460bG, Cell Biology of the Neuron.
Elke Stein, Sreeganga Chandra.

TTH 11.35-12.50 Sc (0)
A comprehensive introduction to neuronal cell biology. Basic principles of cell biology reviewed in the context of the developing nervous system. Membrane trafficking, receptor mechanisms, neurotrophin signaling, neuronal cytoskeleton, axon guidance, and synapse formation and maintenance. Prerequisite: one course in cell biology.

MCDB 470a or b, Tutorial.
Douglas Kankel.

HTBA (0)
Individual or small-group study for qualified students who wish to investigate a broad area of experimental biology not presently covered by regular courses.
A student must be sponsored by a Yale faculty member, who sets the requirements. The course must include one or more written examinations and/or a term paper. This is intended to be a supplementary course and, therefore, to have weekly or biweekly discussion meetings between the student and the sponsoring faculty member. To register, the student must prepare a form, available in the office of the director of undergraduate studies, and a written plan of study with bibliography, approved by the adviser. The form and proposal must be uploaded to the Classes server or submitted to the course instructor in 754 KBT by Wednesday, September 10, for the fall term and Monday, January 19, for the spring term. The final paper is due in the hands of the sponsoring faculty member, with a copy to the course instructor, by the beginning of reading period. In special cases, with approval of the director of undergraduate studies, this course may be elected for more than one term, but only one term will count as an elective for the major. One term of this course fulfills the senior requirement if taken in the senior year. Additional sections offered in Beijing, China, under the supervision of Xing-Wang Deng. See under Peking University–Yale University Joint Undergraduate Program.

**MCDB 475a or b, Research.** Mark Mooseker, L. Nicholas Ornston.

*HTBA (0)*

Research projects under faculty supervision, ordinarily taken to fulfill the senior requirement. This course may be taken before the senior year, but it cannot substitute for other requirements. Students are expected to spend approximately ten hours per week in the laboratory, and to make presentations to students and advisers at monthly section meetings. At the beginning of the term the student must submit a written proposal of research approved by the Yale faculty sponsor and the instructor in charge of the course. A final research report is required before a grade is given. Students who take this course more than once must reapply each term; students planning to conduct two terms of research should consider enrolling in MCDB 485. Students should line up a research laboratory during the term preceding the research. Guidelines for the course should be obtained from the office of the director of undergraduate studies or downloaded from the Classes server. Written proposals are due Wednesday, September 10, for the fall term and Monday, January 19, for the spring term. One term of this course fulfills the senior requirement if taken in the senior year. Additional sections offered in Beijing, China, under the supervision of Xing-Wang Deng. See under Peking University–Yale University Joint Undergraduate Program.

**MCDB 485, Research in Biology.** Mark Mooseker, L. Nicholas Ornston.

*HTBA (0)* *Cr/Year only*

Individual two-term laboratory research projects under the supervision of a faculty member. Students are expected to spend ten to twelve hours per week in the laboratory, and to make presentations to students and advisers at monthly discussion groups. Written assignments include a research proposal, due at the beginning of the first term, and a research report that summarizes experimental results, due at the end of the second term. Students should line up a research laboratory during the term preceding the research. Guidelines for the course should be obtained from the office of the director of undergraduate studies or downloaded from the Classes server. Written proposals are due Wednesday, September 10, 2008. Fulfills the senior requirement if taken in the senior year.

**MCDB 495, Intensive Research in Biology.** Mark Mooseker, L. Nicholas Ornston.

*HTBA 4 C Credits (0)* *Cr/Year only*
Qualified students may undertake directed research in some field of biology during the senior year. Before registering for this course, the student must be accepted for a research project by a Yale faculty member with a research program in experimental biology and obtain the approval of the instructor in charge of the course. Students spend approximately twenty hours per week in the laboratory, and make written and oral presentations of their research to students and advisers. Guidelines for the course are covered in detail in an information sheet that students should obtain from the office of the director of undergraduate studies early in the final term of the junior year. A written proposal must be submitted by Wednesday, September 10, 2008. *Fulfills the senior requirement if taken in the senior year.*

**GRADUATE COURSES OF INTEREST TO UNDERGRADUATES**

Graduate courses in the biological and biomedical sciences that may be of interest to undergraduates are listed in the bulletin of the Graduate School and many are posted at [http://info.med.yale.edu/bbs](http://info.med.yale.edu/bbs). Additional information is available from the directors of undergraduate and graduate studies. Undergraduates with an appropriate background may enroll with the permission of the director of graduate studies and the instructor.

**BIOMEDICAL ENGINEERING**

Director of undergraduate studies: James Duncan, 332 BML, 785-2427, 313 MEC, 432-9917, james.duncan@yale.edu

**FACULTY OF THE DEPARTMENT OF BIOMEDICAL ENGINEERING**

**Professors**
- Richard Carson, R. Todd Constable, James Duncan (*Electrical Engineering*), Douglas Rothman, Mark Saltzman (*Chemical Engineering*), Frederick Sigworth, Steven Zucker (*Electrical Engineering*)

**Associate Professors**
- Francesco d’Errico, Fahmeed Hyder, Laura Niklason, Lawrence Staib (*Electrical Engineering*), Hemant Tagare

**Assistant Professors**
- Robin de Graaf, Tarek Fahmy, Themis Kyriakides, Mark Laubach, Erin Lavik (*Chemical Engineering*), Michael Levene, Xenophon Papademetris

**Lecturers**
- Paul Ivancic, Eric Stern

Engineering methods and strategies are used to address important biomedical problems ranging from studies of physiological function using images to the development of artificial organs and new biomaterials. The major in Biomedical Engineering is designed to provide students with an understanding of the common methodologies that underlie many of these problems as well as the ability to develop quantitative approaches to understanding one of three biomedical engineering fields in more detail.

The flexible course structure of the major permits students to understand and bridge basic concepts in the life sciences and at least one of the traditional engineering disciplines offered at Yale, while also gaining a comprehensive understanding of biomedical engineering as a field of study.

**Requirements of the major:** The B.S. degree program in Biomedical Engineering offers three tracks: the bioimaging track, the biomechanics track, and the molecular engineering track.
During the freshman year, students study basic mathematics, chemistry, and biology. By the end of the sophomore year, they have taken physics, ENAS 194A or B, and BENG 350A, Physiological Systems. In the junior year, students obtain a comprehensive grounding in the field through taking BENG 351A and 352B, Biomedical Engineering I and II, and BENG 355L, Biomedical Engineering Laboratory, as well as an elective in one of the three areas of concentration in order to prepare for more advanced work. During the remainder of the junior and senior years, students acquire depth in one of the three areas of concentration. A senior seminar and a senior project permit students to gain practical, detailed information about their chosen area of concentration.

The following courses are prerequisite to the major for students in all tracks: MCDB 120A; CHEM 112A, 114A, or 118A; ENAS 194A or B; MATH 112A or B, 115A or B; MATH 120A or B or ENAS 151A; PHYS 180A, 181B, 205La or Lb, and 206La or Lb (or 165La and 166Lb, with permission of the director of undergraduate studies).

Students must complete ten term courses, totaling nine course credits, beyond the prerequisites, including at least three required courses in the chosen track, both terms of the Biomedical Engineering Laboratory (BENG 355L), and the two-term senior requirement.

All students in the major are required to take the following three term courses and one yearlong laboratory course: BENG 350A, 351A, 352B, and 355L. Students in the bioimaging track must also take three courses chosen from EENG 310B, BENG 410A, 421B, 436B, 445A, 449B, or CPSC 475B. Students in the biomechanics track must also take three courses chosen from MENG 185B, 280A, 361A, BENG 410A, 434A, or 457B. Students in the molecular engineering track must also take three courses chosen from BENG 410A, 434A, 435B, 464B, MENG 361A, or MB&B 300A. Any relevant course may be substituted with the permission of the director of undergraduate studies. By the end of senior year, two courses in the life sciences must have been included among the prerequisite and required courses for the major.

Senior requirement. In their senior year, all students must complete a one-term senior project in their final term of enrollment (BENG 471A or 472B) and the senior seminar (BENG 480A).

Credit/D/Fail option. No course taken Credit/D/Fail may count toward the major, including prerequisites.

Select Program in Engineering. Qualified students majoring with a B.S. degree in Biomedical Engineering may be eligible to apply for a special program that includes industry research experience. See under Engineering.

Preparation for graduate study. The Biomedical Engineering curriculum is excellent preparation for graduate study in engineering, science, and medicine. In some cases, organic chemistry and/or certain biology courses may be substituted for courses in any one of the tracks after consultation with the director of undergraduate studies.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** MCDB 120A; CHEM 112A, 114A, or 118A; ENAS 194A or B; MATH 112A or B, 115A or B; MATH 120A or B or ENAS 151A; PHYS 180A, 181B, and 205La or Lb, 206La or Lb (or 165La and 166Lb with DUS permission)

**Number of courses:** 10 term courses, totaling 9 course credits, beyond prereqs (incl senior req)

**Distribution of courses:** 2 courses in life sciences among prereq and req courses
Specific courses required:  
**All tracks**—BENG 350a, 351a, 352b, 355L; 
**Bioimaging track**—3 from EENG 310b, BENG 410a, 421b, 436b, 445a, 449b, or CPSC 473b; 
**Biomechanics track**—3 from MENG 185b, 280a, 361a, BENG 410a, 434a, or 457b; 
**Molecular engineering track**—3 from BENG 410a, 434a, 435b, 464b, MENG 361a, or MB&B 300a

Substitution permitted: Relevant course with DUS permission

Senior requirement: Senior project (BENG 471a or 472b) and senior sem (BENG 480a)

### BENG 100b, Frontiers of Biomedical Engineering.
Mark Saltzman.  
**TTh 10.30-11.20, Th 1-4 Sc (23)**  
The basic concepts of biomedical engineering and their connection with the spectrum of human activity. Introduction to the fundamental science and engineering on which biomedical engineering is based. Case studies of drugs and medical products illustrate the product development–product testing cycle, patent protection, and FDA approval. Designed for science and non–science majors.

### BENG 350aG/MCDB 310aG, Physiological Systems.
Mark Saltzman and staff.  
**MWF 9.25-10.15 Sc (32)**  
Regulation and control in biological systems, emphasizing human physiology and principles of feedback. Biomechanical properties of tissues emphasizing the structural basis of physiological control. Conversion of chemical energy into work in light of metabolic control and temperature regulation. **Prerequisites:** CHEM 113b or 115b or PHYS 180a and 181b, MCDB 120a.

### BENG 351a/CENG 351a, Biomedical Engineering I: Quantitative Physiology.
Eric Stern.  
**TTh 11.35-12.50 QR, Sc (24)**  
Together with the companion course BENG 352b, a yearlong presentation of the fundamentals of biomedical engineering. Demonstration of the use of engineering analysis and synthesis in problems in the life sciences and medicine; focus on modeling of molecular physiological processes and design of artificial organs. Lectures are coordinated with BENG 350a to illustrate how engineering analysis can be used to understand physiological processes. Additional topics include pharmacokinetics, heat and mass transfer in physiological systems, hemodialysis, drug delivery, and tissue engineering. **Concurrently with** BENG 350a. **Prerequisites:** MCDB 120a, CHEM 112a, 114a, or 118a; PHYS 180a, 181b; MATH 115a or b; ENAS 194a or b.

### BENG 352b/EENG 352b, Biomedical Engineering II.
James Duncan, Fahmeed Hyder.  
**TTh 11.35-12.50 QR, Sc (24)**  
In conjunction with BENG 351a, a comprehensive introduction to the field of biomedical engineering. Topics include biosignals, medical imaging, mathematical modeling of biosystems, and biomechanics. **Prerequisites:** PHYS 180a and 181b, MATH 115a or b, and ENAS 194a or b.

### BENG 355L, Biomedical Engineering Laboratory.
Lawrence Staib.  
**M or T 1-5 Sc ½ C Credit per term (0)**

Introduction to laboratory techniques and tools used for physiological measurement in biomedical engineering. Topics include bioelectric measurement, bioimaging technologies, signal processing, and dialysis. **Enrollment limited.**
**BENG 410a, Physical and Chemical Basis of Bioimaging and Biosensing.** Douglas Rothman, Frederick Sigworth.

**TTh 1-2.15** QR, Sc (26)

Basic principles and technologies for sensing the chemical, electrical, and structural properties of living tissues and of biological macromolecules. Topics include magnetic resonance spectroscopy, microelectrodes, fluorescent probes, chip-based biosensors, X-ray and electron tomography, and MRI. **Prerequisites:** BENG 351a and 352b or permission of instructor.

**BENG 421bG, Physics of Medical Imaging.** R. Todd Constable.

**MW 11.35-12.50** QR, Sc (34)

The physics of image formation, with special emphasis on techniques with medical applications. Emphasis on concepts common to different types of imaging, along with understanding how information is limited by physical phenomena. Topics include mathematical concepts of image analysis; formation of images by ionizing radiation; ultrasound; NMR and other energy forms; and methods of evaluating image quality. **Prerequisites:** ENAS 194a or b, and PHYS 180a, 181b, or 200a, 201b, and EENG 310b, or permission of instructor.

**BENG 434a, Biomaterials.** Erin Lavik.

**TTh 9-10.15** Sc (22)

Introduction to the major classes of biomedical materials: ceramics, metals, and polymers. Their structure, properties, and fabrication connected to biological applications, from implants to tissue-engineered devices and drug delivery systems. **Prerequisite:** CHEM 113b or 115b; organic chemistry recommended.

**BENG 435b G, Biomaterial-Tissue Interactions.** Themis Kyriakides.

**MW 2.30-3.45** Sc (37)

Study of the interactions between tissues and biomaterials, with an emphasis on the importance of molecular- and cellular-level events in dictating the performance and longevity of clinically relevant devices. Attention to specific areas such as biomaterials for tissue engineering and the importance of stem/progenitor cells, as well as biomaterial-mediated gene and drug delivery. **Prerequisites:** CHEM 112a, 114a, or 118a, and MCDB 120a, or equivalents.

**BENG 436bG, Biophotonics and Optical Microscopy.** Michael Levene.

**MW 4-5.15** (37)

A review of linear and nonlinear optical microscopies and other biophotonics applications. Topics include wide-field techniques, linear and nonlinear laser scanning microscopy, fundamentals of geometrical and physical optics, optical image formation, laser physics, single molecule techniques, fluorescence correlation spectroscopy, and light scattering. Discussion of fluorescence and the underlying physics of light-matter interactions that provide biologically relevant signals.


**MW 4-5.15** (37)

A study of the basic computational principles related to processing and analysis of biomedical images (e.g., magnetic resonance, computed X-ray tomography, fluorescence microscopy). Basic concepts and techniques related to discrete image representation, multidimensional frequency transforms, image enhancement, motion analysis, image segmentation, and image registration. **Prerequisite:** EENG 310b or permission of instructors. Recommended preparation: familiarity with probability theory.
beng 449bG, Biomedical Data Analysis. Richard Carson.

MWF 9.25-10.15 QR (32)

Introduction to the analysis of biological and medical data associated with applications of biomedical engineering. Provides basics of statistics and analytical approaches for determination of quantitative biological parameters from experimental data. Prerequisite: MATH 120a or b or ENAS 151a. After or concurrently with ENAS 194a or b. (Formerly beng 349b)

beng 457bG/meng 457b, Biomechanics. Staff.

TH 2.30-3.45 QR, Sc Meets RP (27)

An introduction to the application of mechanical engineering principles to biological materials and systems. Topics include ligament, tendon, bone, muscle; joints, gait analysis; exercise physiology. The basic concepts are directed toward an understanding of the science of orthopedic surgery and sports medicine. Prerequisites: MENG 280a and 383a or permission of instructor.

beng 464b, Tissue Engineering. Erin Lavik.

MW 9.25-10.15, W 2.30-4.20 Sc (0)

Introduction to the major aspects of tissue engineering, including materials selection, scaffold fabrication, cell sources, cell seeding, bioreactor design, drug delivery, and tissue characterization. Class sessions include lectures and hands-on laboratory work. Prerequisite: CHEM 112a, 114a, or 118a. Recommended preparation: organic chemistry.

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*beng 471a and 472b, Special Projects. Consult the director of undergraduate studies.

HTBA (0)

Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory), engineering design, or tutorial study. Students are expected to consult the director of undergraduate studies and appropriate faculty members about ideas and suggestions for suitable topics. This course is usually taken during the spring term of the senior year but with permission of the director of undergraduate studies can be taken any time during a student's career, and may be taken more than once. Permission of both the instructor and the director of undergraduate studies is required.

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*beng 480aG, Seminar in Biomedical Engineering. Staff.

W 1-3 (0)

Oral presentations and written reports by students analyzing papers from scientific journals on topics of interest in biomedical engineering, including discussions and advanced seminars from faculty on selected subjects.

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TH 3.30-5.30 Sc (0)

The neuroenergetic and neurochemical basis of several dominant neuroimaging methods, including fMRI. Topics include technical aspects of different methods, interpretation of results, and controversies or challenges regarding the application of fMRI and related methods in medicine.

BIOPHYSICS

(See under Molecular Biophysics and Biochemistry.)
BRITISH STUDIES
(Courses at the Paul Mellon Centre in London)

During the spring term, the Yale-in-London program at the Paul Mellon Centre for Studies in British Art, located in central London, offers four courses in British studies covering British history, history of art, literature, and drama. Information about courses offered in spring 2009 and application forms will be available by September 15, 2008, at www.yale.edu/yaleinlondon. Inquiries may also be directed to the Yale-in-London office, Yale Center for British Art, 1080 Chapel Street (P.O. Box 208280, New Haven, CT 06520-8280), 432-2824. The application deadline for spring term 2009 is Friday, October 10, 2008. Students will be notified of acceptance within one month of the application deadline. Inquiries about the summer program, described in chapter I, should be directed to the same office. Applications for summer 2009 are due Friday, January 9, 2009.

CHEMICAL ENGINEERING

Director of undergraduate studies: Paul Van Tassel, 304 ML, 432-7983, paul.vantassel@yale.edu

FACULTY OF THE DEPARTMENT OF CHEMICAL ENGINEERING

Professors
Eric Altman, Gaboury Benoît, Menachem Elimelech, Abbas Firoozabadi (Adjunct), Thomas Graedel, Gary Haller, Edward Kaplan, Michael Loewenberg, Robert McGraw (Adjunct), Lisa Pfefferle, Joseph Pignatello (Adjunct), Daniel Rosner, James Saiers, Mark Saltzman, T. Kyle Vanderlick, Paul Van Tassel, Kurt Zilm

Associate Professors
Yéhia Khalil (Adjunct), William Mitch

Assistant Professors
†Michelle Bell, †Eric Dufresne, †Tarek Fahmy, Jodie Lutkenhaus, Chinedum Osuji, Jordan Pecia, André Taylor, Corey Wilson, Julie Zimmerman

Lecturer
James Wallis

†A joint appointment with primary affiliation in another department or school.

Chemical engineering has made significant contributions to a diverse range of scientific and technological developments such as drug delivery devices, microfluidic devices, environmental remediation, fuel cells, semiconductor processing, and enzyme design using biomimetics. The far-reaching impact of chemical engineering can be attributed to its focus on basic principles from physics, chemistry, and biology and its systematic approach to problem solving and analysis.

The Chemical Engineering program is focused on fundamental engineering science. The curriculum provides a strong background in basic science (mathematics, chemistry, physics) and the analysis of experiments and problems in the chemical engineering sciences (thermodynamics, chemical kinetics, fluid mechanics, and transport phenomena). A special feature of the program is the accessibility of laboratory research. Most majors participate in research with faculty members, often leading to a refereed journal publication.
A major in Chemical Engineering prepares graduates for a wide range of career options. Recent graduates have become professors, scientists at national laboratories, doctors, lawyers, managers, and policy makers.

The program has three central objectives: to provide graduates with an excellent engineering science background for graduate study in chemical, biomedical, and environmental engineering programs, as well as superior scientific and analytical preparation for medical school and law school; to prepare graduates for a diverse range of industrial careers through experience in chemical engineering design, process control, economics, safety, and ethics; and to provide graduates with a broad education that combines rigorous courses for the Chemical Engineering major with the Yale College distributional requirements.

Students considering the Chemical Engineering major are encouraged to take two terms of chemistry and mathematics during their freshman year. Interested students should contact the director of undergraduate studies.

Requirements of the major. Two degree programs are offered: a B.S. degree in Chemical Engineering that is accredited by the Accreditation Board for Engineering and Technology (ABET) and an unaccredited B.S. degree in Engineering Sciences (Chemical) that provides more flexibility for course work in other fields.

Prerequisites. Students in both degree programs take the following prerequisite courses: MATH 112a or b, 115a or b, and ENAS 151a or equivalent; PHYS 180a, 181b; CHEM 114a, 115b, 116La, and 117Lb, or CHEM 118a; ENAS 130b. Students with advanced high school preparation may reduce the number of prerequisites.

B.S. degree program in Chemical Engineering. The curriculum for the ABET-accredited B.S. degree in Chemical Engineering includes the following required courses beyond the prerequisites:

1. Mathematics: ENAS 194a or b or equivalent, and MATH 222a or b or another advanced term course in mathematics or computer science
2. Chemistry: CHEM 220a or 225b; 221b or 227a; 332a, 333b, and 330La
3. Engineering science: MENG 361a and two term courses chosen from engineering or science electives
4. Chemical engineering: CENG 210a, 300a, 301b, 315b, 411a, 412b, 480a

Senior requirement. In their senior year students must pass CENG 416b, Chemical Engineering Process Design.

B.S. degree program in Engineering Sciences (Chemical). The curriculum for the B.S. degree in Engineering Sciences (Chemical) consists of ten term courses beyond the prerequisites, chosen in consultation with the director of undergraduate studies. The standard program includes the following courses:

1. Mathematics: ENAS 194a or b or equivalent
2. Chemistry: CHEM 220a or 225b, and 221b or 227a; or 332a, 333b
3. Engineering science: MENG 361a
4. Chemical engineering: CENG 210a, 300a, 301b, 315b, 411a

Senior requirement. In their senior year students must complete a senior research project in CENG 490a or b.

Select Program in Engineering. Qualified students majoring with a B.S. degree in Chemical Engineering or Engineering Sciences (Chemical) may be eligible to apply for a special program that includes industry research experience. See under Engineering.
REQUIREMENTS OF THE MAJOR

CHEMICAL ENGINEERING, B.S.

Prerequisites: MATH 112a or b, 115a or b, ENAS 151a or equivalent; CHEM 114a, 115b, 116La, and 117b, or CHEM 118a; PHYS 180a, 181b; ENAS 130b

Number of courses: 18 term courses beyond prereqs (incl senior req)

Specific courses required: ENAS 194a or b or equivalent; CHEM 220a or 225b; 221b or 227a; 332a, 333b, and 330La; MENG 361a; CENG 210a, 300a, 301b, 315b, 411a, 412b, 480a

Distribution of courses: 1 addtl advanced term course in math or comp sci; 2 addtl electives in engineering or science

Senior requirement: CENG 416b

ENGINEERING SCIENCES (CHEMICAL), B.S.

Prerequisites: MATH 112a or b, 115a or b, ENAS 151a or equivalent; CHEM 114a, 115b, 116La, and 117Lb, or CHEM 118a; PHYS 180a, 181b; ENAS 130b

Number of courses: 10 term courses beyond prereqs (incl senior req)

Specific courses required: ENAS 194a or b or equivalent; CHEM 220a or 225b, and 221b or 227a, or 332a, 333b; MENG 361a; CENG 210a, 300a, 301b, 315b, 411a

Senior requirement: CENG 490a or b

ceng 120b/enas 120b/enve 120b, Introduction to Environmental Engineering. Jordan Peccia.

For description see under Environmental Engineering.

ceng 210a/enve 210a, Principles of Chemical Engineering and Process Modeling. André Taylor.

MW 1-2.15 QR, Sc Meets RP (36)

Analysis of the transport and reactions of chemical species as applied to problems in chemical, biochemical, and environmental systems. Emphasis on the interpretation of laboratory experiments, mathematical modeling, and dimensional analysis. Lectures include classroom demonstrations. Prerequisite: MATH 120a or b or ENAS 151a or permission of instructor.

ceng 300a, Chemical Engineering Thermodynamics.

Chinedum Osuji.

MW 11.35-12.50 QR, Sc Meets RP (34)

Analysis of equilibrium systems. Topics include energy conservation, entropy, heat engines, Legendre transforms, derived thermodynamic potentials and equilibrium criteria, multicomponent systems, chemical reaction and phase equilibria, systematic derivation of thermodynamic identities, criteria for thermodynamic stability, and introduction to statistical thermodynamics. Prerequisite: MATH 120a or b or ENAS 151a or permission of instructor.

ceng 301b, Chemical Kinetics and Chemical Reactors.

Jodie Lutkenhaus.

MW 11.35-12.50 QR, Sc Meets RP (34)

Physical-chemical principles and mathematical modeling of chemical reactors. Topics include homogeneous and heterogeneous reaction kinetics, catalytic reactions, systems of coupled reactions, selectivity and yield, chemical reactions with coupled mass transport, nonisothermal systems, and reactor design. Applications from problems in environmental, biomedical, and materials engineering. Prerequisite: ENAS 194a or b or permission of instructor.


MW 1-2.15 QR, Sc Meets RP (36)
Unified treatment of momentum, energy, and chemical species transport including conservation laws, flux relations, and boundary conditions. Topics include convective and diffusive transport, transport with homogeneous and heterogeneous chemical reactions and phase change, and interfacial transport phenomena. Emphasis on problem analysis and mathematical modeling, including problem formulation, scaling arguments, analytical methods, approximation techniques, and numerical solutions. Prerequisite: ENAS 194a or b or permission of instructor.

ceng 351a/beng 351a, Biomedical Engineering I: Quantitative Physiology. Eric Stern.
For description see under Biomedical Engineering.

ceng 373a/enve 373a, Air Pollution Control. Lisa Pfefferle.
For description see under Environmental Engineering.

*CEng 377b/Enve 377b, Water Quality Control. William Mitch.
For description see under Environmental Engineering.

ceng 411a, Separation and Purification Processes.
Daniel Rosner.
MW 2.30-3.45 QR, Sc Meets RP (37)
Theory and design of separation processes for multicomponent and/or multiphase mixtures via equilibrium and rate phenomena. Topics include single-stage and cascaded absorption, adsorption, extraction, distillation, partial condensation, filtration, and crystallization processes. Applications to environmental engineering (air and water pollution control), biomedical-chemical engineering (artificial organs, drug purification), food processing, and semiconductor processing. Prerequisite: Ceng 300a or 315b or permission of instructor.

ceng 412b, Chemical Engineering Laboratory. Yehia Khalil.
W 12-4 Sc Meets RP (36)
Basic experiments in chemical engineering science, including interpretation, analysis, and modeling of experimental results. Typical experiments include liquid level control, convective heat transfer, electrophoresis of colloidal particles, surface tension, surface wettability measurements, particle sedimentation, microfiltration, and flow in porous media.

ceng 416b/enve 416b, Chemical Engineering Process Design.
Yehia Khalil.
TTh 7-8.15 P.M. QR, Sc Meets RP (0)
Study of the techniques for and the design of chemical processes and plants, applying the principles of chemical engineering and economics. Emphasis on flowsheet development and equipment selection, cost estimation and economic analysis, design strategy and optimization, safety and hazards analysis, and environmental and ethical considerations. Prerequisites: Ceng 301b and 411a.

ceng 471a or b, Independent Research. Consult the director of undergraduate studies.
HTBA (0)
Faculty-supervised individual student research and design projects. Emphasis on the integration of mathematics with basic and engineering sciences in the solution of a theoretical, experimental, and/or design problem. May be taken more than once for credit.

ceng 480a, Chemical Engineering Process Control.
Yehia Khalil.
TTh 9-10.15 QR, Sc Meets RP (22)
Transient regime modeling and simulations of chemical processes. Conventional and state-space methods of analysis and control design. Applications of modern control methods in chemical engineering. Course work includes a design project. *Prerequisite: ENAS 194A or B or permission of instructor.*

**ceng 490A or B, SENIOR RESEARCH PROJECT.** Consult the director of undergraduate studies.

**HTBA** (O)

Individual research and/or design project supervised by a faculty member in Chemical Engineering, or in a related field with permission of the director of undergraduate studies.

**COURSE IN ANOTHER DEPARTMENT THAT COUNTS TOWARD THE MAJOR**

The following course counts equally with Chemical Engineering courses toward the requirements of the major.

**meng 361A, MECHANICAL ENGINEERING II: FLUID MECHANICS.**
Mitchell Smooke.

**CHEMISTRY**

Director of undergraduate studies: Victor Batista, 239 SCL, 432-6672, victor.batista@yale.edu [F]; Kurt Zilm, 249 SCL, 432-3956, kurt.zilm@yale.edu [Sp]

**FACULTY OF THE DEPARTMENT OF CHEMISTRY**

**Professors**
†Sidney Altman, Victor Batista, Gary Brudvig, Robert Crabtree, †Craig Crews, R. James Cross, Jr., John Faller, †Gary Haller, †Francesco Iachello, Mark Johnson, William Jorgensen, J. Patrick Loria, J. Michael McBride, Scott Miller, Peter Moore, †Lynne Regan, †James Rothman, Martin Saunders, Alanna Schepartz, Charles Schmuttenmaer, †Dieter Söll, †Thomas Steitz, †Scott Strobel, John Tully, Patrick Vaccaro, Kurt Zilm

**Associate Professor**
Ann Valentine

**Assistant Professors**
Seth Herzon, Glenn Micalizio, David Spiegel, Elsa Yan

**Lecturers**
Paul Anastas, Iona Black, Christine DiMeglio, N. Ganapathi, Jonathan Parr

†A joint appointment with primary affiliation in another department.

The wide range of courses offered by the Department of Chemistry reflects the position of chemistry as the foundation of all the molecular sciences. Students with B.A. or B.S. degrees in chemistry go on to a variety of professional callings. In addition to graduate work in chemistry, biochemistry, medicine, or other health-related disciplines, the department’s graduates find their broad scientific training useful in fields such as business management and law. As contemporary society’s problems involve ever more complex scientific issues, degree programs in the sciences become increasingly appropriate for students wishing to pursue careers in public policy, government, or public service. The breadth of exposure to the physical and life sciences makes chemistry an especially appropriate major for these students.
The department offers a flexible arrangement of beginning and upper-level courses intended to meet a variety of student interests. The choice of a proper course of study depends on the student's preparation and career goals. The director of undergraduate studies is available to assist students in choosing course offerings best suited to their educational needs.

The majority of students intending to major in one of the physical or life sciences, as well as those planning to pursue postgraduate studies in a health-related discipline, should begin the study of chemistry in their freshman year.

Placement in introductory courses. The introductory chemistry courses are designed to address the varied needs of Yale freshmen for a solid grounding in general chemistry. Placement in these courses is determined by the Chemistry department, using achievement test scores as well as information provided by preregistration and by the Admissions Office. Students may gain access to more advanced courses by taking the department's placement examination.

The department offers a range of courses that commonly serve as a student's entry into the study of chemistry at Yale. The majority of students begin with a general chemistry sequence: either CHEM 112a and 113b, Chemistry with Problem Solving; CHEM 114a and 115b, Comprehensive General Chemistry; or CHEM 118a, Quantitative Foundations of General Chemistry. All of these courses fulfill the requirements for general chemistry in the Chemistry major and serve as the general chemistry prerequisite for any of the more advanced courses offered by the department.

Students with a sufficiently strong background in chemistry may initiate their studies with courses in organic or physical chemistry. CHEM 124a and 125b, Freshman Organic Chemistry, is designed expressly for freshmen. Other beginning courses in organic or physical chemistry (CHEM 220a and 221b, 225b and 227a, or 332a and 333b) are available to qualified freshmen. CHEM 332a, 333b, Physical Chemistry with Applications in the Physical Sciences, is taught with the needs of freshmen in mind. Placement in any of these advanced courses provides chemistry and life science students with greater flexibility in course selection during subsequent years.

In addition, the Chemistry department offers three one-term courses intended for non–science majors: CHEM 100b, Chemistry in Popular Novels, CHEM 102a, Introduction to Green Chemistry, and CHEM 103b, Chemistry, Energy, and the Environment. These courses have no prerequisites. They do not satisfy medical school requirements or the requirements for any science major (including Chemistry).

Placement guidelines. A typical student in CHEM 112a may have taken a year of high school chemistry as a sophomore, but has not been exposed to the problem-solving approach used in many university-level science courses. Students placed in CHEM 114a may have taken one or two years of chemistry in high school and have had some exposure to quantitative problem-solving scientific methods. A little more than half of the students placed in CHEM 114a last took chemistry as sophomores in high school. Students in CHEM 118a have done well in an advanced placement course in chemistry or shown other evidence of high achievement in science or mathematics. For instance, students having a Chemistry Advanced Placement test score of 5 are placed into CHEM 118a. Students eligible for CHEM 118a who also perform well on the department’s placement examination may enroll in CHEM 124a or 220a. Those who have a strong background in physics and calculus may be eligible for CHEM 332a.
Placement procedures. The Chemistry department reviews the admission records of all incoming freshmen prior to the beginning of the fall term. Using these data and information supplied by students in preregistration, the department determines the appropriate general chemistry sequence for every entering freshman. Students will be able to view their initial placement level in late August on the Student Information Systems Web site, www.yale.edusis. Updates about placement information will be posted at www.chem.yale.edu/courses by the beginning of registration week in the fall term.

Students wishing to take a higher-numbered chemistry course than they have been assigned to in the initial placement, as well as all students wishing to elect a lecture course numbered higher than CHEM 118a, must attend the department’s registration and orientation meeting and take the placement examination. Students are advised to review general chemistry prior to taking this examination. Use of an electronic calculator on the examination is permitted. Times and places for the examination are published in the Calendar for the Opening Days of College. After the examination final placements will be updated on the Student Information Systems Web site.

Students who feel they have been placed incorrectly may appeal their course assignment by consultation with a Chemistry placement adviser. Sessions with placement advisers are scheduled during the first week of the fall term. See the Calendar for the Opening Days of College for times and places. Students wishing to change their placement should consult one of the advisers as soon as possible.

Laboratory registration. Information about online registration for laboratory sections can be found at www.yale.edu/sis. Due to the nature of laboratory exercises it is impractical to preview laboratory courses during the course selection period.

Placement information for upperclassmen. Upperclassmen taking an introductory chemistry course must attend the Chemistry department registration and orientation meeting to be advised of their placement. Since CHEM 112a and 113b are restricted to freshmen, upperclassmen are placed in either CHEM 114a or 118a. Upperclassmen wishing to enroll in CHEM 220a or 225b may do so as long as they have satisfied the general chemistry prerequisite.

Placement examination and registration information. For further information about registration, placement examinations, course placement, and class scheduling, consult the Calendar for the Opening Days of College, the Freshman Handbook, and www.chem.yale.edu/courses.

Information for premedical students. Medical schools currently require one year of organic chemistry and laboratory as well as one year of general chemistry and laboratory. The general chemistry requirement may be satisfied by completing CHEM 112a and 113b, or 114a and 115b, or two terms of physical chemistry (CHEM 328a or 332a and CHEM 333b). Students taking the term course CHEM 118a can complete this requirement by taking any additional term course in nonorganic chemistry with laboratory, for instance, CHEM 252b and 251Lb.

Requirements of the major. Both the B.A. and B.S. degrees in Chemistry have a core-course requirement that includes a year of general chemistry and laboratory, a year of organic chemistry and laboratory, a year of physical chemistry and laboratory, and a term course in inorganic chemistry. There is a great deal of flexibility in fulfilling these requirements and in adapting the Chemistry degree program to the requirements of medical and other
professional schools. Four typical sequences that meet the Chemistry core-course requirements are listed below.

**Standard Chemistry Major Core Sequences**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Core 1</th>
<th>Core 2</th>
<th>Core 3</th>
<th>Core 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>General chemistry</td>
<td>CHEM 112a, 113b or 114a, 115b, CHEM 116a, 117b</td>
<td>CHEM 118a, 119La</td>
<td>——</td>
<td>CHEM 119La</td>
</tr>
<tr>
<td>Organic chemistry</td>
<td>CHEM 220a, 221b, 222La, 223Lb</td>
<td>CHEM 228a or 328a, 229b, 332a, 333b, 330La</td>
<td>CHEM 328a or 328a, 229b, 332a, 333b, 330La</td>
<td>CHEM 220a, 221b, 222La, 223Lb</td>
</tr>
<tr>
<td>Physical chemistry</td>
<td>CHEM 224a, 225b, 227a, 228a or 328a, 329b, 330La</td>
<td>CHEM 224a, 225b, 227a, 329b, 330La</td>
<td>CHEM 224a, 225b, 227a, 329b, 330La</td>
<td>CHEM 224a, 225b, 227a</td>
</tr>
<tr>
<td>Inorganic chemistry</td>
<td>CHEM 350b, 351Lb, 352a, 457a</td>
<td>One course credit from CHEM 450b, 452a, 457a</td>
<td>Two course credits from CHEM 224a, or Lb, 226La or Lb, 228a, or Lb, 330La</td>
<td>One and one-half course credits from CHEM 224a, or Lb, 226La or Lb, 228a, or Lb, 330La</td>
</tr>
<tr>
<td>Additional laboratory course credit</td>
<td></td>
<td>Two course credits from CHEM 224a, or Lb, 226La or Lb, 228a, or Lb, 330La</td>
<td></td>
<td>Two course credits from CHEM 224a, or Lb, 226La or Lb, 228a, or Lb, 330La</td>
</tr>
</tbody>
</table>

Core 1 is suitable for freshmen without an advanced chemistry background. Core 2 is intended for students with a strong background in chemistry. Core 3 and Core 4 are intended for students whose thorough preparation in high school is confirmed by satisfactory performance on the department’s advanced chemistry placement examination. Students in Core 3 or Core 4 will find it possible to enroll in graduate Chemistry offerings by their junior year and are encouraged to do so. Permission of the instructor and of the director of graduate studies is required in each instance.

Substitutions other than those indicated in the four core sequences may be made only with approval of the director of undergraduate studies. No Chemistry courses to be counted toward the major (including substitutions for advanced courses) may be taken Credit/D/Fail. The graduate courses CHEM 360La and 361Lb may replace CHEM 330La and 331Lb, but may not be counted as an advanced course in Chemistry. The graduate courses CHEM 362, 364, and 365 may not be counted toward any requirement of the major. 

**Prerequisites.** Each core sequence contains a course in physical chemistry. MATH 112a or b, 115a or b (MATH 120a or b or ENAS 131a is recommended), and PHYS 180a, 181b (or 150a, 151b, or 200a, 201b) or their equivalents in advanced placement are prerequisites for the physical chemistry courses.

**B.S. degree.** In addition to one of the four core sequences, the B.S. degree requires five additional terms of advanced chemistry lecture courses. At least one of these courses must be a course in Chemistry or MB&I 300a or 301b. Within this restriction, up to two terms of CHEM 490 (involving an original research or chemical education project, not a literature project) or up to two terms of relevant advanced science courses may be used in fulfilling the five advanced term course requirement, with approval of the director of undergraduate studies.

**B.A. degree.** The B.A. degree requires completion of one of the four core sequences and three additional terms of advanced chemistry lecture courses. One of these must be a Chemistry course or MB&I 300a or 301b. Within this restriction, up to two terms of CHEM 490 (involving an original research or chemical education project, not a literature project) or up to two terms
of relevant advanced science courses may be used in fulfilling the three advanced term course requirement, with approval of the director of undergraduate studies.

Senior requirement. Senior majors prepare a written report and make an oral presentation on their laboratory, literature, or chemical education project in the spring term of Chem 490. The presentation is made during the latter portion of the term and the paper is due the first day of the reading period of the student’s final term. Research or literature papers are expected to be fifteen to twenty-five pages in length (double-spaced, twelve-point font, exclusive of figures and bibliography).

Special restrictions on yearlong lecture courses. Completion of the first term of any yearlong Chemistry lecture course (Chem 112a and 113b, 114a and 115b, 124a and 125b, 220a and 221b, 225b and 227a, and 332a and 333b) with a passing grade is a prerequisite for registration in the subsequent term.

Special restrictions on laboratory courses. Any Chemistry lecture course may be taken without the accompanying laboratory (except Chem 124a and 125b, for which Chem 126La and 127Lb are corequisites). However, the appropriate lecture course is a prerequisite or corequisite for each laboratory course. A student who is not enrolled in the second term of a yearlong lecture course may not take the second term of the related laboratory course. This restriction can be waived only by the director of undergraduate studies. All Chemistry laboratories earn one course credit for the year’s work with the exception of Chem 226La or Lb, 330La, and 331Lb, which earn a full credit per term.

While Chem 490 may be used to substitute for advanced lecture courses, it may not in any circumstance be substituted for any of the required core laboratory courses.

Year or Term Abroad. Participation in the Year or Term Abroad program is available for qualified majors at Sussex University (U.K.). Interested students should consult the director of undergraduate studies and the Chemistry Year Abroad coordinator, Robert Crabtree. For general information about the Year or Term Abroad, see chapter III of this bulletin.

Combined B.S./M.S. degree program in Chemistry. Exceptionally well-prepared students may complete a course of study leading to the simultaneous award of the B.S. and M.S. degrees after eight terms of enrollment. Formal application for admission to this program must be made by the first day of classes in the sixth term of enrollment. Acceptance into the program requires two-thirds A or A– grades within the major and one-half A or A– grades overall after five terms. Chem 490 must be taken in the fifth and sixth terms with grades of A or A– earned to continue in the program. Subsequent grades are irrelevant as long as normal progress is maintained. Typical B.S./M.S. degree programs include completion of Core 3 or Core 4 and a Physics course at the level of 200 or higher by the end of the fourth term. Eight graduate courses in Chemistry (four of which count toward the B.S.) are required. Four terms of research are required, including two terms of research as Chem 990.

Requirements of the Major

Prerequisites:

- Math 112a or b, 115a or b (Math 120a or b or Enas 151a suggested);
- Phys 180a, 181b (or 150a, 151b, or 200a, 201b), or equivalents in advanced placement

Number of courses:

- B.A. — 8 to 10 term lecture courses depending on placement;
- 4 lab course credits
- B.S. — 10 to 12 term lecture courses depending on placement;
- 4 lab course credits
**Specific courses required:** General chem (CHEM 112A, 113B, or 114A, 115B, or 118A, or acceleration credit, depending on placement); organic chem (CHEM 124A, 125B, or 220A, 221B, or 225B, 227A); physical chem (CHEM 328A or 332A and CHEM 333B); inorganic chem (CHEM 252B, or 450B, or 452A, or 457A); 3 advanced chem courses for the B.A.; 3 for the B.S.; 4 chem lab credits incl organic chem (CHEM 126La and 127Lb, or CHEM 222La or Lb and 223La or Lb) and physical chem (CHEM 330La, 331Lb)

**Substitution permitted:** Approved labs for CHEM 331Lb; up to 2 relevant advanced science courses in other depts for advanced chem courses with DUS permission; up to 2 terms of CHEM 490 for advanced chem courses with DUS permission

**Senior requirement:** Oral presentation at a spring-term sem and written report, both based on research, chemical education, or literature project, completed in spring term of CHEM 490

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**COURSES FOR NONMAJORS WITHOUT PREREQUISITES**

*CHEM 100B, Chemistry in Popular Novels.* Iona Black.

_**Lect.**_ TtH 9-10.15; _lab/disc._ 3 HTBA  Sc (0)

Chemistry through the reading of popular novels and articles, both fiction and nonfiction. A laboratory component provides practical understanding of concepts and techniques. _**Intended for non-science majors; no prerequisites. Does not satisfy premedical chemistry requirements or requirements for the Chemistry major.**_

**CHEM 102A, Introduction to Green Chemistry.** Paul Anastas.

_TtH 1-2.15, 1 HTBA  Sc (26)_

Overview of the basic concepts and methods needed to design processes and synthesize materials in an environmentally benign way. Related issues of global sustainability. Case studies that suggest possible solutions for the serious environmental and toxicological issues currently facing industry and society. _**Intended for non-science majors with a basic high school background in chemistry and physics, as well as high school algebra. Does not satisfy premedical chemistry requirements or requirements for the Chemistry major.** Enrollment limited to students who have not taken any previous chemistry courses approved for the Chemistry major.

**CHEM 103B, Chemistry, Energy, and the Environment**

**INTRODUCTORY COURSES**

Freshmen planning to take an introductory Chemistry course during their first term are required to preregister over the summer. Those planning to elect CHEM 124A or 332A must also register in person and take a placement examination as described in the text above and in the _Freshman Handbook_. Placement in other introductory Chemistry courses is made on the basis of test scores and other admissions data, as discussed in the text above. Time and place for the orientation meeting, registration, and placement examination are listed in the _Calendar for the Opening Days of College_. For further information on placement see the _Freshman Handbook_.

_All freshman candidates for CHEM 124A, 220A, 225B, or 332A are required to take the department’s advanced chemistry placement examination._

*CHEM 112A, Chemistry with Problem Solving I.* Jonathan Parr, Iona Black.

_**Lect.**_ MWF 10.30-11.20 QR, Sc Meets RP (33)

_**Disc.**_ M or Th 11.35-12.25 or T 1.30-2.20 or W 2.30-3.20

_**Prob-solv.**_ M 7-7.50 P.M. or M 8-8.30 P.M. or T 7-7.50 P.M.
A systematic introduction to chemistry. Topics include atomic/molecular structure, stoichiometry, thermochemistry, chemical periodicity/bonding, and reactions in aqueous solutions. For beginning students in chemistry or for those whose exposure to the subject has been moderate. Special emphasis on scientific problem-solving skills through an additional discussion section devoted to quantitative reasoning. In combination with CHEM 113b, fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry as well as the general chemistry prerequisite for CHEM 220a or 225b. Attendance at one discussion section and one problem-solving section required. May not be taken after CHEM 114a, 115b, 118a, or higher-numbered chemistry courses. Enrollment limited to freshmen. Enrollment by placement only. For placement information see “Placement in introductory courses” in the text above.

**CHEM 113b, CHEMISTRY WITH PROBLEM SOLVING II.** Ann Valentine, Iona Black.

*Lect. MWF 10.30-11.20*  QR, Sc  Meets RP  (33)

*Disc. M or Th 11.35-12.25 or T 1.30-2.20 or W 2.30-3.20

*Prob-solv. M 7-7.50 P.M. or M 8-8.50 P.M. or T 7-7.50 P.M.*

The continuation of CHEM 112a. Topics include the phase-dependent properties of matter, solutions and their behavior, chemical equilibrium, chemical kinetics, and the chemistry of the elements. In combination with CHEM 112a, fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry as well as the general chemistry prerequisite for CHEM 220a or 225b. Attendance at one discussion section and one problem-solving section required. May not be taken after CHEM 114a, 115b, 118a, or higher-numbered chemistry courses. Enrollment limited to freshmen. Enrollment by placement only. For placement information see “Placement in introductory courses” in the text above.

**CHEM 114a, COMPREHENSIVE GENERAL CHEMISTRY I.** Peter Moore.

*Lect. MWF 10.30-11.20*  QR, Sc  Meets RP  (33)

*Disc. MTW or Th 11.35-12.25 or 1.30-2.20 or 2.30-3.20

A comprehensive survey of modern descriptive, inorganic, and physical chemistry. Topics include atomic theory, stoichiometry, thermochemistry, chemical periodicity, concepts in chemical bonding, and the shapes of molecules. For students with a good secondary school exposure to general chemistry. In combination with CHEM 115b, fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry as well as the general chemistry prerequisite for CHEM 220a or 225b. Attendance at a weekly discussion section required. May not be taken after CHEM 112a, 113b, 118a, or higher-numbered chemistry courses. Normally to be accompanied by CHEM 116La. Enrollment by placement only. For placement information see “Placement in introductory courses” in the text above.

**CHEM 115b, COMPREHENSIVE GENERAL CHEMISTRY II.**

J. Patrick Loria.

*Lect. MWF 10.30-11.20*  QR, Sc  Meets RP  (33)

*Disc. MTW or Th 11.35-12.25 or 1.30-2.20 or 2.30-3.20

The continuation of CHEM 114a. Topics include kinetics, chemical equilibrium, acid-base chemistry, free energy and entropy, electrochemistry, nuclear chemistry, and descriptive chemistry of the elements. In combination with CHEM 114a, fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry as well as the general chemistry prerequisite for CHEM 220a or 225b. Attendance at a weekly discussion section required. After CHEM 114a. May not be taken after CHEM 112a, 113b, 118a, or higher-numbered chemistry courses. Normally to be accompanied by CHEM 117Lb. Enrollment by placement only. For placement information see “Placement in introductory courses” in the text above.
CHEM 116LA, GENERAL CHEMISTRY LABORATORY I.  N. Ganapathi.
MTWTh or F 12-3 or 1-4 SC ½ C Credit  Meets RP (0)
An introduction to basic chemistry laboratory methods. Techniques required for quantitative analysis of thermodynamic processes and the properties of gases. Must accompany or follow CHEM 112a or 114a. May not be taken after a higher-numbered laboratory class.

CHEM 117LB, GENERAL CHEMISTRY LABORATORY II.  N. Ganapathi.
MTWTh or F 12-3 or 1-4 SC Credit Meets RP (0)
The continuation of CHEM 116LA. Introduction to rate and equilibrium measurements, acid-base chemistry, synthesis of inorganic compounds, and qualitative/quantitative analysis. After CHEM 116LA. Must accompany or follow CHEM 113b or 115b. May not be taken after a higher-numbered laboratory class.

*CHEM 118A, QUANTITATIVE FOUNDATIONS OF GENERAL CHEMISTRY.
Mark Johnson.
Lect. MWF 10.30-11.20 QR, Sc (33)
Disc. MTW or Th 11.35-12.25 or 1.30-2.20 or 2.30-3.20
An advanced general chemistry course emphasizing conceptual aspects and physical principles in general chemistry. Fulfills the general chemistry prerequisite for CHEM 220a or 225b. CHEM 118A in combination with CHEM 252b fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry. May not be taken after CHEM 112a, 113b, 114a, 115b, or an organic chemistry course. Enrollment by placement only. For placement information see “Placement in introductory courses” in the text above.

CHEM 119LA, LABORATORY FOR COMPREHENSIVE GENERAL CHEMISTRY.
Jonathan Parr.
MTWTh or F 1-5 Sc ½ C Credit (0)
Introductory laboratory for students with advanced standing. Emphasis on the fundamental quantitative and physical principles of general chemistry together with quantitative and data analysis. Accompanies CHEM 118A, 328A, or 332A.

*CHEM 124A, FRESHMAN ORGANIC CHEMISTRY I.
J. Michael McBride.
Lect. MWF 10.30-11.20 Sc Meets RP (33)
Disc. M or Th 7-7.50 P.M. or 8-8.50 P.M.
An introductory course focused on current theories of structure and mechanism in organic chemistry, their development, and their basis in experimental observation. Open to freshmen with excellent preparation in chemistry, mathematics, and physics who have taken the department’s advanced chemistry placement examination. For placement information see “Placement procedures” in the text above. Must be taken concurrently with CHEM 126LA.

CHEM 125B, FRESHMAN ORGANIC CHEMISTRY II.  J. Michael McBride.
Lect. MWF 10.30-11.20 Sc Meets RP (33)
Disc. MTh 7-7.50 P.M. or 8-8.50 P.M.
The continuation of CHEM 124A. Survey of simple and complex reaction mechanisms, spectroscopy, organic synthesis, and the molecules of nature. For placement information see “Placement in introductory courses” in the text above. After CHEM 124A. Must be taken concurrently with CHEM 127LB.

CHEM 126LA, LABORATORY FOR FRESHMAN ORGANIC CHEMISTRY I.
Christine DiMeglio.
MT or Th 1-5, or W 12-4 Sc ½ C Credit (0)
The first half of a two-term laboratory sequence designed to introduce the basic synthetic and analytic techniques of organic chemistry. Must be taken concurrently with CHEM 124a.

CHEM 127Lb, Laboratory for Freshman Organic Chemistry II.
Christine DiMeglio.
MT or TH 1-5, or W 12-4 Sc ⅓ C Credit (0)
The second half of a two-term laboratory sequence in organic chemistry. One-, two-, and three-step syntheses of organic target molecules. After CHEM 126La. Must be taken concurrently with CHEM 125b.

Intermediate Courses

CHEM 220a, Organic Chemistry. Scott Miller.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. MTW or TH 12.30-1.20 or 1.30-2.20 or 2.30-3.20
An introductory course covering the fundamental principles of organic chemistry. The laboratory for this course is CHEM 222La. After CHEM 113b, 115b, 118a, or 333b. Students who have earned a grade of less than C in one of the general chemistry courses are cautioned that they may not be sufficiently prepared for this course. Usually followed by CHEM 221b.

CHEM 221b, The Organic Chemistry of Life Processes.
David Spiegel.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. MTW or TH 12.30-1.20 or 1.30-2.20 or 2.30-3.20
The principles of organic reactivity and how they form the basis for biological processes. The laboratory for this course is CHEM 223Lb. After CHEM 220a. Students who have earned a grade of less than C in one of the general chemistry courses are cautioned that they may not be sufficiently prepared for this course.

CHEM 222La or Lb, Laboratory for Organic Chemistry I.
Christine DiMeglio.
MT or F 1-5 or W 12-4 Sc ⅓ C Credit (0)
First term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. In choosing their laboratory, students are reminded of the accompanying discussion sections for organic chemistry lecture courses. After or concurrently with CHEM 220a, 221b, 225b, or 227a.

CHEM 223La or Lb, Laboratory for Organic Chemistry II.
Christine DiMeglio.
MT or F 1-5 or W 12-4 Sc ⅓ C Credit (0)
Second term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. In choosing their laboratory, students are reminded of the accompanying discussion sections for organic chemistry lecture courses. After or concurrently with CHEM 221b or 227a. Prerequisite: CHEM 222La or Lb.

CHEM 224La or Lb, Advanced Chemistry Laboratory.
Christine DiMeglio, Jonathan Parr.
T or TH 1-5 Sc ⅓ C Credit Meets RP (0)
A one-term course in advanced chemistry laboratory technique, synthesis, and chemical analysis intended to bring the student closer to independent research. Offered subject to available laboratory space and sufficient enrollment. After CHEM 127Lb or 223La or Lb. A second term of this laboratory may be elected to provide coverage equivalent to that of CHEM 226La or Lb. For enrollment procedures, contact the instructors.
chem 225b, Comprehensive Organic Chemistry I.
Alanna Schepartz.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. MTW or TH 12.30-1.20 or 1.30-2.20 or 2.30-3.20
The first half of a two-term comprehensive introductory sequence in organic chemistry. Molecular structure and mechanism and interpretation of organic chemical reactivity. The laboratory for this course is chem 222Lb. The second course in this sequence is chem 227a. After chem 118a.

chem 226La or Lb, Intensive Advanced Chemistry Laboratory.
Christine DiMeglio, Jonathan Parr.
T and TH 1-5 Sc Meets RP (0)
An intensive course in advanced organic chemistry laboratory technique intended to bring the student closer to independent research. Included are an independent laboratory project and presentation, introduction to library research, and training in the use of various analytical techniques. Offered subject to available laboratory space and sufficient enrollment. After chem 127Lb or 223La or Lb. For enrollment procedures, contact the instructors.

chem 227a, Comprehensive Organic Chemistry II. Glenn Micalizio.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. MTW or TH 10.30-11.20 or 8-8.50 P.M.
The second part of a two-term comprehensive introductory sequence in organic chemistry. Spectroscopic structure determination and organic synthesis. The laboratory for this course is chem 223La. After chem 225b.

chem 251Lb, Inorganic Chemistry Laboratory. Jonathan Parr.
MTW or TH 1-5 WR, Sc ½ C Credit (0)
Introductory laboratory course covering synthetic and physical characterization techniques in inorganic chemistry. After chem 127Lb or 223La or Lb; concurrently with or after chem 252b, 452a, or 457a.

chem 252b, Introductory Inorganic Chemistry. Robert Crabtree.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. M or TH 11.35-12.25 or W or TH 1.30-2.20
The “vigor and diversity” of modern inorganic chemistry are presented; an introduction to the fundamental concepts of solid-state chemistry, coordination chemistry, and organometallic chemistry. chem 252b in combination with chem 118a fulfills the prerequisites for medical school and for all majors requiring a year of general chemistry. After chem 125b, 221b, or 227a. May not be taken after chem 450b, 452a, or 457a.

chem 328a, Physical Chemistry with Applications in the Biological Sciences. Elsa Yan.
Lect. MWF 9.25-10.15 QR, Sc Meets RP (32)
Disc. W or TH 10.30-11.20 or 11.35-12.25 or 7-7.50 P.M.
Physical chemical principles and their application to the chemical and life sciences. Topics include thermodynamics, chemical and biochemical kinetics, solution physical chemistry, electrochemistry, and membrane equilibria. chem 322a is preferred for Chemistry majors. Prerequisites: PHYS 180a, 181b, or 200a, 201b preferred; phys 150a, 151b acceptable; MATH 112a or b and 115a or b required; MATH 120a or b or ENAS 151a suggested; chem 115b, 115b, 118a, or 123b; or permission of instructor. May not be taken after chem 332a.

chem 330La, Laboratory for Physical Chemistry I.
Patrick Vaccaro, N. Ganapathi.
Lect. F 1.30-2.20; lab MTW or TH 1-5 Sc Meets RP (36)
An introduction to the tools and techniques of modern physical chemistry. Analog/digital electronics, measurement of thermodynamic properties, optical laser spectroscopy, and nuclear magnetic resonance. After or concurrently with chem 328a or 332a. Prerequisites: phys 180a, 181b, or 200a, 201b preferred; phys 150a, 151b acceptable; math 112a or b and 115a or b. Advanced Chemistry majors may wish to enroll in the graduate laboratory chem 360La as an alternative course; permission of the instructor and the director of graduate studies is required. Meets on Wednesday, Thursday, and Friday from 1.30 to 2.20 for the first week of the term.

chem 351Lb, LABORATORY FOR PHYSICAL CHEMISTRY II.
Charles Schmuttenmaer, N. Ganapathi.

Lect. F 1.30-2.20; lab MTW or TH 1-5 Sc Meets RP (36)

The continuation of chem 350La. Applications of physical method to chemical analysis by spectroscopic and spectrometric techniques. After or concurrently with chem 333b. After chem 330La. Prerequisites: phys 180a, 181b, or 200a, 201b preferred; phys 150a, 151b acceptable; math 112a or b and 115a or b. Advanced Chemistry majors may wish to enroll in the graduate laboratory chem 361Lb as an alternative course; permission of the instructor and the director of graduate studies is required. Meets on Wednesday, Thursday, and Friday from 1.30 to 2.20 for the first week of the term.

*chem 332a, Physical Chemistry with Applications in the Physical Sciences I.
Charles Schmuttenmaer.

Lect. MWF 10.30-11.20 QR, Sc Meets RP (33)

Disc. M 11.35-12.25 or MTW or TH 7-7.50 P.M.

A comprehensive survey of modern physical and theoretical chemistry, including topics drawn from thermodynamics, chemical equilibrium, electrochemistry, and kinetics. Enrollment limited to majors in Chemistry, Engineering, Geology and Geophysics, Mathematics, and Physics, and selected freshmen. Prerequisites: phys 180a, 181b or 200a, 201b preferred; phys 150a, 151b acceptable; math 112a or b and 115a or b required; math 120a or b or enas 151a suggested; chem 113b, 115b, 118a, or 125b; or permission of instructor. May not be taken after chem 328a.

*chem 333b, Physical Chemistry with Applications in the Physical Sciences II.
Kurt Zilm.

Lect. MWF 10.30-11.20 QR, Sc Meets RP (33)

Disc. M 11.35-12.25 or MTW or TH 7-7.50 P.M.

The continuation of chem 332a, including topics drawn from quantum mechanics, atomic/molecular structure, spectroscopy, and statistical thermodynamics. Enrollment limited to majors in Chemistry, Engineering, Geology and Geophysics, Mathematics, and Physics, and selected freshmen. Prerequisites: phys 180a, 181b or 200a, 201b preferred; phys 150a, 151b acceptable; math 112a or b and 115a or b required; math 120a or b or enas 151a suggested; topics from math 222a or b, math 225a or b, math 230, and enas 194a or b are useful; chem 328a or 332a; or permission of instructor:

ADVANCED COURSES

*chem 418aG, Advanced Organic Chemistry I.
William Jorgensen.

MWF 9.25-10.15 Sc Meets RP (32)

Concise overview of structure, properties, thermodynamics, kinetics, reactions, and intermolecular interactions for organic molecular systems. Prerequisites: chem 125b, 221b, or 227a; chem 328a or 332a, and chem 333b.

TTh 9-10.15 Sc Meets RP (22)
A one-term introduction to the origins and emerging frontiers of chemical biology. Discussion of the key molecular building blocks of biological systems and the history of macromolecular research in chemistry. Prerequisites: CHEM 125b, 221b, or 227a, and MCDB 120a or equivalent.


MWF 10.30-11.20 Sc Meets RP (33)
A discussion of modern methods. Topics include functional group manipulation, synthesis and functionalization of stereo-defined double bonds, carbonyl addition chemistry, and synthetic designs. Normally taken only by students with a special interest in organic synthesis; for other students, CHEM 418a is more appropriate. Prerequisites: CHEM 125b, 221b, or 227a, or permission of instructor.


MWF 9.25-10.15 Sc Meets RP (32)
Applications of NMR, ESR, infrared, UV, visible, and mass spectroscopy to chemical problems concerning structures and reactions. X-ray crystallography. Computer simulation of NMR spectra. Prerequisites: CHEM 125b, 221b, or 227a; CHEM 328a or 332a, and CHEM 333b.

[CHEM 426bG, Computational Chemistry and Biochemistry]


MWF 9.25-10.15 QR, Sc Meets RP (32)
The fundamentals of statistical mechanics developed and used to elucidate gas phase and condensed phase behavior, as well as to establish a microscopic derivation of the postulates of thermodynamics. Topics include ensembles; Fermi, Bose, and Boltzmann statistics; density matrices; mean field theories; phase transitions; chemical reaction dynamics; time-correlation functions; and Monte Carlo and molecular dynamics simulations. Prerequisites: CHEM 328a or 332a, and CHEM 333b, or permission of instructor.

CHEM 440aG, Molecules and Radiation I. Kurt Zilm.

Lect. MWF 8.20-9.10; disc. T 10.30-11.20 QR, Sc Meets RP (31)
An integrated treatment of quantum mechanics and modern spectroscopy. Basic wave and matrix mechanics, perturbation theory, angular momentum, group theory, time-dependent quantum mechanics, selection rules, coherent evolution in two-level systems, lineshapes, and NMR spectroscopy. Prerequisites: CHEM 328a or 332a, and CHEM 333b, or permission of instructor.

CHEM 442bG, Molecules and Radiation II. Mark Johnson.

Lect. TTh 11.35-12.50; disc. 1 HTBA QR, Sc Meets RP (24)
An extension of the material covered in CHEM 440a to atomic and molecular spectroscopy, including rotational, vibrational, and electronic spectroscopy, as well as an introduction to laser spectroscopy. Prerequisite: CHEM 440a or permission of instructor.


TTh 9-10.15 Sc Meets RP (22)
A detailed discussion of experimental techniques used to study the properties of biological macromolecules, focusing on the application of Fourier methods and concepts to NMR spectroscopy, optical and electron microscopy, image reconstruction, X-ray scattering/diffraction, and mass spectrometry. Emphasis on the physical chemistry that underlies both the execution of such experiments and the interpretation of the resulting data. Prerequisites: CHEM 328a or 332a, and CHEM 333b.

CHEM 450bG, Advanced Inorganic Chemistry. John Faller.

Th 9-10.15 Sc Meets RP (22)
Elementary group theory, molecular orbitals, states arising from molecular orbitals containing several electrons, ligand field theory, and electronic structure of metal complexes. Introduction to the major physical methods used in the determination of molecular structure and the bonding of polyatomic molecules. May be taken independently of CHEM 452a. Prerequisites: CHEM 328a or 332a and CHEM 333b; CHEM 457a or equivalent and an introduction to quantum mechanics strongly recommended.

CHEM 452aG, Organometallic Chemistry. Robert Crabtree.

Th 9-10.15 Sc Meets RP (22)
A survey of the organometallic chemistry of the transition elements and of homogeneous catalysis. May be taken independently of CHEM 450b. Prerequisites: CHEM 125b, 221b, or 227a, and CHEM 252b.


Th 11.35-12.50 Sc Meets RP (24)
The principles of modern inorganic chemistry. Main group and transition element chemistry: reactions, bonding, structure, and spectra. Prerequisites: CHEM 125b, 221b, or 227a, and CHEM 252b.

CHEM 470aG, Introductory Quantum Chemistry.

R. James Cross, Jr.

Th 9-10.15 QR, Sc Meets RP (22)
The elements of quantum mechanics developed and illustrated with applications in chemistry and chemical physics. Prerequisites: CHEM 328a or 332a, CHEM 333b, and MATH 120a or b or ENAS 151a.


T 10.30-11.20; lab HTBA Meets RP (0)
After consulting with the director of undergraduate studies no later than midterm of the preceding term, students choose to work on individual laboratory or theoretical research problems under the direction of a faculty member in Chemistry or a closely related field. Students can familiarize themselves with ongoing research in the department by reviewing the departmental Web site (www.chem.yale.edu) and by attending an evening seminar series presented during the first weeks of the fall term. Specific dates and times of the evening seminars may be obtained in the department office, 1 scl. Independent work may also encompass research in chemical education or a literature project. Occasional required seminars address laboratory safety, literature searching, research methods, and scientific ethics. Students present their research results in a formal seminar series late in the spring term. At least ten hours of research weekly. May be taken multiple times for credit except in the case of a literature project, in which case credit may be awarded for only one term. Enrollment limited to junior and senior Chemistry majors except with permission of the course instructor.

To enroll, the student must complete a CHEM 490 registration form (available in the department office, 1 scl), have it signed by both the intended faculty
adviser and the course instructor, and submit it to the department office for approval by the director of undergraduate studies prior to the date on which the student’s schedule is due. All students taking chem 490 must also consult with the director of undergraduate studies for approval of their projects by midterm of the term preceding enrollment in chem 490.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Graduate courses in chemistry that may be of particular interest to undergraduates are listed in the bulletin of the Graduate School. Information about them is available in the office of the director of undergraduate studies. Enrollment requires permission of both the director of graduate studies and the instructor.

CHILD STUDY CENTER

The Child Study Center is a department of the School of Medicine that works to further understanding of the problems of children and families. Among the disciplines involved in this work are child psychiatry, pediatrics, genetics, neurobiology, epidemiology, psychology, nursing, social work, and social policy. The mission of the Center is to understand child development, social, behavioral, and emotional adjustment, and psychiatric disorders, and to help children and families in need of care.

*CHLD 125a*/PSYC 125a*/TPRP 125a, Child Development. Nancy Close and staff.

W 1:30-3:20, 3 HTBA WR, So (0)
The reading of selected material with supervised participant-observer experience in infant programs, a day-care and kindergarten center, or a family day-care program. Regularly scheduled seminar discussions emphasize both theory and practice. An assumption of the course is that it is not possible to understand children—their behavior and development—without understanding their parents and the relationship between child and parents. The focus is on infancy as well as early childhood. Enrollment limited to juniors and seniors. Meets requirements for Teacher Preparation’s early childhood certification.

*CHLD 126a or b*/TPRP 191a or b, Clinical Child Development and Assessment of Young Children. Nancy Close.
For description see under Teacher Preparation & Education Studies.

*CHLD 127a*/PSYC 127a*/TPRP 127a, Early Childhood Methods. Carla Horwitz.

M 2:30-4:20, 3 HTBA WR, So Meets RP (0)
Development of curricula for preschool children—infants, toddlers, three-, four-, and five-year-olds—in light of current research and child development theory. Meets requirements for Teacher Preparation’s early childhood certification.


TTh 9-10:15 WR, So Meets RP (0)
The complicated role of play in the development of language and literacy skills among preschool-aged children. Topics include social-emotional, cross-cultural, cognitive, and communicative aspects of play. Meets requirements for Teacher Preparation’s early childhood certification.
**CHLD 350a or b/PSYC 350a or b, Autism and Related Disorders I.**
Ami Klin, Fred Volkmar.

T 3:30-5:20 So Meets RP (0)
Topics in the etiology, diagnosis, treatment, and natural history of childhood autism and other severe disorders of early onset. Retardation, behavioral disorders, and childhood psychosis. Supervised experience. **Prerequisite: an introductory psychology course.**

**CHLD 351b/PSYC 351b, Autism and Related Disorders II.**
Ami Klin, Fred Volkmar.

TH 3:30-5, 3 HTBA So (0)
Advanced study in the evaluation of individual children with autism and associated disorders, experience in the design of curricula, and work with individual children and groups of children with autism and similar disorders. Supervised experience. **Prerequisite: an introductory psychology course.**

**CHINESE**

*(See under East Asian Languages and Literatures and under Peking University–Yale University Joint Undergraduate Program.)*

**CHINESE STUDIES**

*(See under East Asian Studies and under Peking University–Yale University Joint Undergraduate Program.)*

**CLASSICS**

Director of undergraduate studies: John Fisher, 203 PHELPS, 432-0990, john.fisher@yale.edu

**FACULTY OF THE DEPARTMENT OF CLASSICS**

**Professors**
Egbert Bakker, Victor Bers, Susanne Bobzien, Kirk Freudenburg, Verity Harte, Donald Kagan, Diana Kleiner, Christina Kraus (Chair), John Matthews, William Metcalf (Adjunct), Mary Rouse (Visiting), Richard Rouse (Visiting)

**Associate Professors**
Corinne Pache, Celia Schultz

**Assistant Professors**
Alexander Beecroft, John Fisher, Milette Gaifman, Pauline LeVen, Irene Peirano, Barbara Sattler

**Lecturers**
Veronika Grimm, Ann Ellis Hanson, Susan Matheson, Joseph Solodow

The Department of Classics offers a major in Classics, a major in Classical Civilization, and (in conjunction with the Hellenic Studies program) a major in Ancient and Modern Greek. The diversity of subject matter covered by these majors makes classics an excellent partner in interdepartmental major programs.

**I. THE MAJOR IN CLASSICS**

The major in Classics is primarily a liberal arts major. It provides an excellent general education in a comprehensive humanistic discipline; it can also give
the background necessary for those who wish to do professional graduate work. Students develop a mastery of the classical languages, become acquainted with important periods and major authors in Greek and Roman literature, and develop powers of critical analysis, appreciation of literary values, and understanding of the ancient cultural traditions that constitute the foundation of Western civilization. Courses in other literatures, in history, and in philosophy are strongly recommended for students enrolled in the Classics major.

The candidate for the Classics major may elect either the standard or the intensive major. In both these majors the department recognizes two kinds of concentration, one aiming at knowledge of both ancient literatures, the other concentrating on either Greek or Latin literature. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**The standard major for the Class of 2009.** A standard major in both literatures requires no fewer than six term courses, totaling eight course credits, in Greek and Latin at the level of 390 or above, including the double-credit Survey for the Major in Classics (GREK 498a and 499b or LATN 498a and 499b), and two additional courses in related areas of history and art. The language courses must also include GREK 390a or LATN 390b and at least three term courses at the level of 400 or above in the language whose survey (498a, 499b) is not elected. One of the additional courses in a related field must be a term course in ancient history, and the other must be a term course in ancient history, classical art and archaeology, or classical civilization.

Students majoring in one literature (Greek or Latin) are required to take no fewer than six term courses, totaling eight course credits, in that literature at the level of 390 or above, including the double-credit Survey for the Major in Classics in the language chosen and either GREK 390a or LATN 390b. They must also take a term of ancient history related to the literature they have chosen and an additional term course in ancient history, classical art and archaeology, or classical civilization. They are encouraged to do some work in the second language and may substitute two terms at the intermediate level (131a and 141b) in the second language for two 400-level courses in the major literature.

**The standard major for the Class of 2010 and subsequent classes.** A standard major in both literatures requires no fewer than ten term courses. These include six term courses in Greek and Latin at the level of 390 or above, surveys of the history of Greek and Latin literature in translation (CLCV 254a and 255b), and two additional courses in related areas of history and art. The language courses must include GREK 390a or LATN 390b and five term courses at the level of 400 or above. One of the additional courses in a related field must be a term course in ancient history, and the other must be a term course in ancient history, classical art and archaeology, or classical civilization.

Students majoring in one literature (Greek or Latin) are required to take no fewer than ten term courses. These include six term courses in that literature at the level of 390 or above, surveys of the history of Greek and Latin literature in translation (CLCV 254a and 255b), a term course in ancient history related to the chosen literature, and an additional term course in ancient history, classical art and archaeology, or classical civilization. The language courses must include GREK 390a or LATN 390b and at least five term courses at the level of 400 or above. Students are encouraged to do some work in the second language and may substitute two terms at the intermediate level (131a and 141b) in the second language for two 400-level courses in the major literature.
Senior requirement. At the end of the senior year the student majoring in both literatures takes a comprehensive examination in the history of Greek and Latin literature and in translation of both languages; the student majoring in one literature takes a senior departmental examination in the history of the literature of the major and in translation of that literature.

The intensive major is designed for students who desire the opportunity for a larger measure of independence than the standard major offers. In addition to fulfilling the requirements of the standard major (in both literatures, in Greek, or in Latin), students in the intensive major devote two terms in the senior year to writing an essay (CLSS 490a and 491b) under the regular guidance of a faculty adviser. A brief prospectus of the essay must be submitted preferably at the end of the junior year and in no case later than October 15 of the senior year. The candidate must submit two copies of the senior essay to the director of undergraduate studies no later than April 1 of the senior year.

REQUIREMENTS OF THE MAJOR

Prerequisites: None

Number of courses:

Class of 2009, two literatures (Greek and Latin)—8 term courses, totaling 10 course credits; Class of 2009, one literature (Greek or Latin)—8 term courses, totaling 10 course credits; Class of 2010 and later, two literatures (Greek and Latin)—10 term courses; Class of 2010 and later, one literature (Greek or Latin)—10 term courses

Specific courses required:

Class of 2009—Grek 390a or Latn 390b; Grek 498a, 499b, or Latn 498a, 499b; Class of 2010 and later—Grek 390a or Latn 390b; Clcv 254a and 255b

Substitution permitted: One literature—2 courses in the other lit numbered 131 or higher for 2 courses in major lit at 400 level

Distribution of courses:

Class of 2009, two literatures—6 courses in both langs at level 390 or above, with at least 3 at 400 level or above in lang whose survey (498a, 499b) is not elected; 1 course in ancient hist; 1 addtl course in ancient hist, classical art and archaeology, or classical civ; Class of 2009, one literature—6 courses in lit at level 390 or above; 1 course in ancient hist related to lit of major; 1 addtl course in ancient hist, classical art and archaeology, or classical civ; Class of 2010 and later, two literatures—6 courses in both langs at level 390 or above, with at least 3 at 400 level or above; 1 course in ancient hist; 1 addtl course in ancient hist, classical art and archaeology, or classical civ; Class of 2010 and later, one literature—6 courses in lit at level 390 or above, with at least 3 at 400 level or above; 1 course in ancient hist related to lit of major; 1 addtl course in ancient hist, classical art and archaeology, or classical civ

Senior requirement: Senior dept exam in hist and translation of Greek and Latin lit (two lits) or major lit (one lit)

Intensive major: Senior essay (CLSS 490a, 491b) in addition to above

II. THE MAJOR IN CLASSICAL CIVILIZATION

The major in Classical Civilization is designed to offer students an opportunity to study an entire Western civilization in its many diverse but related aspects. The literature, history, philosophy, religion, art, archaeology, and other aspects of Greek and Roman antiquity from the earliest beginnings in Greece to the Middle Ages are studied for their intrinsic artistic value, their historical significance, and their power to illuminate problems confronting members of contemporary society. Ancient texts are studied primarily in translation, though under the guidance of instructors who know ancient literature in the original languages.
Candidates for the major complete at least twelve term courses (including the senior seminar) in Classics and related departments. Of these, two must be in ancient history and/or classical art and archaeology; and two must be in Greek or Latin, or both, numbered 131 or higher (the latter courses should be completed by the end of the junior year). Students in the Class of 2010 and subsequent classes must also take two survey courses, CLCV 254a and 255b. It is strongly recommended that candidates elect one course each in the general areas of ancient epic, drama, philosophy, and Roman civilization. Candidates for the major are encouraged to take related courses in other departments. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Senior requirement. Students devote both terms of the senior year to a significant project of original research, usually an essay, under the guidance of a faculty adviser (CLCV 450a, 451b). A brief prospectus of the project must be submitted to the director of undergraduate studies preferably at the end of the junior year and in no case later than October 15 of the senior year. The completed project must be submitted to the department no later than April 1 of the senior year. If the student has written an essay, two copies are required.

Programs for all majors must be approved by the director of undergraduate studies.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 12 term courses (incl two-term senior sem)
Specific courses required: Class of 2009—none; Class of 2010 and later—CLCV 254a, 255b
Distribution of courses: 2 courses in ancient hist and/or classical art and archaeology; 2 courses in Greek or Latin (or both) numbered 131 or higher
Senior requirement: Senior project (CLCV 450a, 451b)

III. THE MAJOR IN ANCIENT AND MODERN GREEK

The major in Ancient and Modern Greek offers students an opportunity to integrate the study of postclassical Greek language, history, and culture with the departmental program in ancient Greek and classical civilization. The major covers Hellenic civilization from the Bronze Age to the modern day, and traces the development of the language and the culture across traditionally drawn boundaries. The study of both ancient and modern Greek allows the student to appreciate how familiarity with one enriches understanding of the other, and to chart the development of a language which has one of the oldest continuous written traditions in the world. The literature, history, philosophy, religion, and art of the ancient Greek and Greco-Roman worlds are studied both as ends in themselves and also as a foundation for appreciating later (medieval, Ottoman, and modern) developments in these areas. Students are encouraged to develop a sense of the continuity of Greek language and culture, and an understanding of how Byzantine and modern forms relate to their ancient forebears.

The standard major for the Class of 2009. The major in Ancient and Modern Greek requires at least eight term courses, totaling ten course credits: candidates must complete no fewer than four term courses, totaling six course credits, at the level of 390 or above in ancient Greek, including the double-credit Survey for the Major in Classics (Grek 498a and 499b), and
one additional course in ancient Greek history. The language courses should include GREEK 390a. Candidates are encouraged to take a wide range of courses in the areas of ancient philosophy, religion, art, and architecture. In addition, no fewer than two term courses in modern Greek must be elected at the intermediate level (MGRK 130a, 140b) or above, as well as at least one additional term course in the history, art history, literature, or culture of the Greek-speaking Balkans or the Hellenic diaspora in the medieval, Ottoman, or modern period. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

The standard major for the Class of 2010 and subsequent classes. The major in Ancient and Modern Greek requires at least ten term courses. These include four term courses at the level of 390 or above in ancient Greek, surveys of the history of Greek and Latin literature in translation (CLCV 254a and 255b), and one term course in ancient Greek history. The language courses should include GREEK 390a. Candidates are encouraged to take a wide range of courses in the areas of ancient philosophy, religion, art, and architecture. In addition, no fewer than two term courses in modern Greek must be elected at the intermediate level (MGRK 130a, 140b) or above, as well as at least one additional term course in the history, art history, literature, or culture of the Greek-speaking Balkans or the Hellenic diaspora in the medieval, Ottoman, or modern period. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Senior requirement. At the end of the senior year the student takes a comprehensive examination in the history of Greek literature.

The intensive major is designed for students who desire a larger measure of independence than that offered by the standard major. Students in the intensive major devote two terms of the senior year to writing an essay (CLSS 490a and 491b) under the regular guidance of a faculty member. A brief prospectus of the essay must be submitted preferably at the end of the junior year and in no case later than October 15 of the senior year. The candidate must submit two copies of the senior essay to the director of undergraduate studies no later than April 1 of the senior year.

REQUIREMENTS OF THE MAJOR

Prerequisites: None

Number of courses:
Class of 2009—8 term courses, totaling 10 course credits; Class of 2010 and later—10 term courses

Specific courses required:
Class of 2009—GREEK 390a, 498a, and 499b; Class of 2010 and later—GREEK 390a, CLCV 254a, 255b

Distribution of courses:
Class of 2009—6 course credits in ancient Greek; 1 term course in ancient Greek hist; 2 term courses in modern Greek; 1 term course in postclassical Greek hist or culture; Class of 2010 and later—4 term courses in ancient Greek; 1 term course in ancient Greek hist; 2 term courses in modern Greek; 1 term course in postclassical Greek hist or culture

Senior requirement: Senior dept exam

Intensive major: Same, plus senior essay (CLSS 490a, 491b)

PLACEMENT POLICY

Students are encouraged to take courses as advanced as they can handle with profit and pleasure. The department, recognizing the great variety in preparation in ancient languages, wishes to accommodate incoming students in as flexible a manner as possible. Students who plan either to begin or to continue
the study of Greek or Latin should consult members of the departmental faculty as soon as practicable.

Students who have had the equivalent of two years of college-level instruction may try a 400-level course. It is possible to take GREK 141b or LATN 141b after a 400-level course in the fall, or to be admitted to a 400-level course after completion of GREK 131a or LATN 131a. Freshmen are encouraged to take advantage of the initial course selection period before course schedules are due to find the most appropriate course.

GREEK

GREK 110a, BEGINNING GREEK: THE ELEMENTS OF GREEK GRAMMAR.

Staff.

MTWThF 9.25-10.15 L1 1.5 C Credits Meets RP (32)
Introduction to ancient Greek. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for GREK 120b. No prior knowledge of Greek assumed.

GREK 120b, BEGINNING GREEK: REVIEW OF GRAMMAR AND SELECTED READINGS.

Staff.

MTWThF 9.25-10.15 L2 1.5 C Credits Meets RP (32)
Continuation of GREK 110a. Emphasis on consolidating grammar and on readings from Greek authors. The sequence GREK 110a, 120b prepares for 131a or 141b. Prerequisite: GREK 110a or equivalent. (Formerly GREK 111b)

GREK 131a, GREEK PROSE: AN INTRODUCTION.

Staff.

MWF 10.30-11.20 L3 (33)
Close reading of selections from classical Greek prose with review of grammar. Counts as L4 if taken after GREK 141b or equivalent. (Formerly GREK 300a)

GREK 141b, HOMER: AN INTRODUCTION.

Pauline LeVen.

MWF 10.30-11.20 L3 (33)
A first approach to reading Homeric poetry in Greek. Selected books of the Iliad or the Odyssey. Counts as L4 if taken after GREK 131a or equivalent. (Formerly GREK 301b)

GREK 390aG, SYNTAX AND STYLISTICS.

Victor Bers.

MW 9-10.15 L5, Hu (32)
A review of accidence and syntax, elementary composition, and analysis of Greek prose styles of the fifth and fourth centuries b.c., including a comparison of “prosaic” and “poetic” syntax. Prerequisite: previous familiarity with some Greek prose beyond the elementary level, or permission of instructor.

*GREK 430bG, ARISTOPHANES.

Egbert Bakker.

MW 4-5.15 L5, Hu (37)
Intensive reading and study of Aristophanes’ plays in their historical, social, and intellectual context.

*GREK 437aG/PHIL 400aG, PLATO’S PARMENIDES.

Verity Harte, Barbara Sattler.
For description see under Philosophy.

*GREK 460aG, GREEK LYRIC POETRY: PINDAR AND BACCHYLIDES.

Pauline LeVen.

MW 2.30-3.45 L5, Hu (37)
Close reading of the lyric poetry of Pindar and Bacchylides. Focus on victory odes (epinicians), with additional readings from paens and dithyrambs. Discussion of composition, themes, and poetics, as well as issues of genre and performance. The poems’ relations to contemporary religious and social practices. Introduction to a range of modern critical approaches.

**grek 467a, Satires and Dialogues of Lucian.** John Dillon.

WF 11.35-12.50  L5, Hu (34)

Close reading of selected satirical works and dialogues by Lucian of Samosata. Focus on grammar, syntax, and translation. Some attention to the teachings of competing philosophical schools, the culture of the Second Sophistic movement, and the nature of satire, rhetoric, and conversational dialogue. A bridge course between intermediate and advanced courses.

**grek 480bG, Readings in the Ancient Greek Novel.**

Pauline LeVen.

MW 2.30-3.45  L5, Hu (37)

Close reading of selections from Greek novels of the first to fourth centuries C.E. Aspects of the novel genre; individual authors’ literary techniques; the nature, readership, and social context of the ancient novel. Introduction to major critical and interpretive issues. Novels include Longus’ *Daphnis and Chloe*, Achilles Tatius’ *Leukippe and Chiton*, and Heliodorus’ *Ethiopian Tale.*

**grek 494a or b, Independent Tutorial in Greek Language and Literature.** Consult the director of undergraduate studies.

HTBA (0)

For students with advanced Greek language skills who wish to engage in concentrated reading and research on material not otherwise offered in courses. The work should result in a term paper or examination. A limited number of these classes may be offered toward the major.

**grek 498aG and 499bG, Survey for the Major in Classics: History of Greek Literature.**

L5, Hu  2 C Credits per term

498a: Th 11.35-12.50, 1 HTBA (24)  Corinne Pache

499b: MW 1-2.15, 1 HTBA (36)  Egbert Bakker

A comprehensive treatment of Greek literature from Homer to the Hellenistic age. The student is expected to read extensively in the original language, working toward familiarity with the range and variety of the literature. Prepares for the comprehensive examinations in Classics for those majoring in both literatures or concentrating on Greek. **After at least two term courses in Greek numbered in the 400s. Enrollment limited to seniors majoring in Classics, Classical Civilization, or Ancient and Modern Greek.**

**Latin**

**Latin 110a, Beginning Latin: The Elements of Latin Grammar.**

Staff.

L1  1 1/2 C Credits  Meets RP (61)

110a–1: MTWThF 9.25-10.15

110a–2: MTWThF 10.30-11.20

110a–3: MTWThF 1.30-2.20

Introduction to Latin. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for **LATN 120b. No prior knowledge of Latin assumed. Preregistration, which is required, is on Tuesday, September 2, at the Academic Fair in WLH from 2 to 4 P.M.**
LATN 120b, BEGINNING LATIN: REVIEW OF GRAMMAR AND SELECTED READINGS. John Fisher and staff.

L2 1½ Credits Meets RP (61)

120b–1: MTWTHF 9.25-10.15
120b–2: MTWTHF 10.30-11.20
120b–3: MTWTHF 1.30-2.20

Continuation of LATN 110a. Emphasis on consolidating grammar and on readings from Latin authors. The sequence LATN 110a, 120b prepares for 131a or 141b. Prerequisite: LATN 110a or equivalent. (Formerly LATN 111b)

LATN 131a, LATIN PROSE: AN INTRODUCTION. Pauline LeVen and staff.

131a–1: MWF 9.25-10.15 L3 (61)
131a–2: MWF 10.30-11.20 L3 (61)
131a–3: MWF 1.30-2.20 L3 (61)

Close reading of a major work of classical prose; review of grammar as needed. Counts as L4 if taken after LATN 141b or equivalent. (Formerly LATN 300a)

LATN 141b, LATIN POETRY: AN INTRODUCTION. Staff.

141b–1: MWF 10.30-11.20 L3 (61)
141b–2: MWF 1.30-2.20 L3 (61)

The course is devoted to Vergil. Counts as L4 if taken after LATN 131a or equivalent. (Formerly LATN 301b)

LATN 300b, LATIN SYNTAX AND STYLE. Joseph Solodow.

MW 9-10.15 L5, Hu (32)

A systematic review of syntax and an introduction to Latin style. Selections from Latin prose authors are read and analyzed, and students compose short pieces of Latin prose. For students with some experience reading Latin literature who desire a better foundation in forms, syntax, idiom, and style.

*LATN 421bG, VERGIL’S AENEID. Irene Peirano.

TH 4-5.15 (27)

An in-depth study of Vergil’s Aeneid within its political context.

[LATN 427bG, TACITUS AND PLINY]

*LATN 447aG/HIST 209Ja, ROMAN SOCIAL HISTORY IN LATIN TEXTS.

John Matthews.

M 1.30-3.20 L5, Hu (0)

A study of issues in the social and economic life of the Roman Empire from the first century through the fifth. Readings from legal, documentary, epigraphic, and literary sources of the period.

*LATN 458a, SUETONIUS. William Metcalf.

MW 4-5.15 L5, Hu (37)

Close reading of texts from Suetonius’s Lives of the Caesars. A bridge course between intermediate and advanced courses.

*LATN 464aG, OVID’S METAMORPHOSES. Joseph Solodow.

MW 11.35-12.50 (34)

An intensive introduction to the Metamorphoses, with particular attention to questions of narrative, gender, politics, and literary history.

[LATN 474bG, ROMANS AND GAULS]

*LATN 491aG, COMPARATIVE LATIN GRAMMAR. John Fisher.

TH 2.30-3.45 L5 (27)
Introduction to the historical and comparative study of the Latin language, with emphasis on the earliest records of archaic Latin, the development of Latin grammar and vocabulary from Proto-Indo-European, and comparison with the grammar and vocabulary of Greek, English, and other Italic languages, including South Picene, Oscan, and Umbrian.

**LATN 4944 or b, Independent Tutorial in Latin Language and Literature.** Consult the director of undergraduate studies.

HTBA (0)

For students with advanced Latin language skills who wish to engage in concentrated reading and research on material not otherwise offered in courses. The work should result in a term paper or examination. A limited number of these classes may be offered toward the major.

**LATN 498aG and 499bG, Survey for the Major in Classics: History of Latin Literature.**

L5, Hu 2 C Credits per term

498a: TTh 11.35-12.50, 1 HTBA (24) John Fisher

499b: TTh 1-2.15, 1 HTBA (26) Irene Peirano

A survey of Latin literature from the earliest texts to the sixth century C.E., with the main focus on the period from the second century B.C.E. to the second century C.E. Diachronic, synchronic, generic, and topical models of organization. Prepares for the comprehensive examinations in Classics for those majoring in both literatures or concentrating on Latin. After at least two term courses in Latin numbered in the 400s. Enrollment limited to seniors majoring in Classics or Classical Civilization.

**CLASSICS**

**CLSS 401bG, Latin Paleography.** Richard Rouse.

TTh 11.35-12.50, 1 HTBA L5, Hu (24)

Introduction to the history of the manuscript book, 750–1500. Techniques for making informed judgments concerning date and place of origin; reading and transcription of medieval scripts. The manuscript book as a product of the society that made it and as a source for the study of that society. Prerequisite: proficiency in Latin.

**CLSS 403bG, Greek Papyrology.** Ann Ellis Hanson.

Th 2.30-4.20 Hu (0)

Literary and documentary papyri of Greek and Roman Egypt, concentrating on documents housed in the Beinecke Library from the late Ptolemaic and Roman periods. Topics include using papyri as sources for social and other histories; gaining familiarity with the language of the papyri; and the reading of literary and documentary hands. Prerequisites: proficiency in Greek; reading knowledge of German and French.

**CLSS 423bG, Medieval Readings about Writing.** Mary Rouse.

F 1.30-3.20 L5, Hu (0)

Reading and explanation of texts concerning the production, use, reception, and metaphorical import of manuscript books in the Latin West, 400–1500. Texts employed for their insights into medieval communities. Prerequisite: advanced proficiency in Latin. Recommended preparation: reading knowledge of at least one western European language.

**CLSS 490a and 491b, Senior Essay for the Intensive Major in Classics.** Consult the director of undergraduate studies.

HTBA (0)
Qualified students may write a senior essay in ancient literature or classical archaeology under the guidance of a faculty adviser. A written statement of purpose must be submitted to the director of undergraduate studies.

CLASSICAL CIVILIZATION

    TTh 1-2.15, 1 HTBA    WR, Hu (26)
An introduction to myths and their cultural context, with emphasis on Greek mythology. The wider application of myth to human concerns such as creation, gender, identity, and death. Methods of modern myth analysis applied to ancient, medieval, and modern mythology.

[clcv 122a/hist 214a, The Age of Constantine]

clcv 170a/arcg 170a/hsar 250a, Roman Art: Empire, Identity, and Society. Diana Kleiner.
For description see under History of Art.

clcv 175b/arcg 252b/hsar 252b, Roman Architecture.
Diana Kleiner.
For description see under History of Art.

clcv 205a/hist 205a, Introduction to Ancient Greek History.
Donald Kagan.
    TTh 11.35-12.50, 1 HTBA    Hu (24)
An introductory course in Greek history tracing the development of Greek civilization as manifested in political, intellectual, and creative achievements from the Bronze Age to the end of the classical period. Students read original sources in translation as well as the works of modern scholars.

clcv 206a/hist 217a, Introduction to Roman History:
The Republic. William Metcalf.
    MW 2.30-3.45    WR, Hu (37)
The development of Rome from a small village in the archaic period to the head of an empire by the death of Caesar in 44 b.c. Readings from primary sources with emphasis on how the ancients perceived and wrote history, as well as engagement with epigraphic and archaeological material.

clcv 207b/hist 218b, Introduction to Roman History:
The Empire. John Matthews.
    MW 2.30-3.45, 1 HTBA    Hu (37)
The history of the Roman Empire from its establishment by Augustus to the reign of Justinian. Attention to social, intellectual, and religious changes, as well as to the framework of historical events within which these changes took place, and to the processes by which the Roman Empire was replaced by the institutions of the Western Middle Ages and the Byzantine Empire.

*clcv 211b/hums 263b/litr 333b/mgrk 211b/wgss 248b, Literature and War in the Greek Tradition. George Syrimis.
For description see under Hellenic Studies.

*clcv 218b/hums 258b/litr 161b/thst 218b, Drama and Demos.
Timothy Robinson.
    MW 1-2.15    WR, Hu (36)    Tr
The major plays of Aeschylus, Sophocles, Euripides, and Aristophanes read in translation with attention to their theatricality and to their articulation of contemporary attitudes toward politics, psychology, and the consolidation and disintegration of the Athenian polis during the fifth century B.C. Prerequisite: a course on ancient Greece (history or literature) or in theater studies.

For description see under History of Art.

cclv 232a/hist 208a/hums 233a, Food and Diet in Greco-Roman Antiquity. Veronika Grimm.

**TTh 11:35-12:30 Hu (24)**
A review of evidence concerning dietary habits and attitudes in the Greco-Roman world, examining the various meanings of eating and drinking in literary texts and the significance of food and drink in social and religious life and in health care. Readings in translation.

clcv 254a/litr 158a, Introduction to Greek Literature.
Egbert Bakker.

**MW 1-2.15, 1 HTBA Hu (36) Tr**
Survey of the literature of ancient Greece from the Archaic period to the Second Sophistic. Readings and discussion in English.

cclv 255b/litr 159b, Introduction to Latin Literature.
Kirk Freudenburg.

**TTh 11:35-12:30, 1 HTBA Hu (24) Tr**
Survey of the literature of ancient Rome from the Republic to the sixth century C.E. Readings and discussion in English.

*clcv 312b/*hums 390b/*nelc 315b, Translating the Hero.
Corinne Pache, Kathryn Slanski.
For description see under Humanities.

*clcv 318a/*hums 382a/*litr 445a, Literature and Philosophy in Early China and Greece. Alexander Beecroft.
For description see under Literature.

*clcv 406a/*hist 200Ja, Athenian Imperial Democracy.
Donald Kagan.

**T 2:30-4.20 Hu (27)**
A history of Greece in the years between the Persian invasion and the Peloponnesian War, with emphasis on Athens. Prerequisite: clcv 205a or equivalent.

*clcv 407b6/*hist 207Jb6, Thucydides and the Peloponnesian War. Donald Kagan.

**T 1:30-3.20 Hu (26)**
A study both of the great war between Athens and Sparta that transformed the world of the Greek city-states and of the brilliant historian and political thinker who described it. Prerequisite: clcv 205a or equivalent.

*clcv 414a6/*hist 213Ja, Religions of the Roman Empire.
Veronika Grimm.

**MW 11:35-12.50 Hu (0)**
A survey of the religions of Rome and its empire from the Republic to the time of Constantine. Readings from ancient texts, in translation, and secondary sources. (Formerly clcv 208a)
*clcv 447b/phil 401b, Pleasure in Plato and Aristotle.
  Verity Harte.
  For description see under Philosophy.

*clcv 449b/phil 402b, Philosophy of Mathematics in Ancient Greece.
  Barbara Sattler.
  For description see under Philosophy.

*clcv 450a and 451b, Senior Project for the Major in Classical Civilization.
  Consult the director of undergraduate studies.

htba (0)
An appropriate instructor is assigned to each student by the director of undergraduate studies in consultation with the student. In the first term, selected readings compensate for individual deficiencies and help the student achieve a balanced overview. In the second term, each student explores in depth a subject of personal interest in literature, archaeology, art, philosophy, or history.

*clcv 494a or b, Independent Tutorial in Classical Civilization.
  Consult the director of undergraduate studies.

htba (0)
For students who wish to pursue a specialized subject in classical civilization not otherwise covered in courses. Students are expected to provide a detailed reading list and a clear outline of their project early in the term. The work should result in a term paper or examination. A limited number of these classes may be offered toward the major. Readings in translation.

Other Courses Relevant to the Major

*gman 305a/G*gmst 305a/*hums 238a/*litr 216a, Oedipus and Faust: Tragedies of Knowledge.
  Rainer Nägele.
  For description see under Germanic Languages & Literatures.

hist 210a/hums 380a, The Early Middle Ages, 284–1000.
  Paul Freedman.
  For description see under History.

hsar 239b/G*arcg 239b/hums 104b/nelc 104b, Art of the Ancient Near East and Aegean.
  Karen Foster.
  For description see under History of Art.

*hsar 422b, Hellenistic Sculpture.
  Lisa Brody.

*hums 226a, Classical to Romantic Epic.
  Jane Levin.

hums 396b, The City of Rome.
  Virginia Jewiss.

mgrk 110a, Elementary Modern Greek I.
  Maria Kaliambou.
  For description see under Hellenic Studies.

mgrk 120b, Elementary Modern Greek II.
  Maria Kaliambou.
  For description see under Hellenic Studies.

mgrk 130a, Intermediate Modern Greek I.
  Maria Kaliambou.
  For description see under Hellenic Studies.

mgrk 140b, Intermediate Modern Greek II.
  Maria Kaliambou.
  For description see under Hellenic Studies.
Cognitive science explores the nature of cognitive processes such as perception, reasoning, memory, attention, language, decision making, imagery, motor control, and problem solving. The goal of cognitive science, stated simply, is to understand how the mind works. Cognitive science is an inherently interdisciplinary endeavor, drawing on tools and ideas from fields such as psychology, computer science, linguistics, philosophy, and neuroscience. Approaches include empirical studies of the ontogenetic and phylogenetic development of cognitive abilities, experimental work on cognitive processing in adults, attempts to understand perception and cognition based on patterns of breakdown in pathology, computational and robotic research that strives to simulate aspects of cognition and behavior, neuroscientific investigations of
the neural bases of cognition using neural recording and brain scanning, and
the development of philosophical theories of the nature of mind.

Introductory courses. An introductory survey course, CGSC 110a, is normally
taken by the end of the fall term of the sophomore year and prior to admission
to the major. An introductory survey course in psychology, linguistics,
computer science, neuroscience, or philosophy should also be taken by the
end of the fall term of the sophomore year.

Requirements of the major. Fifteen course credits are required for the major,
including the two introductory courses and the senior colloquium and project.
The remaining twelve term courses are chosen from an approved list that
includes work in psychology, linguistics, computer science, neuroscience,
and philosophy bearing on the study of the mind and its relation to the
brain. Beyond these core areas, the program also draws on relevant courses
in anthropology, art, biology, economics, and music. Majors take four
courses in one core field, three in another, two in a third, and one in a fourth,
with the remaining two courses selected (with the approval of the director
of undergraduate studies) from courses relevant to the student's program in
Cognitive Science. The particular selection of courses must be approved by
the director of undergraduate studies in order to assure overall coherence
and breadth. For the Class of 2011 and subsequent classes, courses taken
Credit/D/Fail may not be counted toward the requirements of the major,
except with permission of the director of undergraduate studies.

Specific programs will vary considerably depending on the student's choice
of areas of concentration, as well as the offerings of participating departments
from year to year. Some of the themes that may structure coursework in the
major include perception, language, reasoning and decision making, the con-
nection between brain and behavior, comparative cognition, cognition and
the arts, and computational approaches to studying the mind.

Senior requirement. In the senior year, majors take the senior colloquium
and project, CGSC 490. In the fall term students begin researching and writ-
ing a senior essay under the guidance of an appropriate faculty member in an
area of cognitive science. In the spring term students complete the senior
essay. Throughout the senior year, students meet regularly with one another
and with the faculty in the context of this course to discuss current work in
cognitive science and their own developing research projects.

Application to the major. Students must apply to enter the major at the end
of the fall term of the sophomore year. Applications must be made in writ-
ing to the director of undergraduate studies no later than Wednesday,
December 10, in 109 K. Applications must include both an official or unof-
ficial transcript of work at Yale that lists fall-term 2008 courses and a brief
statement of purpose, which serves to indicate academic interests and
expected focus within the areas of the Cognitive Science major. Application
forms and a list of frequently asked questions are available on line at
www.yale.edu/perception/cogsci. Applicants will be notified of decisions con-
cerning admission to the major in January 2009.

REQUIREMENTS OF THE MAJOR

Prerequisites:  CGSC 110a or equivalent; 1 intro survey course in related discipline, 
as specified
Number of courses:  15 course credits (incl prereqs and senior req)
Distribution of courses:  4 term courses from one core field, 3 from another, 2
from a third, and 1 from a fourth; 2 addtl term courses from relevant area
Senior requirement:  CGSC 490
INTRODUCTORY COURSES

CGSC 110A/PSYC 130A, INTRODUCTION TO COGNITIVE SCIENCE.
Daniel Rothschild.
MW 11:35-12:50  So  (0)
An introduction to the interdisciplinary study of how the mind works. Discussion of tools, theories, and assumptions from psychology, computer science, neuroscience, linguistics, and philosophy.

CGSC 150A, BRAIN AND CULTURE. Bruce Wexler.
HTBA  So  (50)
Differences between humans and other animals in the degree to which our brains are shaped by sensory input from the environment and the degree to which we shape our environments. Neurobiological, psychological, and anthropological views of the relationship between the individual and the social environment; changes in that relationship when the brain matures and neuroplasticity decreases in early adulthood, with implications for social theory. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

CGSC 201A/PSYC 120A, BRAIN AND THOUGHT: AN INTRODUCTION TO THE HUMAN BRAIN. Amy Arnsten.
TT 2:30-3:20, 1 HTBA  Sc  (27)
An introduction to human brain anatomy, physiology, and function for Cognitive Science and non-science majors. Focus on basic concepts of neural function and on brain mechanisms underlying higher cognitive abilities. Includes readings about and videos of patients with neuropsychiatric disorders or brain lesions.

ADVANCED COURSES

CGSC 320B/LING 140B, COMPUTATIONAL MODELS IN COGNITIVE SCIENCE. Robert Frank.
For description see under Linguistics.

CGSC 390B, JUNIOR SEMINAR IN COGNITIVE SCIENCE. Stephen Anderson.
T 3:30-5:30  (0)
Discussion of historically important papers in cognitive science. Topics are varied and reflect student interests. Some attention to planning for the senior project. Intended for juniors in the Cognitive Science major.

CGSC 407B/PSYC 407B, COGNITIVE SCIENCE OF CAUSALITY. Frank Keil.
For description see under Psychology.

CGSC 409A, LANGUAGE AND THE BRAIN. Bruce Wexler.
HTBA  So  (0)
Neural and social processes important in the development and functions of language, the role of language in thought, the role of internal language in brain function, processes of learning first and second languages, and differences between spoken and written language. Students are encouraged to draw on their own experiences in learning Chinese and English to evaluate the effects of learning a new language on how our minds and brains work. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

For description see under Psychology.
*CGSC 413b/PSYC 413bG, Mind, Brain, and Society. Marvin Chun.
For description see under Psychology.

*CGSC 471a and 472b, Directed Research in Cognitive Science.
Brian Scholl.
HTBA (0)
Research projects for qualified students. The student must be supervised by a member of the Cognitive Science faculty, who sets the requirements and directs the research. To register, a student must submit a written plan of study to the director of undergraduate studies and the faculty supervisor. The normal minimum requirement is a written report of the completed research, but individual faculty members may set alternative equivalent requirements. May be elected for one or two terms.

*CGSC 473a and 474b, Directed Reading in Cognitive Science.
Brian Scholl.
HTBA (0)
Individual study for qualified students who wish to investigate an area of cognitive science not covered in regular courses. The student must be supervised by a member of the Cognitive Science faculty, who sets the requirements and meets regularly with the student. To register, a student must submit a written plan of study to the director of undergraduate studies and the faculty supervisor. The normal minimum requirement is a term paper, but individual faculty members may set alternative equivalent requirements. May be elected for one or two terms.

*CGSC 490, Senior Colloquium and Project. Tamar Gendler.
W 4-5.50 1 C Credit (0) Cr/Year only
A research colloquium leading to the selection of a topic for, and the completion of, the senior essay. Seniors in the major attend regular colloquium presentations by outside scholars and, together with program faculty, discuss them along with other current work in the field. By the end of the fall term students choose an essay topic. During the spring term presentations become more narrowly focused on students' senior projects.

Courses in Other Departments Relevant to Cognitive Science


*CHLD 350a or b/PSYC 350a or b, Autism and Related Disorders I.
Ami Klin, Fred Volkmar.
For description see under Child Study Center.

*CHLD 351b/PSYC 351b, Autism and Related Disorders II.
Ami Klin, Fred Volkmar.
For description see under Child Study Center.

CPSC 178a, Visualization: Data, Pixels, and Ideas.
Holly Rushmeier.

CPSC 201a or b, Introduction to Computer Science.

CPSC 202a, Mathematical Tools for Computer Science.
James Aspnes.


cpsc 475bG/EEENG 475bG, Computational Vision and Biological Perception.  Steven Zucker.
For description see under Computer Science.


e&eb 122b, Principles of Evolution, Ecology, and Behavior.
Stephen Stearns.
For description see under Biology.

econ 156b, Mathematical Economics: Game Theory.
Johannes Horner.

econ 159a, Game Theory.  Benjamin Polak.

LING 120aG/PSYC 318a, General Phonetics.  Jelena Krivokapić.
For description see under Linguistics.

LING 130bG/PSYC 322b, Evolution of Language.  Stephen Anderson.
For description see under Linguistics.

LING 132aG, Introduction to Phonological Analysis.
Darya Kavitskaya.


LING 141aG/PSYC 327a, Language and Computation.  Gaja Jarosz.
For description see under Linguistics.

LING 153aG, Syntax I.  Raffaella Zanuttini.


LING 254bG, Syntax II.  Robert Frank.

LING 270bG, Topics in Semantics: Focus.  Ashwini Deo, Laurence Horn.

MCDB 320aG, Neurobiology.  Haig Keshishian, Paul Forscher.
For description see under Biology.

For description see under Biology.

For description see under Biology.

PHIL 115a, First-Order Logic.  Sun-Joo Shin.

PHIL 267aG, Mathematical Logic I.  Sun-Joo Shin.
College Seminars in the Residential Colleges

Residential college seminars for the fall and spring terms are described on line at www.yale.edu/collegeseminar. These listings contain course titles, descriptions, and prerequisites. Course syllabi are available on line at classesv2.yale.edu.

College seminars begin meeting on the first day of classes each term. Students attend the first session of the college seminar and submit an application card to the instructor at the end of that session. Each term, a student is permitted to submit one first-choice card and two others. No more than three cards are accepted from any student. A student may enroll in no more than two college seminars in any given term, and no more than four total.
COMPARATIVE LITERATURE

The Comparative Literature department offers undergraduate courses under the rubric “The Literature Major,” and a graduate degree in Comparative Literature. For a listing of Yale College courses, see under The Literature Major.

COMPUTER SCIENCE

Director of undergraduate studies: Stanley Eisenstat, 208 AKW, 432-1246, stanley.eisenstat@yale.edu

FACULTY OF THE DEPARTMENT OF COMPUTER SCIENCE

Professors
Dana Angluin, James Aspnes, Julie Dorsey, Stanley Eisenstat, Joan Feigenbaum, Michael Fischer, David Gelernter, Paul Hudak, Gil Kalai (Adjunct), Ravindran Kannan, Drew McDermott, Willard Miranker (Adjunct), Vladimir Rokhlin, Holly Rushmeier, Martin Schultz, Zhong Shao, Avi Silberschatz (Chair), Daniel Spielman, Steven Zucker

Associate Professors
Brian Scassellati, Yang Richard Yang

Assistant Professor
Daniel Abadi

Senior Lecturer
Robert Dunne

The Department of Computer Science offers both B.S. and B.A. degree programs, as well as combined majors with the Departments of Electrical Engineering (see Electrical Engineering and Computer Science), Mathematics (see Computer Science and Mathematics), and Psychology (see Computer Science and Psychology). Each major program not only provides a solid technical education but also allows students either to take a broad range of courses in other disciplines or to complete the requirements of a second major.

The Computer Science and combined major programs share a common core of five computer science courses. The first is cpsc 201a or b, Introduction to Computer Science, a survey that demonstrates the breadth and depth of the field to students who have taken the equivalent of an introductory programming course. The remaining core courses cover discrete mathematics; data structures; systems programming and computer architecture; and algorithm analysis and design. Together these courses include the material that every major should know.

The core courses are supplemented by electives (and, for the joint majors, core courses in the other discipline) that offer great flexibility in tailoring a program to each student’s interests. The capstone is the senior project, through which students experience the challenges and rewards of original research under the guidance of a faculty mentor.

Prospective majors are encouraged to discuss their programs with the director of undergraduate studies as early as possible.

Introductory courses. The department offers a broad range of introductory courses to meet the needs of students with varying backgrounds and interests. With the exception of cpsc 201a or b, none assumes previous knowledge of computers.

1. cpsc 101b introduces nonmajors to some of the central ideas in computer science, including algorithms, elementary programming, hardware, complexity, and representation of information.
2. CPSC 112A or B teaches students majoring in any subject area how to program a computer and solve problems using the language Java or C#. Students with previous programming experience should consider taking CPSC 201A or B instead.

3. CPSC 150A explores how some of the key ideas in computer science have affected philosophy of mind, cognitivism, connectionism, and related areas. This humanities-style course has significant readings and a paper, and satisfies the writing distributional requirement.

4. CPSC 151B studies the history of the graphical user interface in an attempt to guess its future. This course also satisfies the writing distributional requirement.

5. CPSC 178A presents computer graphics and visualization tools as a medium for communication and discovery in science, engineering, business, and the arts.

6. CPSC 179B examines the methods used to define shapes, materials, and lighting in computer-generated images. Students use a modeling/rendering system to create an animated video with rich visual effects. Proficiency in high school-level mathematics is assumed.

7. CPSC 180A or B studies the legal issues arising from the use of computers in contemporary society, particularly in the context of the Internet. No previous experience with law is assumed.

8. CPSC 201A or B surveys the field of computer science, including systems (computers and their languages) and theory (algorithms, complexity, and computability). Students with sufficient programming experience may elect CPSC 201A or B without taking CPSC 112A or B. (These courses meet at the same time so that students are easily able to change levels if necessary.)

9. CPSC 202A presents the formal methods of reasoning and the concepts of discrete mathematics and linear algebra used in computer science and related disciplines.

Requirements of the major. The B.S. and the B.A. degree programs have the same required core courses: CPSC 201A or B; CPSC 202A or MATH 244A; CPSC 223B, 323A, 365B, and 490A or B. The B.S. degree program requires six additional intermediate or advanced courses in Computer Science, for a total of twelve; the B.A. degree program, four, for a total of ten. CPSC 480A or B and 490A or B may not be counted toward these electives. All courses in the major must be taken for a letter grade.

Students majoring in Computer Science are advised to complete CPSC 201A or B and 223B by the end of the sophomore year.

For students who already know how to program, typical B.S. programs starting in the freshman and sophomore years are:

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<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>CPSC 201A</td>
<td>CPSC 202A</td>
<td>Two electives</td>
<td>CPSC 490A</td>
</tr>
<tr>
<td>CPSC 223B</td>
<td>CPSC 365B</td>
<td>One elective</td>
<td>CPSC 490A</td>
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and

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>CPSC 201A</td>
<td>CPSC 323A</td>
<td>CPSC 490A</td>
</tr>
<tr>
<td>CPSC 202A</td>
<td>One elective</td>
<td>Two electives</td>
</tr>
<tr>
<td>CPSC 223B</td>
<td>CPSC 365B</td>
<td>Two electives</td>
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</table>

One elective

For typical B.A. programs, two of the electives would be omitted.
**Electives.** The Computer Science department encourages interdisciplinary study in which computer science plays a major role. Advanced courses in other departments that involve concepts from computer science and are relevant to an individual program may, with permission of the director of undergraduate studies, be counted toward the requirements.

Students considering graduate study in computer science are advised to take CPSC 421A and 422B, as well as courses covering the breadth of computer science, including programming languages and systems, artificial intelligence, scientific computing, and theoretical computer science.

Students interested in using computers to solve scientific and engineering problems are advised to take CPSC 440B as well as computational courses offered in Applied Mathematics and in Engineering and Applied Science.

The core mathematical background necessary to complete the Computer Science major is provided in CPSC 202A. However, many advanced courses in graphics, computer vision, neural networks, and numerical analysis assume additional knowledge of linear algebra and calculus. Students who plan to take such courses as electives and who are unsure whether they have the appropriate mathematical background are encouraged to take MATH 222A or B, 225A or B, or 230 and MATH 112A or B, 115A or B, or 120A or B.

**Senior requirement.** In the senior year students must take CPSC 490A or B, an independent project course in which students select an adviser to guide them in research in a subfield of computer science. With permission of the director of undergraduate studies, students may enroll in 490A or B more than once or before their senior year.

**Schedule approval.** All Computer Science majors in the sophomore, junior, and senior years should have their programs approved by the director of undergraduate studies.

**Combined B.S./M.S. degree program in Computer Science.** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.S. and M.S. degrees after eight terms of enrollment. The requirements are as follows:

1. Candidates must satisfy the Yale College requirements for the B.S. degree in Computer Science.
2. In fulfilling these requirements, students must complete eight graduate courses from the approved list, up to two of which may, with the permission of the director of undergraduate studies and the director of graduate studies, also be applied toward completion of the B.S. degree. At most one of these eight courses may be CPSC 690A or B, 691A or B, or 692A or B.

**Select Program in Engineering.** Qualified students majoring with a B.S. degree in Computer Science may be eligible to apply for a special program that includes industry research experience. See under Engineering.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:** B.S. — 12 term courses taken for letter grades (incl senior project); B.A. — 10 term courses taken for letter grades (incl senior project)

**Specific courses required:** B.S. and B.A. — CPSC 201A or B; CPSC 202A or MATH 2444; CPSC 223B, 323A, 365B

**Distribution of courses:** B.S. — 6 addtl intermediate or advanced Comp Sci courses; B.A. — four addtl intermediate or advanced Comp Sci courses

**Substitution permitted:** Advanced courses in other depts, with DUS permission

**Senior requirement:** Senior project (CPSC 490A or B)
INTRODUCTORY COURSES

cpsc 101b, Great Ideas in Computer Science. Stanley Eisenstat.
 MW 1-2.15 QR (0)
An introduction for nonmajors to some of the most important ideas in computer science: what the computer is; how it works; what it can do and what it cannot do, now and in the future. Topics include algorithms, elementary programming, hardware, language interpretation, software engineering, complexity, models of computation, and artificial intelligence. No previous programming experience required.

cpsc 112a or b, Introduction to Programming.
 112a: MWF 10.30-11.20 QR (33) Daniel Abadi
 112b: MWF 11.35-12.25 QR (34) Drew McDermott
Development on the computer of programming skills, problem-solving methods, and selected applications. No previous experience with computers necessary.

 MW 11.35-12.50 WR (34)
Introduction to the basic ideas of computer science (computability, algorithm, virtual machine, symbol processing system), and of several ongoing relationships between computer science and other fields, particularly philosophy of mind. No previous experience with computers necessary.

[cpsc 151b, The Graphical User Interface]

cpsc 178a, Visualization: Data, Pixels, and Ideas. Holly Rushmeier.
 TT 1-2.15 QR (0)
Introduction to the use of computer graphics as a medium for communication and discovery. Topics include computer graphics primitives and their association with data, relationships, and concepts to generate an image; real-time interactions with images; and the application of visualization to a variety of application domains, from science and engineering to business and the arts. No previous experience with computers necessary.

 TT 1-2.15 QR (0)
Basic methods used to define shapes, materials, and lighting when creating computer-generated images. Mathematical models for shape, texture models, and lighting techniques. Principles are applied through the use of modeling/rendering-animation software. Proficiency in high school–level mathematics is assumed. No previous programming experience necessary.

cpsc 180a or b, Computers and the Law. Robert Dunne.
 MWF 11.35-12.25 So (34)
A survey and exploration of legal issues arising from the use of computers in contemporary society, particularly in the context of the Internet. Topics include the nature of cyberspace and cybercommunities, constitutional rights on the electronic frontier, privacy and electronic communication, anonymity, censorship, computer crime and torts, liability issues, and intellectual property. No previous experience with computers or law necessary.

*cpsc 181a, Privacy in the Digital Age. Robert Dunne.
 MW 1-2.15 So (0)
Consideration of potential legal problems arising from computing technology. Topics include legal issues related to databases and privacy rights, user interfaces, Web filtering software, hot links, data communications, digitized pornography, and junk e-mail. After cpsc 180a or b.

**cpsc 182b, Intellectual Property in the Digital Age.**

Robert Dunne.

MW 1-2.15 So (2)

Issues and opportunities in the interpretation, design, and enforcement of copyright, trademark, trade secret, and patent laws in the context of computer hardware, software, and networks. After cpsc 180a or b.

**cpsc 201a or b, Introduction to Computer Science.**

201a: MWF 10.30-11.20 QR (33) Dana Angluin
201b: MWF 11.35-12.25 QR (34) Holly Rushmeier

Introduction to the concepts, techniques, and applications of computer science. Topics include computer systems (the design of computers and their languages); theoretical foundations of computing (computability, complexity, algorithm design); and artificial intelligence (the organization of knowledge and its representation for efficient search). Examples stress the importance of different problem-solving methods. After cpsc 112a or b or equivalent.

**cpsc 202a, Mathematical Tools for Computer Science.**

James Aspnes.

MWF 11.35-12.25 QR (34)

Introduction to formal methods for reasoning and to mathematical techniques basic to computer science. Topics include propositional logic, discrete mathematics, and linear algebra. Emphasis on applications to computer science: recurrences, sorting, graph traversal, Gaussian elimination.

**cpsc 223b, Data Structures and Programming Techniques.**

Michael Fischer.

TTh 1-2.15 QR (26)

Topics include programming in C; data structures (arrays, stacks, queues, lists, trees, heaps, graphs); sorting and searching; storage allocation and management; data abstraction; programming style; testing and debugging; writing efficient programs. After cpsc 201a or b or equivalent.

**math 244a/amth 244a, Discrete Mathematics.** Jayadev Athreya.

For description see under Mathematics.

**INTERMEDIATE COURSES**

**cpsc 323a, Introduction to Systems Programming and Computer Organization.** Stanley Eisenstat.

MW 1-2.15 QR Meets RP (0)

Machine architecture and computer organization, systems programming in a high-level language, assembly language, issues in operating systems, software engineering, prototyping in nonprogramming languages. After cpsc 223b.

**eeng 348a, Digital Systems.** Andreas Savvides.

**cpsc 365b, Design and Analysis of Algorithms.** Daniel Spielman.

TTh 2.30-3.45 QR (27)
Paradigms for problem solving: divide and conquer, recursion, greedy algorithms, dynamic programming, randomized and probabilistic algorithms. Techniques for analyzing the efficiency of algorithms and designing efficient algorithms and data structures. Algorithms for graph theoretic problems, network flows, and numerical linear algebra. Provides algorithmic background essential to further study of computer science. After cpsc 202a and 223b.

ADVANCED COURSES


MW 1-2.15 QR (36)
Compiler organization and implementation: lexical analysis, formal syntax specification, parsing techniques, execution environment, storage management, code generation and optimization, procedure linkage and address binding. The effect of language-design decisions on compiler construction. After cpsc 323a.

[cpsc 422bG, Operating Systems]

[cpsc 424bG, Parallel Programming Techniques]

[cpsc 425aG, Theory of Distributed Systems]


Th 2.30-3.45 QR (0)
Basic design and implementation of language-based approaches for increasing the security and reliability of systems software. Topics include proof-carrying code, certifying compilation, typed assembly languages, runtime checking and monitoring, high-confidence embedded systems and drivers, and language support for verification of safety and liveness properties. Prerequisites: cpsc 202a, 323a, and math 222a or b, or equivalents.

[cpsc 430aG, Formal Semantics]


MW 2.30-3.45 QR (0)
Study of the theoretical and practical fundamentals of computer-generated music, with a focus on high-level representations of music, algorithmic and heuristic composition, and programming languages for computer music generation. Theoretical concepts are supplemented with pragmatic issues expressed in a high-level programming language. Prerequisites: ability to read music; cpsc 202a and 223b.

[cpsc 432aG, Computer Music: Sound Representation and Synthesis]

[cpsc 433bG, Computer Networks]

Yang Richard Yang.

MW 2.30-3.45 QR (37)
Introduction to the principles of mobile computing and its enabling technologies. Topics include wireless systems; information management; location-independent and location-dependent computing models; disconnected and weakly-connected operation models; human-computer interactions; mobile applications and services; security; power management; and sensor networks. Prerequisites: cpsc 202a and 323a.
For description see under Electrical Engineering.

Introduction to Databases. Avi Silberschatz.  
TTh 2:30-3:45 QR (0)  

Database System Implementation and Architectures. Daniel Abadi.  
TTh 1-2:15 QR (26)  
A study of systems programming techniques, with a focus on database systems. In the first half of the term, students analyze the design of a traditional DBMS and build various components of a DBMS prototype, e.g., a catalog-manager, a buffer-manager, and a query execution engine. In the second half, students examine nontraditional architectures such as parallel databases, data warehouses, stream databases, and Web databases. After or concurrently with cpsc 202a and 323a.

Numerical Computation. Vladimir Rokhlin.  
MW 2:30-3:45 QR (37)  
Algorithms for numerical problems in the physical, biological, and social sciences: solution of linear and nonlinear systems of equations, interpolation and approximation of functions, numerical differentiation and integration, optimization. After cpsc 112a or b or an equivalent introductory programming course; math 120a or b; and math 222a or b or 225a or b or cpsc 202a.

Introduction to Data Mining. Martin Schultz.  
TTh 2:30-3:45 QR (0)  
A study of algorithms and systems that allow computers to find patterns and regularities in databases, to perform prediction and forecasting, and to improve their performance generally through interaction with data. After cpsc 202a, 223b, and math 222a or b, or equivalents.

Genomics and Bioinformatics. Mark Gerstein, Michael Snyder, and staff.  
For description see under Molecular Biophysics & Biochemistry.

TTh 2:30-3:45 (0)  
A mathematically rigorous investigation of the interplay of economic theory and computer science, with an emphasis on the relationship of incentive-compatibility and algorithmic efficiency. Particular attention to the formulation and solution of mechanism-design problems that are relevant to data networking and Internet-based commerce. Recommended preparation: familiarity with basic algorithmics and basic microeconomic theory.

MWF 11:35-12:25 QR (0)  
Paradigms and algorithms for learning classification rules and more complex behaviors from examples and other kinds of data. Topics may include version spaces, decision trees, artificial neural networks, Bayesian networks, instance-based
learning, genetic algorithms, reinforcement learning, inductive logic programming, the MDL principle, the PAC model, VC dimension, sample bounds, boosting, support vector machines, queries, grammatical inference, and transductive and inductive inference. After CPSC 202A and 223B, or with permission of instructor. CPSC 365B is recommended.

[CPSC 465B, Topics in Algorithms]

Michael Fischer.  
MW 2.30-3.45 QR (37)  
A survey of such private and public key cryptographic techniques as DES, RSA, and zero-knowledge proofs, and their application to problems of maintaining privacy and security in computer networks. Focus on technology, with consideration of such societal issues as balancing individual privacy concerns against the needs of law enforcement, vulnerability of societal institutions to electronic attack, export regulations and international competitiveness, and development of secure information systems. Some programming may be required. After CPSC 202A and 223B.

CPSC 468A/G, Computational Complexity.  
Joan Feigenbaum.  
TTTh 1-2.15 QR (0)  
Introduction to the theory of computational complexity. Basic complexity classes, including polynomial time, nondeterministic polynomial time, probabilistic polynomial time, polynomial space, logarithmic space, and nondeterministic logarithmic space. The roles of reductions, completeness, randomness, and interaction in the formal study of computation. After CPSC 365B or with permission of instructor.

CPSC 469B/G, Randomized Algorithms.  
James Aspnes.  
MW 1-2.15 QR (36)  
A study of randomized algorithms from several areas: graph algorithms, algorithms in algebra, approximate counting, probabilistically checkable proofs, and matrix algorithms. Topics include an introduction to tools from probability theory, including some inequalities such as Chernoff bounds. After CPSC 365B; a solid background in probability desirable. Taught in alternate years.

CPSC 470A/G, Artificial Intelligence.  
Drew McDermott.  
MWF 10.30-11.20 QR (33)  
Introduction to artificial intelligence research, focusing on reasoning and perception. Topics include knowledge representation, predicate calculus, temporal reasoning, vision, robotics, planning, and learning. After CPSC 201A or B and 202A.

Brian Scassellati.  
MWF 10.30-11.20 QR (0)  
Introduction to the construction of intelligent, autonomous systems. Sensory-motor coordination and task-based perception. Implementation techniques for behavior selection and arbitration, including behavior-based design, evolutionary design, dynamical systems, and hybrid deliberative-reactive systems. Situated learning and adaptive behavior. After CPSC 202A and 223B.

CPSC 475B/G/EENG 475B/G, Computational Vision and Biological Perception.  
Steven Zucker.  
TTTh 1-2.15 QR, Sc Meets RP (26)
An overview of computational vision with a biological emphasis. Suitable as an introduction to biological perception for computer science and engineering students, as well as an introduction to computational vision for mathematics, psychology, and physiology students. After Math 120a or b and CPSC 112a or b, or with permission of instructor.


TH 11.35-12.50 QR (24)
Artificial neural networks as a computational paradigm studied with application to problems in associative memory, learning, pattern recognition, perception, robotics, and other areas. Development of models for the dynamics of neurons and methods such as learning for designing neural networks. Concepts, designs, and methods compared and tested in software simulation. Brain and consciousness studies are optional topics. Programming and knowledge of linear algebra and calculus required.


MW 1-2.15 QR (36)
Introduction to the basic concepts of two- and three-dimensional computer graphics. Topics include affine and projective transformations, clipping and windowing, visual perception, scene modeling and animation, algorithms for visible surface determination, reflection models, illumination algorithms, and color theory. After CPSC 202a and 223b.

[CPSC 479a G, Advanced Topics in Computer Graphics]

*CPSC 480a or b, Directed Reading. Stanley Eisenstat.

HTBA (0)
Individual study for qualified students who wish to investigate an area of computer science not covered in regular courses. A student must be sponsored by a faculty member who sets the requirements and meets regularly with the student. Requires a written plan of study approved by the faculty adviser and the director of undergraduate studies. May be taken more than once for credit.

*CPSC 490a or b, Special Projects. Holly Rushmeier.

HTBA (0)
Individual research. Requires a faculty supervisor and the permission of the director of undergraduate studies. The student must submit a written report about the results of the project. May be taken more than once for credit.

COMPUTER SCIENCE AND ELECTRICAL ENGINEERING

(See under Electrical Engineering and Computer Science.)

COMPUTER SCIENCE AND MATHEMATICS

Directors of undergraduate studies: Stanley Eisenstat (Computer Science), 208 AKW, 432-1246, stanley.eisenstat@yale.edu; Yair Minsky (Mathematics), 448 DL, 432-4018, yair.minsky@yale.edu

Computer Science and Mathematics is an interdepartmental major for students who are interested in computational mathematics, the use of computers in mathematics, mathematical aspects of algorithm design and analysis, and theoretical foundations of computing.
The major requires fourteen term courses as well as a senior project. Six of the fourteen courses must be in computer science: CPSC 201A or B, 223B, 323A, and 365B; one from CPSC 440B, 465B, or 468A; and one additional advanced term course other than CPSC 480A or B or 490A or B. The remaining eight courses must be in mathematics: MATH 120A or B, either 222A or B or 225A or B, 244A, and five additional advanced term courses other than MATH 470A or B. MATH 230 may replace MATH 120A or B and 222A or B or 225A or B.

The senior requirement is a project or an essay on a topic acceptable to both departments. An oral report on the mathematical aspects of the project must be presented to the Mathematics faculty.

The entire program of each student majoring in Computer Science and Mathematics must be approved by the director of undergraduate studies in each department. For the Class of 2010 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the major.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 14 term courses (not incl senior req)
Specific courses required: CPSC 201A or B, 223B, 323A, 365B; one from CPSC 440B, 465B, or 468A; MATH 120A or B, either 222A or B or 225A or B, 244A
Distribution of courses: 5 addtl advanced courses in math (may not be MATH 470A or B); 1 addtl advanced course in comp sci (may not be CPSC 480A or B or 490A or B)
Substitution permitted: MATH 230 for MATH 120A or B and 222A or B or 225A or B
Senior requirement: Senior project or senior essay on topic acceptable to Comp Sci and Math depts; oral report to Math dept on mathematical aspects of project

COMPUTER SCIENCE AND PSYCHOLOGY

Directors of undergraduate studies: Stanley Eisenstat (Computer Science), 208 AKW, 432-1246, stanley.eisenstat@yale.edu; Woo-kyoung Ahn (Psychology), 319 SSS, 432-9626, psychdus@yale.edu

Computer Science and Psychology is an interdepartmental major designed for students interested in integrating work in these two fields. Each area provides tools and theories that can be applied to problems in the other. Examples of this interaction include cognitive science, artificial intelligence, neural modes of computation, and biological perception.

The prerequisite for the major is PSYC 110A or B. Beyond the prerequisite, the major requires fourteen term courses as well as a senior project.

Eight of the fourteen courses must be in computer science: CPSC 201A or B, 202A, 223B, 323A, 365B, and three advanced computer science courses in artificial intelligence or neural computing. CPSC 480A or B may not be counted as one of these courses.

The remaining six courses must be in psychology, including PSYC 200B, at least one from PSYC 210–299, at least two courses from the social science point of view, indicated as List A under Psychology, and at least one course in cognitive psychology or cognitive science listed in Psychology (e.g., PSYC 120A or 130A).

A second course in cognitive psychology or cognitive science may substitute for one of the courses in artificial intelligence or neural computing. An additional course in psychology and an examination arranged with the instructor of PSYC 200B may substitute for PSYC 200B.
Senior requirement. The senior project must be approved by the director of undergraduate studies in each department. If taken for course credit in CPSC 490a or b or PSYC 490a or 491b, the senior project course is in addition to the fourteen required courses.

The entire program of each student majoring in Computer Science and Psychology must be approved by the director of undergraduate studies in each department. For the Class of 2010 and subsequent classes, no course in Computer Science taken Credit/D/Fail may be counted toward the major; a maximum of one course in Psychology taken Credit/D/Fail may be counted toward the major.

REQUIREMENTS OF THE MAJOR

Prerequisite: PSYC 110a or b
Number of courses: 14 term courses beyond prereq (not incl senior project)
Specific courses required: CPSC 201a or b, 202a, 223b, 323a, 365b; PSYC 200b
Distribution of courses: 8 courses in comp sci, with 3 advanced AI or neural computing courses; 6 courses in psych, with at least 1 from PSYC 210–299, at least 2 from List A under Psychology, and at least 1 in cognitive psych or cognitive science listed in Psychology
Substitutions permitted: For 1 course in AI or neural computing, 1 addtl course in cognitive psych or cognitive science; for PSYC 200b, 1 addtl course in psych and exam arranged with instructor
Senior requirement: Senior project approved by DUS in each dept

COMPUTING AND THE ARTS

Director of undergraduate studies: Stanley Eisenstat (Computer Science), 208 AKW, 432-1246, stanley.eisenstat@yale.edu

Computing and the Arts is an interdepartmental major designed for students who wish to integrate work in computing with work in one of the arts disciplines: Art, History of Art, Music, or Theater Studies.

For students with a computing perspective, issues in these disciplines present interesting and substantive problems: how musicians use computers to compose; the limitations of current software tools used by artists; the types of analyses done by art historians; challenges in designing and using virtual sets in the theater; ways that virtual worlds might help to envision new forms of artistic expression; lessons that can be learned from trying to create a robotic conductor or performer.

For students with an artistic perspective, computing methods offer a systematic approach to achieving their vision. A foundation in computer science allows artists to understand existing computing tools more comprehensively and to use them more effectively. Furthermore, it gives them insight into what fundamentally can and cannot be done with computers, so they can anticipate the future development of new tools for computing in their field.

Prerequisites. The prerequisite for all students in the major is CPSC 112a or b. Additional prerequisites for the art track are ART 111a or b and 114a or b. An additional prerequisite for the music track is MUSI 210a or b, as determined by the music theory placement test. (Students who do not place into or out of MUSI 210a or b may need to take a lower-level course first.) Additional prerequisites for the theater studies track are THST 110a and 111b. There are no additional prerequisites for the history of art track. There is no required favorable review of studio work for admission to the major in any track.
The major. Twelve term courses are required beyond the prerequisites, not including a two-term senior project. Six of the courses must be in Computer Science, including Cpsc 201a or b, 202a, and 223b. Students are advised to complete Cpsc 202a and 223b by the end of the sophomore year. Math 2443 may be substituted for Cpsc 202a.

The six remaining courses are selected from one of the arts disciplines. Students choose a track in art, history of art, music, or theater studies. All requirements for a single track must be satisfied, as specified below.

Regardless of the track chosen, the senior requirement is a two-term project that is acceptable to both departments. Students must submit a written report, including an electronic abstract and Web page(s).

The art track requires the following courses in addition to the Computer Science courses listed above: (1) three 100-level courses beyond Art 111a or b and 114a or b, such as Art 122a or b, 138a, and 145a or b; (2) two courses in Art at the 200 or 300 level; (3) one course in Art at the 400 level; (4) two courses selected from Cpsc 475b, 478b, and 479a; (5) one additional intermediate or advanced computer science course (excluding Cpsc 490a or b).

The history of art track requires the following courses in addition to the Computer Science courses listed above: (1) one introductory History of Art course: Hsar 112a or 115b; (2) one 400-level seminar in History of Art; (3) two History of Art courses at the 200, 300, or 400 level (the courses must represent two different areas as defined in the History of Art program description); (4) one studio art course (students may need to take a prerequisite course in Art to prepare for the studio course); (5) Hsar 401a or b; (6) Cpsc 478b; (7) one from Cpsc 437a, 475b, or 479a; (8) one additional intermediate or advanced computer science course (excluding Cpsc 490a or b).

The music track requires the following courses in addition to the Computer Science courses listed above: (1) Musi 325a; (2) Musi 395a; (3) four term courses chosen from Musi 312, 343a, 412, 450b, 466b, 471a, and 472b; (4) Cpsc 431a; (5) Cpsc 432a; (6) one additional intermediate or advanced computer science course (excluding Cpsc 490a or b).

The theater studies track requires the following courses in addition to the Computer Science courses listed above: (1) Thst 210a; (2) three courses in dramatic literature or theater history; (3) two upper-level Theater Studies production seminars in design, directing, or playwriting; (4) Cpsc 478b or 479a; (5) Cpsc 431a or 432a; (6) one additional intermediate or advanced computer science course (excluding Cpsc 490a or b).

Senior requirement. The senior project must be approved by the director of undergraduate studies. The project requires two terms: one term of Cpar 491a or b, and one term of Art 495a or b, Hsar 499a or b, Musi 490, or Thst 491a or b, depending on the track chosen.

The entire program of each student majoring in Computing and the Arts must be approved by the director of undergraduate studies. Courses taken Credit/D/Fail may not be counted toward the major.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** All tracks — Cpsc 112a or b; Art track — Art 111a or b, 114a or b; Music track — Musi 210a or b; Theater studies track — Thst 110a, 11b

**Number of courses:** 12 term courses beyond prereqs (not incl senior project)

**Specific courses required:** All tracks — Cpsc 201a or b, 202a, 223b; Art track — 2 from Cpsc 475b, 478b, 479a; History of art track — Cpsc 478b; 1 from Cpsc 437a, 475b, 479a; Hsar 112a or 115b; Hsar 401a or b; Music track — Cpsc 431a, 432a; Musi 325a, 395a; Theater studies track — Cpsc 431a or 432a; Cpsc 478b or 479a; Thst 210a
Distribution of courses: All tracks—6 courses in Comp Sci, incl 1 addtl intermediate or advanced course beyond specific reqs (excluding CPSC 490a or b); Art track—3 courses in Art at 100 level (excluding prereqs), 2 at 200 or 300 level, and 1 at 400 level (in addition to senior req); History of art track—2 courses in different areas of history of art at 200, 300, or 400 level; one 400-level sem in History of Art; 1 studio art course; Music track—4 term courses from MUSI 312, 343a, 412, 450b, 466b, 471a, 472b; Theater studies track—3 courses in dramatic lit or theater history; 2 production sems, as specified

Substitution permitted: MATH 244a for CPSC 202a

Senior requirement: All tracks—Two-term senior project approved by DUS; Art track—Senior project completed in CPAR 491a or b and ART 495a or b; History of art track—Senior project completed in CPAR 491a or b and HSAR 499a or b; Music track—Senior project completed in CPAR 491a or b and one term of MUSI 490; Theater studies track—Senior project completed in CPAR 491a or b and THST 491a or b

★CPAR 491a or b, Senior Project in Computing and the Arts.
Stanley Eisenstat.
HTBA (c)
Individual research project for majors in Computing and the Arts. Requires two faculty supervisors, one from Computer Science and one from the department in the chosen track. Requires permission of the director of undergraduate studies. The student must present both a verbal and a written report describing the results of the project. May be taken more than once for credit.

COPTIC
(See under Near Eastern Languages and Civilizations.)

CZECH
(See under Slavic Languages and Literatures.)

DEVANE LECTURE COURSE

The DeVane Lecture Course is a series of lectures open to the general public that can also be taken by Yale undergraduates for course credit. The next set of DeVane Lectures is scheduled to be offered during the 2009–2010 academic year.

DIRECTED STUDIES

Director of undergraduate studies: Jane Levin, 53 Wall St., 432-1314, jane.levin@yale.edu; chair of Humanities: R. Howard Bloch, 53 Wall St., 432-1313, howard.bloch@yale.edu

Directed Studies, a selective program for freshmen, is an interdisciplinary study of Western civilization. One hundred twenty-five students are accepted each year.

All students enrolled in Directed Studies take three yearlong courses—literature, philosophy, and historical and political thought—in which they read the central texts of the Western tradition. The fall term introduces students to the principal works of classical antiquity and to the Judeo-Christian
tradition. The fall term ends with the Middle Ages. The spring term begins with the Renaissance and ends with the twentieth century.

Each course meets weekly for one lecture and two seminars; seminars have eighteen students and one faculty member. The regular lectures and seminars are complemented by a series of colloquia. Distinguished members of the faculty are invited to speak on major issues arising from the work in the program, on related disciplines not included in the program, and on the relationship between Western civilization and the non-Western world. Colloquium topics in recent years have included Greek antiquity and early China, why leaders need to read great books, Arabic and European humanities, and modern political theory.

Directed Studies fulfills the following distributional requirements: two course credits in the humanities and arts, two course credits in the social sciences, and two course credits in writing. The program serves as a strong foundation for all majors in Yale College, including those in the sciences.


Lect. F 11.35-12.25; disc. HTBA WR, Hu (63)
An examination of major literary works with an aim of understanding how a tradition develops. In the fall term, works and authors include Homer, Aeschylus, Sophocles, Virgil, the Bible, and Dante. In the spring term, authors vary somewhat from year to year and include Petrarch, Cervantes, Shakespeare, Milton, Wordsworth, Goethe, Flaubert, Tolstoy, and Proust.


Lect. M 11.35-12.25; disc. HTBA WR, Hu (24)
An examination of major figures in the history of Western philosophy with an aim of discerning characteristic philosophical problems and their interconnections. Emphasis on Plato and Aristotle in the fall term. In the spring term, modern philosophers include Descartes, Berkeley, Hume, Kant, and Nietzsche.

*drst 003, Directed Studies: Historical and Political Thought. David Bromwich, Charles Hill, Emily Levine, Annabel Patterson, Stuart Semmel, Kathryn Slanski, Steven Smith, Daniel Stein Kokin, Norma Thompson, Justin Zaremby.

Lect. W 11.35-12.25; disc. HTBA So (34)
A study of works of primary importance to political thought and intellectual history. Focus on the role of ideas in shaping events, institutions, and the fate of the individual. In the fall term, Herodotus, Thucydides, Plato, Aristotle, Augustine, and Aquinas. In the spring term, Machiavelli, Hobbes, Locke, Rousseau, Burke, Tocqueville, Emerson, Marx, Nietzsche, and Arendt.

DRAMA

(See under Theater Studies.)
EAST ASIAN LANGUAGES
AND LITERATURES

Director of undergraduate studies: Paize Keulemans, 311 HGS, 432-2027, paize.keulemans@yale.edu

FACULTY OF THE DEPARTMENT OF EAST ASIAN LANGUAGES AND LITERATURES

Professors
Kang-i Sun Chang, Edward Kamens (Acting Chair), Tina Lu, Haun Saussy, John Treat

Associate Professor
Christopher Hill

Assistant Professors
Aaron Gerow, Reginald Jackson, Paize Keulemans, Jing Tsu

Senior Lecturer
Koichi Shinohara

Lecturer
Chi-wah Chan

Senior Lectors
Seungja Choi, Koichi Hiroe, Zhengguo Kang, Ninghui Liang, Yoshiko Maruyama, John Montanaro, Ling Mu, Michiaki Murata, Hiroyo Nishimura, Masahiko Seto, Mari Stever, Wei Su, Peisong Xu, William Zhou

Lectors
Hsiu-hsien Chan, Min Chen, Angela Lee-Smith, Rongzhen Li, Fan Liu, Yu-lin Saussy, Jianhua Shen, Haiwen Wang

The Department of East Asian Languages and Literatures offers majors in Chinese and Japanese. These are liberal arts majors intended to give the student a general knowledge of Chinese or Japanese literature and the techniques of literary analysis, and advanced oral and written skills in one of these languages. The department also offers language courses in Korean and courses in East Asian humanities. Courses in Indonesian and Vietnamese are listed under Southeast Asia Studies in this bulletin.

Because the study of an East Asian language presents special challenges, all students interested in these languages are encouraged to begin their studies as early as possible in their careers at Yale. Students must begin language study no later than the sophomore year in order to complete the requirements of either major in the department. Students considering a major in East Asian Languages and Literatures should consult the director of undergraduate studies. The Richard U. Light Fellowship, administered by the Office of International Education and Fellowship Programs, provides opportunities for qualified Yale students to study East Asian languages in East Asia. Numerous other fellowships are also available. Language requirements may be met in part by taking accelerated language courses elsewhere, but students wishing to receive credit for language study completed at another university must take a placement examination to determine their level of proficiency. It is a department policy that Yale College students may not audit language courses.

Course numbering. Courses with numbers up to 099 are freshman seminars on East Asian literature, film, and humanities. Language courses are numbered from 100 to 199. Courses with numbers from 200 to 399 address literature, film, and the humanities: introductory courses in premodern periods are numbered from 200 to 249; introductory courses in the modern period are numbered from 250 to 299; more advanced courses in premodern
periods are numbered from 300 to 349; and more advanced courses in the modern period are numbered from 350 to 399.

Placement examination. Students who are enrolling in the department’s language classes for the first time but who have studied Chinese, Japanese, or Korean elsewhere, and students who have skills in one of these languages because of family background, must take a placement examination at the beginning of the year. The times and places of the examinations are listed in the Calendar for the Opening Days and on the departmental Web site (www.yale.edu/eall/undergrad). The Chinese and Japanese examinations have online components accessed through the same site. Students of Japanese and Korean returning from programs abroad must take a placement examination. Students of Chinese returning from programs abroad should consult with the language-teaching staff regarding placement.

I. THE MAJOR IN CHINESE

The major in Chinese is designed to give the student a broad understanding of the chief forms and themes of Chinese literature through reading in the original language. By the senior year, the student majoring in Chinese can acquire advanced skills in speaking and reading Chinese and in interpreting Chinese literature.

Prerequisite to the major is CHNS 140b or the equivalent. The major consists of at least eleven other courses, which fall into the following seven categories: (1) Chinese literature in translation: two term courses at the 200 or 300 level, of which one must be in premodern literature; (2) third-year Chinese: CHNS 150a and 151b or equivalents; (3) two terms of literary Chinese: CHNS 170a and 171b or equivalents; (4) one general literature course, such as ENGL 129 or LITR 120a or 300b, or a course on Japanese literature at the 200 level; (5) one course conducted in English that gives an overview of Chinese culture, such as HIST 306b; (6) Chinese literature in the original language: two term courses that involve the study of literary texts (premodern or modern vernacular) to be chosen from the fourth-year Chinese language courses in which literary texts are used (such as CHNS 160a or 161b), CHNS 190a, or other courses at the discretion of the director of undergraduate studies; (7) the senior essay. For the Class of 2010 and subsequent classes, a maximum of one course taken Credit/D/Fail may be counted toward the requirements of the major with permission of the director of undergraduate studies.

In order to acquaint themselves with the breadth of the field, students majoring in Chinese should take one or more courses in Chinese literature in translation as early as possible in their careers at Yale. Graduate courses in Chinese may count toward the major; enrollment in them requires permission of the instructor and of the director of graduate studies.

Senior requirement. Students prepare a senior essay in CHNS 491a or b or in CHNS 492.

REQUIREMENTS OF THE MAJOR

Prerequisite: CHNS 140b or equivalent

Number of courses: 11 term courses beyond prereq (incl one-term senior essay) or 12 term courses (incl two-term senior essay)

Specific courses required: CHNS 150a, 151b and 170a, 171b or equivalents

Distribution of courses: 2 courses in Chinese lit in translation, incl 1 in premodern lit; 1 general lit course; 1 overview of Chinese culture in English; 2 courses in Chinese lit in Chinese
II. THE MAJOR IN JAPANESE

The Japanese major immerses the student in the breadth and depth of the Japanese literary tradition, premodern through modern. By the senior year, the student majoring in Japanese can acquire advanced skills in speaking and reading Japanese and in interpreting Japanese literature.

Prerequisite to the major is JAPN 140b or the equivalent. The major consists of at least eleven other courses, which fall into the following seven categories: (1) Japanese literature in translation or Japanese film: three term courses at the 200 or 300 level, of which one must be in premodern literature and one in modern literature; (2) advanced modern Japanese: JAPN 150a and 151b or equivalents; (3) literary Japanese: JAPN 170a; (4) one general literature or film course, such as ENGL 129, LITR 120a or 300b, FILM 150a, or a course on Chinese literature at the 200 level; (5) one course in English that gives an overview of Japanese culture, such as ANTH 254a; (6) Japanese literature in the original language: two term courses that involve the study of literary or other types of texts, premodern or modern, such as JAPN 156a, 157b, 171b, or other courses as approved by the director of undergraduate studies; (7) the senior essay. For the Class of 2010 and subsequent classes, a maximum of one course taken Credit/D/Fail may be counted toward the requirements of the major with permission of the director of undergraduate studies.

In order to acquaint themselves with the breadth of the field, students majoring in Japanese should take one or more courses in Japanese literature in translation as early as possible in their careers at Yale. Graduate courses in Japanese may count toward the major; enrollment in them requires permission of the instructor and of the director of graduate studies.

Senior requirement. Students prepare a senior essay in JAPN 491a or b or in JAPN 492.

REQUIREMENTS OF THE MAJOR

Prerequisite: JAPN 140b or equivalent

Number of courses: 11 term courses beyond prereq (incl one-term senior essay) or 12 term courses (incl two-term senior essay)

Specific courses required: JAPN 150a, 151b or equivalent; JAPN 170a

Distribution of courses: 3 courses in Japanese lit in translation or Japanese film, incl 1 in premodern lit and 1 in modern lit; 1 general lit or film course; 1 overview of Japanese culture in English; 2 courses in Japanese lit in Japanese

Substitution permitted: Other courses concerned with Japanese lang and/or lit for 2 courses in Japanese lit in translation, with DUS permission

Senior requirement: Senior essay (JAPN 491a or b or 492)

EAST ASIAN HUMANITIES

eall 200b/rlst 134bG, BUDDHISM IN CHINA AND JAPAN. Koichi Shinohara.
For description see under Religious Studies.

*eall 205a/rlst 186a, MANDALAS AND MANTRAS. Koichi Shinohara.
For description see under Religious Studies.
**CHINESE**

**CHNS 110a, Elementary Modern Chinese I.** William Zhou, Jianhua Shen, and staff.  
MTWHF 9:25-10:15 or 10:30-11:20 or 11:35-12:25  L1  1½ C Credits  
Meets RP (O)

Intended for students with no background in Chinese. An intensive course with emphasis on spoken language and drills. Pronunciation, grammatical analysis, conversation practice, and introduction to reading and writing Chinese characters. *Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program. Credit only on completion of CHNS 120b. (Formerly the first term of CHNS 115)*

**CHNS 112a, Elementary Modern Chinese for Advanced Learners I.** Ninghui Liang.  
MTWHF 9:25-10:15  L1  1½ C Credits  Meets RP (O)

First level of the advanced learner sequence, intended for students with some background in Chinese. An intensive course with emphasis on spoken language and drills. Pronunciation, grammatical analysis, conversation practice, and introduction to reading and writing Chinese characters. Placement confirmed by placement test on first day of class and by instructor. *Credit only on completion of CHNS 122b. (Formerly the first term of CHNS 118)*

**CHNS 120b, Elementary Modern Chinese II.** William Zhou, John Montanaro, Jianhua Shen, and staff.  
MTWHF 9:25-10:15 or 10:30-11:20 or 11:35-12:25  L2  1½ C Credits  Meets RP (O)

Continuation of CHNS 110a. *Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program. (Formerly the second term of CHNS 115)*

**CHNS 122b, Elementary Modern Chinese for Advanced Learners II.** Ninghui Liang.  
MTWHF 9:25-10:15  L2  1½ C Credits  Meets RP (O)

Continuation of CHNS 112a. * (Formerly the second term of CHNS 118)*

**CHNS 125b, Intensive Elementary Modern Chinese.** Staff.  
HTBA  L1–L2  2 C Credits (50)

An intensive immersion course that covers the material of CHNS 110a and 120b in one term. Emphasis on spoken language and drills, pronunciation, grammatical analysis, conversation practice, and introduction to reading and writing Chinese characters. *Intended for students with no background in Chinese. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.*

**CHNS 130a, Intermediate Modern Chinese I.** Ling Mu, Rongzhen Li, and staff.  
MTWHF 9:25-10:15 or 10:30-11:20 or 11:35-12:25  L3  1½ C Credits  Meets RP (61)

An intermediate course that continues intensive training in listening, speaking, reading, and writing and consolidates achievements from the first year of study. Students improve oral fluency, study more complex grammatical structures, and enlarge both reading and writing vocabulary. *Prerequisite: CHNS 120b or equivalent. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.*
CHNS 132a, Intermediate Modern Chinese for Advanced Learners I. Peisong Xu.

MTWThF 10:30-11.20 or 11.35-12.25 L3 1½ C Credits Meets RP (61)
The second level of the advanced learner sequence. Intended for students with intermediate to advanced oral proficiency and high elementary reading and writing proficiency. Students receive intensive training in listening, speaking, reading, and writing, supplemented by audio and video materials. The objective of the course is to balance these four skills and work toward attaining an advanced level in all of them. Prerequisite: CHNS 122b or equivalent. (Formerly the first term of CHNS 133)

CHNS 140b, Intermediate Modern Chinese II. Ling Mu, Rongzhen Li, and staff.

MTWThF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L4 1½ C Credits Meets RP (61)
Continuation of CHNS 130a. To be followed by CHNS 150a. Prerequisite: CHNS 130a or equivalent. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program. (Formerly the second term of CHNS 130)

CHNS 142b, Intermediate Modern Chinese for Advanced Learners II. Peisong Xu.

MTWThF 10.30-11.20 or 11.35-12.25 L4 1½ C Credits Meets RP (61)
Continuation of CHNS 132a. Admits to CHNS 152a. Prerequisite: CHNS 132a or equivalent. (Formerly the second term of CHNS 133)

CHNS 150a, Advanced Modern Chinese I. Rongzhen Li, Haiwen Wang, and staff.

MTWThF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L5 1½ C Credits (61)
Third level of the standard foundational sequence of modern Chinese, with study in speaking, listening, reading, and writing. Use of audiovisual materials, oral presentations, skits, and longer and more frequent writing assignments to assimilate more sophisticated grammatical structures. Further introduction to a wide variety of written forms and styles. Use of both traditional and simplified forms of Chinese characters. After CHNS 140b. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

CHNS 151b, Advanced Modern Chinese II. Rongzhen Li, Haiwen Wang, and staff.

MTWThF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L5 1½ C Credits (61)
Continuation of CHNS 150a. Prerequisite: CHNS 150a or equivalent. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program. (Formerly the second term of CHNS 150)

CHNS 152a, Advanced Modern Chinese I for Advanced Learners. Zhengguo Kang.

MWF 9.25-10.15 or 10.30-11.20 L5 (61)
Third level of the advanced learner sequence in Chinese. Intended for students with advanced speaking and listening skills (able to conduct conversations fluently on broad topics) and with high intermediate reading and writing skills (able to write 1,000–1,200 characters). Further readings on contemporary life in China and Taiwan, supplemented with authentic video materials. Class discussion, presentations, and regular written assignments. Texts in simplified characters with vocabulary in both simplified and traditional characters. Prerequisite: CHNS 142b or equivalent. (Formerly the first term of CHNS 153)
*CHNS 153b, Advanced Modern Chinese II for Advanced Learners. Zhengguo Kang.
MWF 9.25-10.15 or 10.30-11.20 L5 (61)
Continuation of CHNS 152a. Prerequisite: CHNS 152a or equivalent.

*CHNS 154a, Advanced Modern Chinese III. Jianhua Shen, Fan Liu.
MWF 10.30-11.20 or 11.35-12.25 L5 (61)
Fourth level of the standard foundational sequence of modern Chinese, with study in speaking, listening, reading, and writing. Readings in a wide range of subjects form the basis of discussion and other activities. Students consolidate their skills, especially speaking proficiency, at an advanced level. Materials use both simplified and traditional characters. Prerequisite: CHNS 151b or equivalent.

*CHNS 155b, Advanced Modern Chinese IV. Jianhua Shen, Fan Liu.
MWF 10.30-11.20 or 11.35-12.25 L5 (61)
Continuation of CHNS 154a. Further readings in a wide range of subjects. Students consolidate their skills, especially speaking proficiency, at an advanced level. Materials use both simplified and traditional characters. Prerequisite: CHNS 154a or equivalent. (Formerly the second term of CHNS 154)

*CHNS 156a, Chinese through Film. Zhengguo Kang.
MWF 11.35-12.25 L5 (0)
A survey of Chinese films of the past twenty years, optimized for language teaching. Texts include plot summaries, critical essays, and some scripts. Discussions, screenings, presentations, and writing workshops consolidate the four language skills. Prerequisite: CHNS 151b or equivalent. (Formerly CHNS 155)

*CHNS 158a, Readings in Contemporary Chinese Texts I. Wei Su.
MWF or TT 11.35-12.50 L5 Meets RP (61)
Selected readings in Chinese fiction of the past twenty years. Lectures, discussions, and written work in Chinese aim at integrated mastery of the modern language. Prerequisite: CHNS 151b or equivalent. (Formerly the first term of CHNS 156)

*CHNS 159b, Readings in Contemporary Chinese Texts II.
Wei Su.
MWF or TT 11.35-12.50 L5 Meets RP (61)
Continuation of CHNS 158a. Selected readings in Chinese essays and articles of the past twenty years. Prerequisite: CHNS 151b or equivalent. (Formerly the second term of CHNS 156)

*CHNS 160a, Readings in Modern Chinese Texts I. Wei Su.
MWF 9.25-10.15 L5 (32)
An advanced language course designed to continue the development of students’ overall language skills through reading and discussion of modern short stories. After CHNS 151b or equivalent. (Formerly the first term of CHNS 157)

*CHNS 161b, Readings in Modern Chinese Texts II. Wei Su.
MWF 9.25-10.15 L5 (32)
Continuation of CHNS 160a. Readings in modern Chinese essays and articles. After CHNS 151b or equivalent. (Formerly the second term of CHNS 157)

MWF 11.35-12.25 L5 (0)
A writing course for advanced students with solid oral and reading proficiency. A systematic writing program, from simple assignments such as descriptions, narratives, and expositions to more sophisticated critical essays. **Prerequisite:** A course conducted in Chinese and numbered 154a or higher.

TH 9-10.15 L5 Meets RP (22)  
Reading and interpretation of texts in various styles of literary Chinese (wenyan), with attention to basic problems of syntax and literary style. **After CHNS 142b, 151b, or equivalent.** (Formerly the first term of CHNS 160)

**CHNS 171bG, Introduction to Literary Chinese II.** Paize Keulemans.  
TH 9-10.15 L5 Meets RP (22)  
Continuation of CHNS 170a. **After CHNS 142b, 151b, 170a, or equivalent.** (Formerly the second term of CHNS 160)

**CHNS 180bG, Classical Tales from Tang to Qing.** Tina Lu.  
TH 11.35-12.50 Hu (24)  
Close reading and translation of classical tales from the Tang, Ming, and Qing dynasties. Focus on strengthening students’ reading ability in classical Chinese. Attention to canonical Chinese narratives as well as some lesser-known texts. Discussion of major themes such as romance, magical transformations, and proto–martial arts, including how these themes were transformed over time. **Prerequisite:** CHNS 171b or equivalent.

**CHNS 190aG, Advanced Readings in Modern Chinese Literature**

TH 1-2.15 Hu (0) Tr  
Concepts of man and nature in traditional Chinese literature, with special attention to aesthetic and cultural meanings. Topics include Taoism, Buddhism, and lyricism; body and sexuality; contemplation and self-cultivation; travel in literature; landscape and the art of description; images of Utopian communities as compared to the Western notion of Utopia; ideas of self-identity; and dream, pilgrimage, and allegory. **No knowledge of Chinese required.**

**CHNS 201bG/WGSS 405b, Women and Literature in Traditional China**

**CHNS 253b, Shanghai in Twentieth-Century Literature.** Frederik Green.  
TH 4-5.15 Hu (0) Tr  
Examination of texts about the metropolis of Shanghai, from China’s late imperial period to the present. The city’s importance in Chinese literary and political history. Focus on modern Chinese literature in translation, with some attention to depictions of Shanghai in Japanese, French, and English writings. Works drawn from fiction, literary theory, and historical texts, as well as visual materials. **No knowledge of Chinese required.**

W 1.30-3.20 Hu (0)
Readings of classical Chinese prose with commentaries and notes in modern Chinese. Exploration of a variety of themes and styles. *Lectures and discussion in English and in Chinese.*

*CHNS 303A*, **Readings in Classical Chinese Poetry.**  
Kang-i Sun Chang.  
W 1:30-3:20  Hu (0)  
Fundamentals of classical Chinese poetry and poetics. *Primary readings in Chinese; lectures and discussion in English and Chinese.*

*CHNS 400B*, **Materials and Methods for Research in Chinese Studies.**  
Chi-wah Chan.  
Th 3:30-5:20 (0)  
Lectures, discussion, and written exercises designed to develop skills in using traditional Chinese research materials. *Prerequisite: CHNS 151B or equivalent.*

*CHNS 470A and 471B*, **Independent Tutorial.** Consult the director of undergraduate studies.  
HTBA (0)  
For students with advanced Chinese language skills who wish to engage in concentrated reading and research on literary works in a manner not otherwise offered in courses. The work must be supervised by a specialist and must terminate in a term paper or its equivalent. Ordinarily only one term may be offered toward the major or for credit toward the degree. *Permission to enroll requires submission of a detailed project proposal by the end of the first week of classes and its approval by the director of undergraduate studies.*

*CHNS 491A or B*, **Senior Essay.** Director of undergraduate studies.  
HTBA (0)  
Preparation of a one-term senior essay under faculty supervision.

*CHNS 492*, **Yearlong Senior Essay.** Director of undergraduate studies.  
HTBA (0)  
Preparation of a two-term senior essay under faculty supervision.

JAPANESE

*JAPN 110A*, **Elementary Japanese I.** Hiroyo Nishimura, Yoshiko Maruyama, Michiaki Murata, Mari Stever.  
MTWTFH 9:25-10:15 or 10:30-11:20 LI 1 1/2 C Credits Meets RP (61)  
An introductory course in spoken Japanese. Drills in pronunciation and conversation; lectures on grammar; and an introduction to reading and writing, including *hiragana*, *katakana*, and *kanji*. *Credit only on completion of JAPN 120B.* (Formerly the first term of JAPN 115)

*JAPN 120B*, **Elementary Japanese II.** Hiroyo Nishimura, Yoshiko Maruyama, Michiaki Murata, Mari Stever.  
MTWTFH 9:25-10:15 or 10:30-11:20 L2 1 1/2 C Credits Meets RP (61)  
Continuation of JAPN 110A. *Prerequisite: JAPN 110A.* (Formerly the second term of JAPN 115)

*JAPN 130A*, **Intermediate Japanese I.** Masahiko Seto, Yoshiko Maruyama, Hiroyo Nishimura.  
MTWTFH 10:30-11:20 or 11:35-12:25 L3 1 1/2 C Credits Meets RP (61)
Continued development in both written and spoken Japanese, with reinforcement of grammatical structures using texts, films, and animation. Materials expose students to aspects of Japanese culture. Internet software is used to develop skills in listening and reading. Prerequisite: JAPN 120b or equivalent. (Formerly the first term of JAPN 140)

**JAPN 140b, Intermediate Japanese II.** Masahiko Seto, Yoshiko Maruyama, Hiroyo Nishimura.
MTWTHF 10.30-11.20 or 11.35-12.25 L4 1 1/2 C Credits Meets RP (61)
Continuation of JAPN 130a. Prerequisite: JAPN 130a or equivalent.

**JAPN 150a, Advanced Japanese I.** Mari Stever, Koichi Hiroe.
MWF 9-10.15 or 1-2.15 L5 1 1/2 C Credits Meets RP (61)
Continued development of proficiency in aural and reading comprehension, as well as speaking and writing skills. Reading and discussion of short stories, essays, and journal articles. Viewing and discussion of Japanese anime, television shows, and films. Writing practice includes a diary, letters, essays, and criticism. After JAPN 140b or equivalent.

**JAPN 151b, Advanced Japanese II.** Mari Stever, Koichi Hiroe.
MWF 9-10.15 or 1-2.15 L5 1 1/2 C Credits Meets RP (61)
Continuation of JAPN 150a. After JAPN 150a or equivalent. (Formerly the second term of JAPN 150)

**JAPN 156a, Advanced Japanese III.** Michiaki Murata, Koichi Hiroe.
MWF 1-2.15 L5 1 1/2 C Credits (0)
Close reading of modern Japanese writings in current affairs, social science, cultural history, and modern literature. Students develop their speaking, listening, and writing skills through discussion and written exercises. Drama and films are included. After JAPN 151b or equivalent. (Formerly the first term of JAPN 157)

**JAPN 157b, Advanced Japanese IV.** Michiaki Murata, Koichi Hiroe.
MWF 1-2.15 L5 1 1/2 C Credits (0)
Further reading and discussion of modern Japanese writings in current affairs, social science, cultural history, and modern literature. After JAPN 156a or equivalent.

**JAPN 162a, Advanced Japanese V.** Koichi Hiroe.
THF 1-2.15 L5 (0)
Further development of skills used in academic settings, including public speaking, formal presentations, and expository writing based on research. Materials include lectures, scholarly papers, criticism, fiction, and films. After JAPN 157b or equivalent; recommended to be taken after or concurrently with JAPN 170a.

**JAPN 163b, Advanced Japanese VI.** Koichi Hiroe.
THF 1-2.15 L5 (0)
Continued development of skills used in academic settings, including public speaking, formal presentations, and expository writing based on research. After JAPN 162a or equivalent; recommended to be taken after JAPN 170a. (Formerly the second term of JAPN 162)

MWF 9.25-10.15 L5 (0)
Introduction to the grammar and style of the premodern literary language (bungotai) through a variety of texts. After JAPN 151b or equivalent. (Formerly JAPN 160a)

TTh 11.35-12.50 L5 Meets RP (0)
Close analytical reading of a selection of texts from the Nara through Tokugawa periods: prose, poetry, and various genres. After JAPN 170a or equivalent. (Formerly JAPN 161b)


TTh 2.30-3.45 WR, Hu (0) Tr
Prose narratives, poetry collections, and plays from the eighth through the nineteenth centuries. Topics include the relation of gender to modes of writing, recurring themes of nature, love, warfare, and the supernatural, and the place of Japanese literature within the scope of world literature. No knowledge of Japanese required.

JAPN 215b/G/THST 338a, Introduction to Japanese Theater.
Reginald Jackson.

MW 2.30-3.45 Hu (0)
Japanese theatrical forms from the fourteenth century to the present, including Noh, Kyogen, Bunraku, Kabuki, Shimpā, Shingeki, Butoh, and Takarazuka. Emphasis on understanding the forms in their historical and performative contexts. No background in Japanese language or theater assumed.

JAPN 250a/G/LITR 260a, Modern Japanese Fiction.
Christopher Hill.

TTh 1-2.15 Hu (0) Tr
An introduction to Japanese fiction from the 1890s to the 1980s. Novels and stories by such writers as Natsume Soseki, Tanizaki Jun’ichiro, and Oe Kenzaburo; discussion of major trends such as modernism and writing by women. No knowledge of Japanese required.

JAPN 251b/G/LITR 251b, Japanese Literature after 1970

JAPN 260b/G/LITR 252b, Imagining Space in Japanese Fiction and Film. Christopher Hill.

TTh 1-2.15 Hu (0) Tr
Representations of space in modern fiction and selected films. Aesthetic forms as they establish social and psychological space; urbanization, wartime destruction, and rural transformations as they affect the representation of space. Writers and directors include Kawabata, Enchi, Oe, Murakami, and Miyazaki. No knowledge of Japanese required.

JAPN 270a/G/FILM 446a/LITR 384a, Japanese Cinema before 1960

JAPN 271a/G/FILM 448a, Japanese Cinema after 1960.
Aaron Gerow.
TTh 11.35-12.50 Hu (0)
The development of Japanese cinema after the breakdown of the studio system, through the revival of the late 1990s, and to the present.

For description see under Theater Studies.

JAPN 470a and 471b, Independent Tutorial. Consult the director of undergraduate studies.
HTBA (0)
For students with advanced Japanese language skills who wish to engage in concentrated reading and research on literary works in a manner not otherwise offered in courses. The work must be supervised by a specialist and must terminate in a term paper or its equivalent. Ordinarily only one term may be offered toward the major or for credit toward the degree. Permission to enroll requires submission of a detailed project proposal by the end of the first week of classes and its approval by the director of undergraduate studies.

**JAPN 491A or B, Senior Essay.** Director of undergraduate studies.

*HTBA (0)*
Preparation of a one-term senior essay under faculty supervision.

**JAPN 492, Yearlong Senior Essay.** Director of undergraduate studies.

*HTBA (0)*
Preparation of a two-term senior essay under faculty supervision.

**KOREAN**

**KREN 110A, Elementary Korean I.** Angela Lee-Smith and staff.

*MTWThF 9.25-10.15 L1 1 1/2 C Credits Meets RP (32)*
A beginning course in modern Korean. Pronunciation, lectures on grammar, conversation practice, and introduction to the writing system (*Hankul*). Credit only on completion of *KREN 120B*. (Formerly the first term of *KREN 115*)

**KREN 120B, Elementary Korean II.** Angela Lee-Smith and staff.

*MTWThF 9.25-10.15 L2 1 1/2 C Credits Meets RP (32)*
Continuation of *KREN 110A*. *After KREN 110A or equivalent.* (Formerly the second term of *KREN 115*)

**KREN 130A, Intermediate Korean I.** Seungja Choi and staff.

*MTWThF 10.30-11.20 L3 1 1/2 C Credits Meets RP (33)*
Continued development of skills in modern Korean, spoken and written, leading to intermediate-level proficiency. *After KREN 120B or equivalent.*

**KREN 132A, Intermediate Korean for Advanced Learners I.**
Angela Lee-Smith.

*MTWThF 10.30-11.20 L4 1 1/2 C Credits Meets RP (33)*
Intended for students with some oral proficiency but little or no training in *Hankul*. Focus on grammatical analysis, the standard spoken language, and intensive training in reading and writing. (Formerly the first term of *KREN 133*)

**KREN 140B, Intermediate Korean II.** Seungja Choi and staff.

*MTWThF 10.30-11.20 L4 1 1/2 C Credits Meets RP (33)*
Continuation of *KREN 130A*. *After KREN 130A or equivalent.* (Formerly the second term of *KREN 130*)

**KREN 142B, Intermediate Korean for Advanced Learners II.**
Angela Lee-Smith.

*MTWThF 10.30-11.20 L4 1 1/2 C Credits Meets RP (33)*
Continuation of *KREN 132A*. *After KREN 132A or equivalent.*

**KREN 150A, Advanced Korean I.** Seungja Choi and staff.

*MWF 11.35-12.50 L5 1 1/2 C Credits (34)*
An advanced course in modern Korean. Reading of short stories, essays, and journal articles, and introduction of 200 Chinese characters. Students develop their speaking and writing skills through discussions and written exercises. *Conducted in Korean. After KREN 140B or equivalent.*
**KREN 151B, Advanced Korean II.** Seungja Choi and staff.
MWF 11:30-12:50 L5 13 C Credits (34)
Continuation of KREN 150A. After KREN 150A or equivalent. (Formerly the second term of KREN 150)

**KREN 154A, Advanced Korean III.** Seungja Choi.
W 1-1:50 L5 (36)
An advanced language course designed to develop reading and writing skills using Web-based texts in a variety of genres such as editorials and essays. Students read texts independently and complete comprehension and vocabulary exercises through the Web. Discussion, tests, and intensive writing training in class. After KREN 151B or equivalent.

TH 1-2:15, 1 HTBA Hu (0)
Korean national cinema from the early 1960s to the present. Cinematic representations in the context of such themes as history, nationhood, gender, identity, and traditional culture. Attention to formal aspects of the films, including film styles and cinematography. No knowledge of Korean required. Discussion section conducted in Korean available for students who have completed KREN 151B or equivalent.

**KREN 470A and 471B, Independent Tutorial.** Consult the director of undergraduate studies.

HTBA (0)
For students with advanced Korean language skills who wish to engage in concentrated reading and research on material not otherwise offered in courses. The work must be supervised by an adviser and must terminate in a term paper or its equivalent. Permission to enroll requires submission of a detailed project proposal by the end of the first week of classes and its approval by the director of undergraduate studies.

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**EAST ASIAN STUDIES**

Director of undergraduate studies: Koichi Shinohara, 431 College St., 432-0839, koichi.shinohara@yale.edu; [http://research.yale.edu/eastasianstudies](http://research.yale.edu/eastasianstudies)

**FACULTY ASSOCIATED WITH THE PROGRAM OF EAST ASIAN STUDIES**

**Professors**

**Associate Professors**
- Christopher Hill (*East Asian Languages & Literature*), Pierre Landry (*Political Science*)

**Assistant Professors**
Senior Lecturers
Annping Chin (History), Koichi Shinohara (Religious Studies, East Asian Languages & Literatures)

Lecturers
Elif Akcetin, Chi-wah Chan, Georgios Klonos, Huiwen Helen Zhang

Senior Lecturers
Seungja Choi, Koichi Hiroe, Zhengguo Kang, Ninghui Liang, Yoshiko Maruyama, John Montanaro, Ling Mu, Michiaki Murata, Hiroyo Nishimura, Masahiko Seto, Mari Stever, Wei Su, Peisong Xu, William Zhou

Lecturers
Hsiu-hsien Chan, Min Chen, Angela Lee-Smith, Rongzhen Li, Fan Liu, Yu-Lin Wang Saussy, Jianhua Shen, Haiwen Wang, Li Zhang

In the East Asian Studies major, students concentrate on either China or Japan and organize their work in the humanities or the social sciences. Students also have the opportunity to take courses related to Korea, as the Council on East Asian Studies continues to expand the study of Korea in the undergraduate curriculum. The major offers a liberal education by providing a degree of mastery of a significant field of learning. At the same time, it serves as excellent preparation for graduate study or for business and professional careers in which an understanding of East Asia is essential.

The major: The major in East Asian Studies is interdisciplinary, and students typically select classes from a wide variety of disciplines. The proposed course of study must be approved by the director of undergraduate studies. Prerequisite to the major are CHNS 110a and 120b or JAPN 110a and 120b or the equivalent. Beyond the prerequisites, the major consists of thirteen term courses, which may include up to six taken in a preapproved program of study abroad, normally Yale’s Year or Term Abroad. Required courses are intermediate and third-year Chinese or Japanese. Six term credits must be taken in East Asian language courses. Beyond the language requirement, the major consists of seven additional required courses, six in the country of concentration and one outside it. Of the six courses in the country of concentration, one must be in the premodern period, at least two must be seminars, and one is the senior requirement (a senior seminar culminating in a senior thesis, a one-term senior essay, or a senior directed research project). These courses are normally taken at Yale during the academic year, but with prior approval of the director of undergraduate studies the requirement may be fulfilled through successful course work undertaken elsewhere.

For the Class of 2011 and subsequent classes, a maximum of one course taken Credit/D/Fail may be counted toward the requirements of the major, with permission of the director of undergraduate studies.

Senior requirement. All students must satisfy a senior requirement undertaken during the senior year. This requirement can be met in one of three ways. Students may take one seminar in the country of concentration, culminating in a senior thesis. Alternatively, students who are unable to write a senior essay in a seminar may complete a one-term senior essay in EAST 480a or b or a one-credit, two-term senior research project in EAST 491 culminating in an essay.

Upon entering the major, students are expected to draw up intellectually coherent sequences of courses in consultation with the director of undergraduate studies. They must consult with the director of undergraduate studies each term concerning their course schedules. They should identify as soon
as possible a faculty adviser in the area of their specialization. As a multi-
disciplinary program, East Asian Studies draws on the resources of other
departments and programs in the University. The following listing of courses
is meant to be suggestive only: apart from those courses required for the
major, it is neither restrictive nor exhaustive. Students are encouraged to
examine the offerings of other departments in both the humanities and the
social sciences, as well as residential college seminars, for additional relevant
courses. The stated area of concentration of each student determines the rel-
ance and acceptability of other courses. For a complete listing of courses
approved for the major, see http://research.yale.edu/eastasianstudies. Students
are also encouraged to visit E-Assisted Planning at http://berlin.cls.yale.edu/eap
for help in planning the major.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** CHNS 110a, 120b or JAPN 110a, 120b or equivalent

**Number of courses:** 13 term courses beyond prereq (incl senior req); up to 6 may
be in preapproved study abroad

**Specific courses required:** CHNS 130a, 140b, 150a, 151b, or JAPN 130a, 140b, 150a,
151b, or equivalents

**Distribution of courses:** 7 courses on East Asia, with 6 in, and 1 outside, area of
concentration (China or Japan); 1 course in area of concentration must be in pre-
modern era and 2 must be sems

**Senior requirement:** 1 senior-year sem culminating in a senior thesis, or one-term
senior essay in EAST 480a or b, or one-credit, two-term senior research project in
EAST 491

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**EAST 365b*/SOCY 325b**, Civil Society in China. Deborah Davis.
For description see under Sociology.

**EAST 408a*/EP&E 308a*/SOCY 395a, Wealth and Poverty in Modern
China. Deborah Davis.
For description see under Sociology.

**EAST 479a*/ECON 479a, Economic Development of Japan.
Koichi Hamada.
For description see under Economics.

**EAST 480a or b, One-Term Senior Essay.** Consult the director of
undergraduate studies.

HTBA (0)
Preparation of a one-term senior essay under the guidance of a faculty adviser.
Students must receive the prior agreement of the director of undergraduate stud-
ies and of the faculty member who will serve as the senior essay adviser. Students
must arrange to meet with that adviser on a regular basis throughout the term.

**EAST 491, Senior Research Project.** Consult the director of
undergraduate studies.

HTBA 1 C Credit (0) Cr/Year only
Two-term directed research project under the supervision of a ladder faculty
member. Students should write essays using Chinese- or Japanese-language
materials when possible. Essays should be based on primary material, whether
in Chinese or Japanese or English. Summary of secondary material is not
acceptable.
ELECTIVES WITHIN THE MAJOR

ANTH 170b, CHINESE CULTURE, SOCIETY, AND HISTORY. Helen Siu.

ANTH 254a, JAPAN: CULTURE, SOCIETY, MODERNITY. Karen Nakamura.

ANTH 282b, SPORT, SOCIETY, AND CULTURE. William Kelly.

CHNS 170aG, INTRODUCTION TO LITERARY CHINESE I. Paize Keulemans.
For description see under East Asian Languages & Literatures.

CHNS 171bG, INTRODUCTION TO LITERARY CHINESE II.
Paize Keulemans.
For description see under East Asian Languages & Literatures.

CHNS 180bG, CLASSICAL TALES FROM TANG TO QING. Tina Liu.
For description see under East Asian Languages & Literatures.

CHNS 200aG/LITR 172aG, MAN AND NATURE IN CHINESE LITERATURE.
Kang-i Sun Chang.
For description see under East Asian Languages & Literatures.

CHNS 400bG, MATERIALS AND METHODS FOR RESEARCH IN CHINESE STUDIES. Chi-wah Chan.
For description see under East Asian Languages & Literatures.

ECON 120a or b, INTRODUCTION TO THE CHINESE ECONOMY.
Dong Chen.

HIST 306b, EAST ASIA, 500 TO THE PRESENT. Fabian Drixler, Peter Perdue.


HIST 313Ja/EVST 420a, ASIAN ENVIRONMENTS AND FRONTIERS.
Peter Perdue.
For description see under History.

HIST 314a, EARLY SOURCES IN CHINESE INTELLECTUAL TRADITIONS.
Annping Chin.


HIST 325Jb, INFANTICIDE AND FOUNDLINGS IN ASIA AND EUROPE BEFORE 1900. Fabian Drixler.

HIST 327Ja, NAVIGATING LIFE IN NINETEENTH-CENTURY JAPAN.
Fabian Drixler.

HIST 379Jb/HSHM 447bG, HISTORY OF CHINESE SCIENCE.
William Summers.
For description see under History.

HSAR 350b, CHINESE ART AND THE MODERN WORLD. Lillian Tseng.

HSAR 482b, ART AND AESTHETICS OF THE JAPANESE TEA CEREMONY.
Mimi Yiengpruksawan.

JAPN 170aG, INTRODUCTION TO LITERARY JAPANESE. Edward Kamens.
For description see under East Asian Languages & Literatures.
★JAPN 171bG, Readings in Literary Japanese. Reginald Jackson. For description see under East Asian Languages & Literatures.


JAPN 215aG/THST 338a, Introduction to Japanese Theater. Reginald Jackson. For description see under East Asian Languages & Literatures.

JAPN 250aG/LITR 260a, Modern Japanese Fiction. Christopher Hill. For description see under East Asian Languages & Literatures.

JAPN 260bG/LITR 252b, Imagining Space in Japanese Fiction and Film. Christopher Hill. For description see under East Asian Languages & Literatures.

★JAPN 271aG/FILM 448a, Japanese Cinema after 1960. Aaron Gerow. For description see under East Asian Languages & Literatures.

KREN 251b/FILM 315b, Korean Cinema after 1961. Seungja Choi. For description see under East Asian Languages & Literatures.

★LITR 445a/CLCV 318a/HUMS 382a, Literature and Philosophy in Early China and Greece. Alexander Beecroft. For description see under Literature.

PLSC 111a, Introduction to International Relations. Jolyon Howorth.

★PLSC 292b, Chinese Political Philosophy. Daniel Tauss.


PLSC 427a/INTS 318a, Sex, Markets, and Power. Frances Rosenbluth. For description see under Political Science.

RLST 134bG/EALL 200b, Buddhism in China and Japan. Koichi Shinohara. For description see under Religious Studies.

RLST 181b, Buddhist Masters of the Himalaya. Jacob Dalton.

★RLST 182a, Death, Dreams, and Visions in Indo-Tibetan Buddhism. Jacob Dalton.

★RLST 186a/EALL 205a, Mandalas and Mantras. Koichi Shinohara. For description see under Religious Studies.

★SOCY 086a, Chinese Society since Mao. Deborah Davis.

COURSES IN THE GRADUATE AND PROFESSIONAL SCHOOLS

Qualified students may elect pertinent courses in the Graduate School and in some of the professional schools with permission of the instructor, the director of undergraduate studies, and the director of graduate studies.

ECOLOGY AND EVOLUTIONARY BIOLOGY

Director of undergraduate studies: Melinda Smith, 101 OML, 432-3837, maureen.cunningham@yale.edu, www.eeb.yale.edu

Students interested in the area of ecology and evolutionary biology may find courses and major requirements listed under Biology, Area I. Students should consult an adviser from the appropriate list in that section.

The faculty roster for the Department of Ecology and Evolutionary Biology may be found under Biology. The department offers undergraduate courses in an area of concentration in the Biology major. See under Biology, Area I.

ECONOMICS

Director of undergraduate studies: Benjamin Polak, 55 Hillhouse Ave., 432-9926 or 432-3574, qazi.azam@yale.edu

FACULTY OF THE DEPARTMENT OF ECONOMICS

Professors

Associate Professors
Kenneth Couch (Visiting), Dino Gerardi, Justine Hastings, Sheila Olmstead, Fumiko Takeda (Visiting)

Assistant Professors
Costas Arkolakis, Christopher Blattman, Irene Brambilla, Bjoern Bruegemann, Tri Vi Dang (Visiting), Eduardo Faingold, Patrick Kline, Fabian Lange, Taisuke Otsu, Kareen Rozen, Melissa Tartari, Ebonya Washington

Lecturers
Irasema Alonso, Sigridur Benediktsdottir, Michael Boozer, Cheryl Doss, Andrew Epstein, Howard Forman, Keith Gamble, Tolga Koker, Nicholas Perna, Michael Schmertzler, David Swensen, Dean Takahashi

†Primary appointment in another department or school.

Economics concerns the wealth of nations, its origins in production and exchange, its allocation among competing uses, its distribution among individuals, and its accumulation or decline. Economics seeks to discern both the common features and the differences in the institutions by which societies throughout the world, today and in the past, have organized economic life. The approach is descriptive and analytical. Many issues of national and
international policy are considered, and the focus is on social institutions and market outcomes rather than on individual economic performance. Thus economics at Yale is regarded and taught as part of a liberal education, not as a preparation for any particular vocation.

Nonetheless economics provides an especially relevant background for several professions. In recent years about three-quarters of majors in Economics have entered law school or have gone on to graduate work in economics, business administration, and other professional fields, often after having worked in a related field for two or three years before beginning graduate or professional education. About one-quarter have pursued careers with business firms, government, or other organizations without graduate or professional training.

Requirements of the major. Students majoring in Economics are required to take twelve term courses numbered 108 or above. Two of these may be introductory economics courses, one in microeconomics and one in macroeconomics. Students must also complete a mathematics course selected from the following: Math 112a or b, 115a or b, 118a or b, or 120a or b. Students who place out of these courses must take a higher-level mathematics course at Yale and should consult the director of undergraduate studies. The remaining nine courses are in Economics. Seven of the nine must be economics courses taken at Yale. All majors must take the following core courses: one term of intermediate microeconomics (chosen from Econ 150a or b or 152a), one term of intermediate macroeconomics (chosen from Econ 153b or 154a or b), and one term of econometrics (chosen from Econ 161a or b or 163b or 166b). These required courses for the major should be completed prior to the senior year and are prerequisites for departmental seminars. Majors must also take two courses in the 400–491 range, including at least one in their senior year, to fulfill the senior requirement for the major. One course related to economics but taught in another field, such as accounting, another social science, or advanced mathematics, may be counted toward the Economics major with written permission of the director of undergraduate studies. In order to receive such permission, a student must be a declared major. Related-course credit forms are due by midterm (as it appears in the calendar at the beginning of this bulletin) of the term in which the course is offered. Once a related course is approved as a course counting toward the major, it must be counted toward the major. Courses taken on a Credit/D/Fail basis may not be counted toward the requirements of the major, except with permission of the director of undergraduate studies.

Introductory courses. These courses serve students considering a major in Economics as well as others who would like an introduction to the subject. Most students enroll in Econ 115a or b and 116a or b, lecture courses with a discussion section. Econ 115a or b is concerned with microeconomics and includes such topics as markets, prices, production, distribution, and the allocation of resources. Econ 116a or b covers such macroeconomic issues as unemployment, inflation, growth, and international economics. Students may take either term without the other, except that Econ 116b (but not 116a) has introductory microeconomics as a prerequisite. Students are encouraged to take the two-term sequence in order to obtain an introduction to the broad scope of economics.

Econ 110a and 111b are limited-enrollment alternatives to Econ 115a or b and 116a or b; they are open only to freshmen selected from those who
preregister. ECON 117a is an introductory microeconomics course with environmental applications. ECON 108a or b also covers microeconomics, but with a greater emphasis on quantitative methods and examples. It is intended for students with limited or no experience with calculus. Enrollment is limited, and requires the permission of the director of undergraduate studies. The substance of ECON 108a or b, 109a, 113a or b, and 117a is similar, and ECON 111b and 116a or b are similar as well. A student may receive credit for only one course each in introductory micro- and macroeconomics.

The department recommends that freshmen interested in majoring in Economics take introductory economics in the freshman year. They are also urged to meet the mathematics requirement during the freshman year. In order to make the introductory courses available to all freshmen and to students majoring in other subjects, the introductory courses do not have a mathematics requirement.

Exemptions from the introductory economics courses. Students who present a score of 5 on the Advanced Placement test for microeconomics and/or macroeconomics and a score of 5 on the Advanced Placement Calculus BC test may petition the director of undergraduate studies to place out of the introductory courses and enroll directly in intermediate courses. Students who have high scores in examinations that are equivalent to Advanced Placement, such as the GCE A-level or Higher Level International Baccalaureate, may also be exempted from the introductory courses.

Econometrics and mathematics recommendations. Students are advised to take the ECON 161a or b, 166b sequence or the ECON 162a, 163b sequence in econometrics, especially if they are considering an empirical senior essay. The department also recommends that majors either complete MATH 118a or b (a term course covering the elements of multivariate calculus and linear algebra) or complete two term courses including MATH 120a or b (multivariate calculus) and MATH 222a or b or MATH 225a or b (linear algebra).

Advanced courses. Above the introductory level the department offers a wide selection of courses that explore in greater detail material presented in the introductory courses. Advanced fields of economics include theory, quantitative, and mathematical economics; market organization; human resources; finance; international and development economics; public policy and the public sector; and economic history. Many of these advanced courses apply theory and econometrics to economic problems and institutions, and for this reason some advanced courses list one or more of the theory or econometrics courses as prerequisites. Most advanced courses have as a prerequisite two terms of introductory economics and the one-term mathematics requirement.

Seminars. Although there is diversity in approaches in the various seminars, all have in common an emphasis on class interaction, the writing of papers, and the reading of journal articles. Seminars represent an opportunity for students to apply and extend the economics they have learned in the advanced courses.

There is preregistration for departmental seminars, and enrollment is limited. Applications are received in the Undergraduate Studies office, Room 101, 28 Hillhouse Avenue, during the designated sign-up period in the preceding term. Preference is given to senior Economics majors (including those in Economics and Mathematics) who have not yet completed two seminars. Students must take two of three core courses before enrolling.
in a seminar. Seminar enrollment lists will be posted outside Room 101, 28 Hillhouse Avenue, and on the Economics undergraduate Web page at www.econ.yale.edu. The seminar requirement must be met by Yale Economics courses numbered 400–491; seminars in other departments or taken elsewhere will not suffice. Residential college seminars do not count toward the major.

**Senior requirement.** In their senior year, majors are required to take two departmental courses numbered ECON 400–491, most of which are seminars, or, if they have taken a departmental seminar (ECON 450–491) in their junior year, one course numbered ECON 400–491. In all cases, students must enroll in one such course during their senior year. Enrollment in ECON 491a counts as one seminar. Students who took <ECON 429a> prior to their senior year may not count it toward the senior requirement.

To be considered for Distinction in the Major, students must meet the grade standards for distinction (see chapter I) and submit a senior essay written in ECON 491a, in 491a and 492b, or in a departmental fall seminar to the Economics department by Monday, April 6, 2009. One-term essays are completed only in the fall term. Students who fail to submit such a paper will not be considered for Distinction in the Major. (Note that the paper must be written during the senior year and that students may submit a senior essay only if they have an approved prospectus and a senior essay adviser.) Senior essays that are not submitted on time will receive a grade of Incomplete. Senior essays with grades of Incomplete without permission of the residential college dean are subject to grade penalties when submitted. Grade computation for distinction does not include the introductory economics courses, the required mathematics course, or courses taken outside Yale. It does include, if taken, one course in a related field that is counted toward the major. Meetings for seniors to discuss the senior essay will be held on Wednesday, September 3, at 4:30 p.m. and Thursday, September 4, at 1:30 p.m. in Room 106, 28 Hillhouse Avenue. Details regarding calculations for Distinction in the Major will be discussed in these meetings, and senior essay guidelines will be distributed. Senior essay prospectus forms are due Monday, October 6, 2008.

**Graduate courses.** Well-qualified students who have acquired the requisite background in undergraduate courses may, with written permission of the instructor, the director of undergraduate studies, and the director of graduate studies, be admitted to graduate courses and seminars.

Students who are planning graduate work in economics should take additional mathematics courses beyond the one-term course required for the major. Many graduate programs in economics require courses in multivariate calculus and linear algebra. Students are urged to discuss their plans for graduate work with the director of undergraduate studies as early in their college careers as possible.

**Combined B.A./M.A. program.** Students interested in the B.A./M.A. program in Economics may submit a preliminary application in the fall of their junior year to the directors of undergraduate and graduate studies. Admission to this program is limited to students who have achieved A grades in at least two-thirds of all of their undergraduate courses and have also achieved A grades in at least two-thirds of courses relating to the major. If granted permission, applicants take two of the following three graduate courses: ECON 500a, 510a, and 550a. Only students who earn a grade of at least A— in each course will be considered for candidacy in the B.A./M.A.
program. Applications are forwarded to the Yale College Committee on Honors and Academic Standing at the end of the fall term. This committee makes the final decision on admission of students to the program. It is not possible to enter the B.A./M.A. program except in the fall of the junior year. If admitted to the program, a student completes eight term courses of graduate work in the junior and senior years; these eight courses include the two required for candidacy in the program as well as two chosen from the six core courses in the graduate sequence of microeconomics, macroeconomics, and econometrics. In addition, the student must complete the two-term senior departmental essay by enrollment in ECON 491a and 492b.

All students in the program must complete an approved one-term undergraduate or graduate course in econometrics. It is recommended that students complete the distributional requirements before the senior year. Appropriate graduate theory courses may be substituted for the core Economics courses 150a or b and 154a or b as well as the one-term econometrics course required of majors. The eight graduate courses must not be entirely concentrated in the final two terms, and students in the program must take at least six term courses outside the major during their last four terms at Yale and at least two undergraduate courses during their last two terms. Course schedules must be approved each term by both the director of undergraduate studies in Economics and the director of graduate studies in Economics. To receive the M.A. as well as the B.A. at the end of the senior year, the student must receive two terms of A in the graduate courses, an average of B in the remaining graduate courses, and a reader’s grade of B or higher on the senior essay.

Students interested in this program should see the director of undergraduate studies before or during registration for the first term of the junior year.

Faculty representatives. The Economics department has faculty representatives associated with each residential college. Students majoring in Economics should secure written approval of their course selection from one of their college representatives. Changes in their major program must be approved by a representative. Questions concerning the major or programs of study should be directed to a college representative. For 2008–2009 the college representatives are as follows:

BR, D. Brown, P. Kline
BR, C. Arkolakis, F. Lange
CC, E. Faingold, W. Nordhaus
DC, I. Brambilla, C. Udry
TD, D. Andrews, M. Rosenzweig
JE, S. Berry, E. Vytlačil
MC, K. Rozen, M. Tartari
PC, X. Chen, T. Otsu
SY, T. Bewley, B. Bruegemann
SM, D. Bergemann, E. Engel
ES, R. Fair, Y. Kitamura
TC, J. Geanakoplos, L. Samuelson

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 12 term courses numbered 108 or above
Distribution of courses: 2 term courses of intro econ: 1 of microeconomics, one of macroeconomics; 1 from MATH 112a or b, 115a or b, 118a or b, 120a or b; 2 courses numbered ECON 400–491, at least 1 in senior year
Specific courses required: ECON 150a or b or 152a; 153b or 154a or b; 161a or b or 163b or 166b
Substitution permitted: 1 related course in another dept, with written DUS permission once major is declared
Senior requirement: 1 course numbered ECON 400–491
INTRODUCTORY COURSES

*econ 108a or b, Quantitative Foundations of Microeconomics.
Tolga Koker.

MW 2:30-3:45; disc. F 9:25-10:15 QR, So (64)
Introductory microeconomics with a special emphasis on quantitative methods and examples. Intended for students with limited or no experience with calculus. Enrollment limited. Preregistration is required at www.econ.yale.edu/undergrad/ugrad.htm by August 22, 2008. Final enrollment list will be posted on the bulletin board at 28 Hillhouse Ave. May not be taken after econ 110a or 115a or b or 117a.

*econ 110a, An Introduction to Microeconomic Analysis.

110a-1: MW 11:35-12:50 QR, So (64) Tolga Koker
110a-2: MW 1-2.15 QR, So (64) Tolga Koker
110a-3: TTh 9-10.15 QR, So (64) Keith Gamble
110a-4: TTh 11:35-12:50 QR, So (64) Keith Gamble
Similar to econ 115a or b, but taught as a lecture discussion with limited enrollment. Enrollment limited to freshmen. Preregistration is required at www.econ.yale.edu/undergrad/ugrad.htm by August 29, 2008. Final enrollment list will be posted on the bulletin board at 28 Hillhouse Ave. May not be taken after econ 108a or b, 115a or b, or 117a.

*econ 110b, An Introduction to Macroeconomic Analysis.

110b-1: TTh 9-10.15 So (64) Sigridur Benediktsdottir
110b-2: TTh 11:35-12:50 So (64) Sigridur Benediktsdottir
110b-3: MW 11:35-12:50 So (64) Irasema Alonso
Similar to econ 116a or b, but taught as a lecture discussion with limited enrollment. Enrollment limited to freshmen. Preregistration is required at www.econ.yale.edu/undergrad/ugrad.htm by December 2, 2008. Final enrollment list will be posted on the bulletin board at 28 Hillhouse Ave. May not be taken after econ 116a or b.

econ 115a or b, Introductory Microeconomics.

115a: MW 1-2.15 QR, So (64) Steven Berry
115b: TTh 1-2.15 QR, So (64) Fabian Lange
An introduction to the basic tools of microeconomics to provide a rigorous framework for understanding how individuals, firms, markets, and governments allocate scarce resources. The design and evaluation of public policy. May not be taken after econ 108a or b or 110a or 117a.

econ 116a or b, Introductory Macroeconomics.

116a: TTh 1-2.15 So (64) Gerald Jaynes, Anthony Smith
116b: MW 1-2.15 So (64) Ray Fair
An introduction that stresses how the macroeconomy works, including the determination of output, unemployment, inflation, interest rates, and exchange rates. Economic theory is applied to current events. May not be taken after econ 111b. Prerequisite for econ 116b: econ 108a or b, 110a, 115a or b, or 117a.

econ 117a/EVST 117a/FRES 117a, Microeconomics with Environmental Applications.
Sheila Olmstead.
For description see under Environmental Studies.

econ 120a or b, Introduction to the Chinese Economy.
Dong Chen.
HTBA So (50)
An overview of the Chinese economy, with attention to its rapid growth in the past two decades and its current challenges. The cultural and political background of the economy, China’s market transition, manufacturing and financial sectors, foreign trade, foreign direct investment and technology transfer, and the reform of state-owned enterprises. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

ADVANCED COURSES

econ 150a or b, Intermediate Microeconomics.

150a: MW 9-10.15 QR, So Core (32) Larry Samuelson
150b: MW 1-2.15 QR, So Core (36) Eduardo Faingold

The theory of resource allocation and its applications. Topics include the theory of choice, consumer and firm behavior, production, price determination in different market structures, welfare, and market failure. After two terms of introductory economics and completion of the mathematics requirement for the major or its equivalent. Elementary techniques from multivariate calculus are introduced and applied, but prior knowledge is not assumed. May not be taken after econ 152a.

econ 152a, Microeconomic Theory. Karen Rozen.

MW 1-2.15 QR, So (36) Core

Similar to econ 150a or b but with a more intensive treatment of consumer and producer theory, and covering additional topics including choice under uncertainty, game theory, contracting under hidden actions or hidden information, externalities and public goods, and general equilibrium theory. After two terms of introductory economics, and math 118a or b or 120a or b or equivalent. May not be taken after econ 150a or b.

econ 153b, Macroeconomic Theory. Staff.

3 hta QR, So (50) Core

Similar to econ 154a or b but with a more intensive treatment of the mathematical foundations of macroeconomic modeling, and with rigorous study of additional topics. After two terms of introductory economics, and math 118a or b or 120a or b or equivalent. May not be taken after econ 150a or b.

econ 154a or b, Intermediate Macroeconomics.

154a: MW 11.35-12.50 QR, So Core (34) William Nordhaus
154b: MW 9-10.15 QR, So Core (32) Bjoern Bruegemann

Contemporary theories of employment, money, business fluctuations, and economic growth. Their implications for monetary and fiscal policies of the United States and other developed economies. Relevant empirical studies and recent policies and problems of economic stabilization. After two terms of introductory economics and completion of the mathematics requirement for the major or its equivalent. May not be taken after econ 153b.


TH 1-2.15 QR, So (26)

An introduction to general equilibrium theory and its extension to equilibria involving uncertainty and time. Discussion of the economic role of insurance and of intertemporal models, namely, the overlapping generations model and the optimal growth theory model. After math 118a or b or 120a or b, and intermediate microeconomics, or with permission of instructor.

econ 156b, Mathematical Economics: Game Theory.

Johannes Horner.

MW 9-10.15 QR, So (32)
Introduction to game theory and choice under uncertainty. Analysis of the role of information and uncertainty for individual choice behavior, as well as application to the decision theory under uncertainty. Analysis of strategic interaction among economic agents, leading to the theory of auctions and mechanism design. After MATH 118A or B, 120A or B, and ECON 150A or B or equivalent, or with permission of instructor.

ECON 159A, Game Theory. Benjamin Polak.

MW 11.35-12.50 QR, So (34)
An introduction to game theory and strategic thinking. Ideas such as dominance, backward induction, Nash equilibrium, evolutionary stability, commitment, credibility, asymmetric information, adverse selection, and signaling are applied to games played in class and to examples drawn from economics, politics, the movies, and elsewhere. After introductory microeconomics. No prior knowledge of game theory assumed.

ECON 161A or B, Econometrics and Data Analysis I.

161A: TTH 1-2.15 QR, So Core (26) Melissa Tartari
161B: TTH 11.35-12.50 QR, So Core (24) Yuichi Kitamura
Basic probability theory and statistics, distribution theory, estimation and inference, bivariate regression, introduction to multivariate regression, introduction to statistical computing. After introductory microeconomics and MATH 112A or B or equivalent.

ECON 162A, Introduction to Probability and Statistics.

Taisuke Otsu.

TTH 9-10.15 QR, So (22)
Foundations of mathematical statistics: probability theory, distribution theory, parameter estimation, hypothesis testing, regression, and computer programming. After two terms of introductory economics and either MATH 118A or B or MATH 120A or B and 222A or B or 225A or B.

ECON 163B, Econometrics.

Edward Vytlacil.

MW 9-10.15 QR, So (32) Core
Continuation of ECON 162A with a focus on econometric theory and practice: problems that arise from the specification, estimation, and interpretation of models of economic behavior. Topics include classical regression and simultaneous equations models; panel data; and limited dependent variables. After ECON 162A or with permission of instructor.

ECON 166B, Econometrics and Data Analysis II.

Joseph Altonji.

TTH 9-10.15 QR, So (22) Core
Continuation of ECON 161A or B, with a focus on multivariate regression. Topics include statistical inference, choice of functional form, heteroskedasticity, serial correlation, two-stage least squares, qualitative choice models, time series models, and forecasting. Emphasis on statistical computing and the mechanics of how to conduct and present empirical research. After two terms of introductory economics, completion of the mathematics requirement for the major, and ECON 161A or B or ECON 162A or a course in the STAT 101–106 series.

ECON 170A, Health Economics and Public Policy.

Howard Forman.

TTH 2.30-3.45 So (27)
An application of economic principles to the study of the U.S. health care system. Emphasis on basic principles about the structure of the U.S. system, current problems, proposed solutions, and the context of health policy making and politics. After introductory microeconomics. May not be taken after or concurrently with ECON 467A.
econ 182b/hist 135b, American Economic History.
Benjamin Chabot.
TTh 1-2.15 So (26)
The growth of the American economy since 1790, both as a unique historical record and as an illustration of factors in the process of economic development. The American experience viewed in the context of its European background and patterns of industrialization overseas. After two terms of introductory economics.

econ 186a, European Economic History, 1700–1815.
Timothy Guinnane.
TTh 9-10.15 So (22)
An examination of European economic growth and development from the late seventeenth century through the first stages of the British industrial revolution. Topics include the role of institutional development, trade and imperialism, agricultural improvements, and industrialization. Particular attention to comparisons between Britain and other parts of Europe. After econ 115a or b or 150a or b, and econ 116a or b or 154a or b.

[econ 187a, European Economic History, 1815–1945]
[econ 200b, Firms, Markets, and Competition]

Joseph Altonji.
TTh 9-10.15 So (22)
Labor markets, labor supply and welfare programs, retirement and social security, wage determination, human capital, gender and racial discrimination, inequality, immigration and migration, unions, and unemployment. After two terms of introductory economics, and econ 161a or b or 162a or a course in the stat 101–106 series.

econ 226a, Urban Economics.
Patrick Kline.
MW 10.30-11.20, 1 HTBA So (33)
Determinants of urban growth and decline. Topics include theory and evidence on sources of agglomeration economies and urban growth, systems of cities, housing markets, segregation, determinants of the spatial distribution of jobs, and local public policy. After intermediate microeconomics.

econ 251a, Financial Theory.
John Geanakoplos.
TTh 11.35-12.50 QR, So (24)
Capital asset pricing model, arbitrage pricing theory, option pricing, social security, operation of security exchanges, investment banks, securitization, mortgage derivatives, interest rate derivatives, hedge funds, financial crises, agency theory, and financial incentives. After introductory microeconomics.

econ 252b, Financial Markets.
Sigridur Benediktsdottir.
MW 9-10.15 So (32)
An overview of the ideas, methods, and institutions that permit human society to manage risks and foster enterprise. A detailed description of practices today as well as an analysis of prospects for the future. An introduction to risk management and behavioral finance principles to provide understanding of the functioning of our securities, insurance, and banking industries. After two terms of introductory economics.

econ 253b, Computational Finance.
Donald Brown.
TTh 1-2.15 QR, So (26)
Fundamentals of the most widely used method for computing the value of a derivative asset. The binomial pricing model allows the introduction, in a discrete-time setting, of concepts used in continuous-time theory of asset valuation and hedging of risk, including martingales, risk-neutral pricing, and stochastic calculus. **Prerequisites:** MATH 118a or b, ECON 150a or b, and 161a or b, or equivalents.

**ECON 275b/PLSC 218b, Public Economics.** Ebonya Washington.

MW 2:30-3:45 So (37)
The role of government in the economy and in our economic lives. Reasons for government intervention in the market economy and the impact of government expenditure programs and taxation systems on welfare and behavior. Tools of microeconomics applied to issues such as government response to global warming, the impact of redistribution and social insurance on individual behavior, school choice, social security vs. private retirement savings accounts, and government vs. private health insurance. **After introductory microeconomics.**

**ECON 300a/INTS 358a, International Trade Theory and Policy.**

Costas Arkolakis.

MW 9:00-10:15 So (32)
Theories of comparative advantage, factor abundance, and product differentiation as reasons for trade between countries. The relationship between trade and aggregate welfare; historical and contemporary issues in globalization and trade policy. **After intermediate microeconomics.**

**ECON 325b/INTS 352b, Economics of Developing Countries.**

Dean Karlan.

MW 11:35-12:50 So (34)
Analysis of current problems of developing countries. Emphasis on the role of economic theory in informing public policies to achieve improvements in poverty and inequality, and on empirical analysis to understand markets and responses to poverty. Topics include microfinance, education, health, agriculture, intra-household allocations, gender, and corruption. **After introductory microeconomics; after or concurrently with ECON 161a or b or a course in the STAT 101–106 series.**

*ECON 327b/AFST 170b/PLSC 170b, African Poverty and Western Aid.* Christopher Blattman.

For description see under Political Science.

**ECON 330aG, Economics of Natural Resources.** Robert Mendelsohn.

MWF 10:30-11:20 QR, So (33)
Microeconomic theory brought to bear on current issues in natural resource policy. Topics include regulation of pollution, hazardous waste management, depletion of the world’s forests and fisheries, wilderness and wildlife preservation, and energy planning. **After introductory microeconomics.**

**ECON 331b, The Economics of Energy and Climate Change.**

William Nordhaus.

MW 10:30-11:20, 1 Htba So (33)
The essentials of energy and environmental economics, with applications. Analysis of core topics in public goods, intertemporal choice, uncertainty, decision theory, and exhaustible resources. Applications include energy security, nuclear power, the relationship between nuclear power and nuclear proliferation, and climate change. **Enrollment limited. Prerequisite: two terms of introductory economics.**
DEPARTMENTAL SEMINARS

The following is a provisional list of departmental seminars. For a complete list, see the Economics department undergraduate Web site at www.econ.yale.edu/undergrad/ugrad.htm. Prerequisite to any seminar are two Economics core courses. Preregistration for junior and senior majors, held in Room 101, 28 Hillhouse Ave., is required during the designated sign-up period.

*econ 450a, INVESTMENT ANALYSIS.  David Swensen, Dean Takahashi.
  M 2:30-4:20 So (0)
Examination of investment management in theory and practice. Discussion of asset allocation, investment strategy, and manager selection from the perspective of an institutional investor. Focus on the degree of market efficiency and opportunity for generating attractive returns.

*econ 452b, BEHAVIORAL FINANCE.  Keith Gamble.
  M 1:30-3:20 (0)
The impact of limits to arbitrage; psychological biases on asset prices and investment behavior. Analysis of documented deviations from the predictions of traditional financial theory. After intermediate microeconomics, econometrics, and at least one course in traditional financial theory.

*econ 453a, ANTITRUST LAW AND ECONOMICS.  Alvin Klevorick.
  F 9:25-11:15 So (0)
Exploration of the character, logic, and economic effects of the U.S. antitrust laws, drawing on legal and economic analyses. Topics include the major areas of antitrust law: price fixing and other horizontal restraints of trade, vertical restraints of trade, monopolization, and mergers. After econ 150a or b or 152a. Preference to students who have completed econ 200b.

*econ 454b, TOPICS IN APPLIED GAME THEORY.  Tri Vi Dang.
  M 1:30-3:20 So (0)
Introduction to new concepts and issues in strategic analysis. Formulation and analysis of real-world problems. Topics include forward induction, psychological games, belief heterogeneity (e.g., optimism), and global games.

*econ 455b, INFORMATION ECONOMY.  Judith Chevalier.
  T 3:30-5:20 So (0)
The economics of information, communication, and electronic commerce. Topics include the communications infrastructure—telephone, broadband, and wireless communications—and the regulation and adoption of these technologies; the basic economics of selected uses of the Internet; the organization of businesses as they are affected by new communications technologies; and intellectual property and antitrust issues in the information economy.

*econ 456a, PRIVATE EQUITY INVESTING.  Michael Schmertzler.
  M 3:30-5:20 So (0)
A case-oriented study of principal issues and investment types found in substantial private equity portfolios. Topics include enterprise valuation, value creation, business economics, negotiation, and legal structure, based on primary source materials and original cases. Prerequisites: econ 150a or b or 152a, and econ 161a or b, 163b, or 166b.
**ECON 457b, Financial History.** William Goetzmann.  
M 3.30-5.20 So (o)  
The history of finance and capital markets from the Mesopotamian origins of financial instruments, via the mathematical development of compound interest calculations, to modern times. Focus on innovations in the technology of finance. **Prerequisites:** ECON 150a or b and ECON 161a or b or equivalent. No previous training in finance is assumed.

**ECON 463a/EP&E 320a, Economic Problems of Latin America.**  
Eduardo Engel.  
W 3.30-5.20 So (o)  
Study of historical and current challenges in economic policy faced by Latin America. Topics include privatizations and regulatory reform, competition and trade policies, exchange rate regimes, and governance. Evaluation of reforms, emphasizing their impact on growth, poverty reduction, and the improvement of the distribution of income. **Prerequisite:** ECON 150a or b and 154a or b.

**ECON 464b, Information and Incentives in Health Care.**  
Andrew Epstein.  
T 2.30-4.20 So (o)  
Topics relating to the provision of medical care in the United States, focusing on features brought about by asymmetric information, uncertainty, and incentive structures.

**ECON 465a/EP&E 377a, Debating Globalization.**  
Ernesto Zedillo.  
M 2.30-4.20 (o)  
Facets of contemporary economic globalization, including trade, investment, and migration. Challenges and threats of globalization: inclusion and inequality, emerging global players, global governance, climate change, and nuclear weapons proliferation. **Preference to seniors majoring in Economics or EP&E.**

[**ECON 466a, Topics in International Trade**]

**ECON 467a/EP&E 319a, Issues in Health Economics.**  
Howard Forman.  
M 3.30-5.20 So (o)  
An application of microeconomic, finance, and policy tools to the analysis of health care delivery, domestically and internationally. Health economics theory and applications to central issues in the U.S. health care system. **May not be taken after or concurrently with ECON 170a.**

**ECON 468b, Institutions and Incentives in Economic Development.** Mark Rosenzweig.  
Th 3.30-5.20 So (o)  
Assessment of alternative policies and programs designed to promote economic development; examination of fundamental problems of underdeveloped areas and consideration of how and whether such programs resolve them. The roles of indigenous institutions in low-income countries in alleviating problems of underdevelopment. **Prerequisites:** ECON 150a or b or 152a, and ECON 161a or b, 163b, or 166b.

**ECON 470a or b/EP&E 413a or b, Topics in American Economic History.** Benjamin Chabot.  
W 1.30-3.20 So (o)
An empirical study of nineteenth- and early twentieth-century financial markets. Topics include institutions, banking, panics and crashes, the gold standard, capital market integration, deflation, and the Great Depression. Prerequisites: ECON 150a or b or 152a, and 161a or b or 163b.

*ECON 473b/EPRE 352b/PLSC 343b, EQUALITY. John Roemer.
For description see under Ethics, Politics, & Economics.

*ECON 476a, TOPICS IN INTERNATIONAL ECONOMICS.
Miguel Ramirez.
W 1.30-3.20 So (0)
Recent developments in international economics. Trade policy and market structure; the economics of trading blocs such as the EEC and NAFTA; the economic consequences of continued U.S. external deficits; globalization and inequality; exchange rates, interest rates, and volatility; speculative capital flows and exchange rate policies; and financial crises and the prospects for the European Monetary Union.

*ECON 478a, ECONOMIC DEVELOPMENT OF INDIA AND SOUTH ASIA.
T. N. Srinivasan.
W 2.30-4.20 So (0)
Colonial antecedents of low levels of economic and social development in India and, more broadly, in other South Asian countries. Failings and achievements of the state-directed and inward-oriented development strategy of the first four decades after independence from colonial rule. Developments since India and the region initiated systemic economic reforms and reintegrated their economies with the world economy, allowing market forces to play a large role in economic decisions. Comparison of the performance of India and China since 1980.

*ECON 479a/EAST 479a, ECONOMIC DEVELOPMENT OF JAPAN.
Koichi Hamada.
Th 1.30-3.20 So (0)
Japan's economic development, with attention to the period of tremendous success in the 1960s and the recession of the 1990s. The nature of incentive mechanisms; institutions behind the history of modern and contemporary Japan.

*ECON 483a, THE ECONOMY, ELECTIONS, AND MARKETS.
Ray Fair.
Th 3.30-5.20 So (0)
The effect of the economy on voting behavior, the use of betting markets to predict election outcomes and other events, and the effect of election outcomes on stock prices. Preference to students who have completed ECON 161a or b and 166b or ECON 162a and 163b.

*ECON 484b, THE UNITED STATES BANKING SYSTEM.
Nicholas Perna.
T 1.30-3.20 So (0)
The structure and functions of the U.S. banking system, with special attention to the role of the Federal Reserve, private sector banks, and other related financial institutions in the overall economy. The appropriate role of monetary policy in promoting economic growth and stability; the U.S. banking system as compared with foreign systems; and future evolution of the U.S. banking system, including the role of electronic commerce. Prerequisite: ECON 153b or 154a or b.
**ECON 486a/EP&E 376a, Topics in Labor Economics.**

Kenneth Couch.

T 9.25-11.15 So (0)

Introduction to applied empirical research in labor economics. Emphasis on how research topics can be framed as economic questions and how data can be used to generate relevant empirical information. Topics include measurement of discrimination in the labor market, determinants of black-white differences in employment and earnings, the impact of minimum wages, and economic mobility. Prerequisite: intermediate economics. Enrollment limited to majors in Economics, Economics and Mathematics, and EP&E.

**ECON 488a, Experimental Economics.** Shyam Sunder.

T 1.30-3.20 QR, So (0)

The use of economic experiments to investigate the economic behavior of individuals and markets. Students are actively involved in the design, execution, and analysis of experiments. Examples of experiments include auctions, information aggregation, and asset markets and public goods provision. Prerequisite: ECON 150a or b or 152a.

**ECON 491a and 492b, The Senior Essay.** Benjamin Polak.

HTBA (0)

Students deciding to write one-term senior essays by enrolling in ECON 491a, or two-term senior essays by enrolling in ECON 491a and 492b, must choose their topics and advisers by Monday, October 6, 2008. In order to be considered for Distinction in the Major, students must submit three copies of their essay to the Economics department office by Monday, April 6, 2009. Advisers are chosen with the assistance of the director of undergraduate studies.

The format and character of the departmental senior essay may vary to suit the interest of the student and the demands of the topic, but it is expected that the tools and concepts of economic analysis will be employed. Paper lengths may vary; the normal expectation is thirty pages. Students may receive up to two credits for the senior essay, though it counts as only one departmental seminar whether one or two terms are taken.

The first meeting is on Wednesday, September 3, from 4.30 to 5.20, or on Thursday, September 4, from 1.30 to 2.20, in Room 106, 28 Hillhouse Ave. Seniors planning to write a senior essay should attend this meeting. Details regarding calculation of distinction will be discussed and senior essay guidelines will be distributed.

**ECON 498a and 499b, Directed Reading.** Benjamin Polak.

HTBA (0)

Students desiring a directed reading course in special topics in economics not covered in other graduate or undergraduate courses may elect this course, usually not more than once, with written permission of the director of undergraduate studies and of the instructor. The instructor meets with the student regularly, typically for an hour a week, and the student writes a paper or a series of short essays. May be elected for one or two terms. Does not meet the requirement for a departmental seminar.

**GRADUATE COURSES OF INTEREST TO UNDERGRADUATES**

Graduate courses in Economics are open to qualified undergraduates. Descriptions of courses are listed in the Graduate School bulletin and are available in the Economics department office. Permission of the instructor and of the director of graduate studies is required.
The Economics and Mathematics major is intended for students with a strong intellectual interest in both mathematics and economics.

Prerequisites. The major has prerequisites in both mathematics and economics: MATH 120a or b; one term from ECON 110a or 115a or b; and ECON 111b or 116a or b. With permission of the adviser, upper-level courses may be substituted for prerequisite courses.

Requirements of the major. A total of twelve term courses is required beyond the introductory level in economics and in mathematics, with at least five in mathematics and at least seven in economics. These courses must include:

1. One intermediate microeconomics course chosen from ECON 150a or b or 152a, and one intermediate macroeconomics course chosen from either ECON 153b or 154a or b
2. A year of mathematical economics, ECON 155a and 156b
3. Two term courses of econometrics, ECON 162a and 163b (with permission of the Economics adviser, STAT 242b may be taken instead of ECON 162a)
4. A term course in linear algebra, MATH 222a or b or 225a or b (or 230, which counts for two courses)
5. An introductory term course in analysis, MATH 300b or 301a
6. Senior seminar in mathematics, MATH 480a or b

Because optimization is an important theme in mathematics and is particularly relevant for economics, ORPS 235a is recommended for students majoring in Economics and Mathematics and can be counted toward either the Mathematics or Economics course requirements. Other related courses, such as those in accounting, cannot be used to meet the requirements of the major.

To be considered for Distinction in the Major, students must meet specified grade standards (see chapter I) and submit a senior essay written in either an Economics department seminar or in ECON 491a or in 491a and 492b to the Economics department by April 6, 2009. Students who fail to submit such a paper will not be considered for Distinction in the Major. (The paper must be written in a course taken in the senior year.) The senior essay prospectus form, signed by the adviser, is due October 6, 2008. All courses beyond the introductory level in Mathematics and Economics are counted in the computation of grades for distinction.

Students interested in the major should consult the director of undergraduate studies in Mathematics and the Economics adviser for the program.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** MATH 120a or b; ECON 110a or 115a or b; ECON 111b or 116a or b

**Number of courses:** 12 term courses beyond prereqs (incl senior essay)

**Distribution of courses:** 5 courses in math and 7 in econ

**Specific courses required:** ECON 150a or b or 152a; ECON 153b or 154a or b; ECON 155a and 156b; ECON 162a and 163b; MATH 222a or b or 225a or b (or 230 for 2 course credits); MATH 300b or 301a

**Substitution permitted:** STAT 242b for ECON 162a, with permission of Econ adviser

**Senior requirement:** Senior sem in math (MATH 480a or b); optional senior essay
EDUCATION
(See under Teacher Preparation and Education Studies.)

EGYPTIAN
(See under Near Eastern Languages and Civilizations.)

ELECTRICAL ENGINEERING

Director of undergraduate studies: Kumpati Narendra, 512 DL, 432-9909, kumpati.narendra@yale.edu

FACULTY OF THE DEPARTMENT OF ELECTRICAL ENGINEERING

Professors
Andrew Barron, Richard Chang, James Duncan, Jung Han, Peter Kindlmann (Adjunct), Roman Kuc, Tso-Ping Ma, A. Stephen Morse, Kumpati Narendra, Mark Reed, Peter Schultheiss (Emeritus), J. Rimas Vaišnys, Jerry Woodall (Adjunct), Steven Zucker

Associate Professors
Richard Lethin (Adjunct), Yiorgos Makris, Janet Pan, Lawrence Staib, Hemant Tagare, Sekhar Tatikonda, Edmund Yeh

Assistant Professors
Sobeeh Almukhaizim (Visiting), Eugenio Culurciello, Hürr Köser, Prabhakar Kudva (Adjunct), Minjoo Lee, Andreas Savvides, Hong Tang

Electrical Engineering broadly encompasses disciplines such as microelectronics, photonics, computer engineering, signal processing, control systems, and communications, all of which enable and underpin a modern technological society. Three degree programs are offered that allow students to select the level of technical depth appropriate for individual goals. The B.A. in Engineering Sciences (Electrical) is suitable for a career outside technology, in which a student nevertheless benefits from an appreciation of electrical engineering perspectives. The B.S. in Engineering Sciences (Electrical) provides more technical exposure while retaining academic options outside the electrical engineering core area. The B.S. in Electrical Engineering, accredited by the Accreditation Board for Engineering and Technology (ABET), is appropriate for highly motivated students who are interested in learning the scientific fundamentals and the technologies and creative processes of contemporary electrical engineering. In a world deeply dependent on technology, recent ABET graduates have found their degree a particularly effective credential not only for further work in engineering, but also for careers in business, management consulting, investment banking, medicine, and intellectual property law.

Because the introductory courses are common to all three degree programs, the student does not usually need to make a final choice before the junior year. An interdepartmental program with Computer Science is also offered (see under Electrical Engineering and Computer Science) and students can pursue interdisciplinary studies in other areas of engineering and science.

Prerequisites. All three degree programs require Math 112a or b, 115a or b, Enas 151a or Math 120a or b or higher, and Phys 180a, 181b or higher (Phys 150a, 151b is acceptable for the B.A. degree). Acceleration credits awarded on entrance can be used to satisfy the Math 112a or b and 115a or b requirements. Students whose preparation exceeds the level of Enas 151a or Math 120a or b
are asked to take a higher-level mathematics course instead, such as MATH 250a. Similarly, students whose preparation at entrance exceeds the level of PHYS 180a, 181b are asked to take higher-level physics courses instead, such as PHYS 200a, 201b; consult with the director of undergraduate studies.

**B.S. degree program in Electrical Engineering.** The ABET-accredited B.S. in Electrical Engineering requires, beyond the prerequisites, four term courses in mathematics and science, thirteen term courses in topics in engineering, and one term course in professional ethics. In the language of the ABET guidelines, graduates from this program will (1) have gained an in-depth appreciation of electrical engineering technological frontiers through close interaction with faculty; (2) be able to enter highly selective graduate schools, or pursue technical careers in industry or national labs, or bring to their careers as business, national, or global leaders knowledge of technologies that will continue to be the key drivers of social productivity; (3) be able to apply knowledge in science and mathematics to formulate and solve electrical engineering problems qualitatively and quantitatively; (4) be able to communicate ideas effectively to multidisciplinary audiences; and (5) be able to exhibit broad awareness of contemporary social and environmental issues.

Requirements beyond the prerequisites include:

1. Mathematics and basic science (four term courses): ENAS 194a or b; MATH 222a or b or 223a or b; APHY 322b or equivalent; STAT 241a or equivalent.
2. Electrical engineering and related subjects (thirteen term courses): EENG 200a, 201b, 202a, 203b, 310b, 320a, 325b, 348a, 481a (the senior project); and four engineering electives, at least three of which should be at the 400 level.
3. Professional ethics: ENAS 335a or equivalent.

Each student's program must be approved by the director of undergraduate studies.

For students who have taken the equivalent of one year of calculus in high school, a typical ABET-accredited B.S. program might include:

**Freshman** | **Sophomore** | **Junior** | **Senior**
--- | --- | --- | ---
EENG 200a | EENG 202a | EENG 320a | EENG 481a
ENAS 151a or MATH 120a | STAT 241a | EENG 348a | Two electives
PHYS 180a

EENG 201b | EENG 203b | APHY 322b | Two electives
MATH 222b | ENAS 194b | EENG 310b | EENG 323b
PHYS 181b

For students who must start with MATH 112a or b, a typical ABET-accredited B.S. program might include:

**Freshman** | **Sophomore** | **Junior** | **Senior**
--- | --- | --- | ---
MATH 112a | EENG 200a | EENG 202a | EENG 481a
ENAS 151a or MATH 120a | EENG 320a | EENG 348a | Two electives
PHYS 180a

EENG 201b | ENAS 194b | EENG 203b | APHY 322b
MATH 115b | MATH 222b | EENG 310b | Two electives
PHYS 181b |
Faster-paced and slower-paced variations are possible, depending on the student’s level of preparation and commitment to the major; consult with the director of undergraduate studies.

**B.S. degree program in Engineering Sciences (Electrical).** This program requires fewer technical courses and allows more freedom for work in technical areas outside the traditional electrical engineering disciplines (e.g., economics or cognitive psychology). It requires thirteen technical term courses beyond the prerequisites, specifically: \( \text{MATH} \ 222a \text{ or } b \text{ or } 225a \text{ or } b; \ \text{ENAS} \ 194a \text{ or } b; \ \text{EENG} \ 200a, 201b, 202a, 203b, 471a \) (the senior project); and six electives approved by the director of undergraduate studies, at least three of which must be at the 400 level.

For students who have taken the equivalent of one year of calculus in high school, a typical program for this degree might include:

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<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>EENG 200a</td>
<td>EENG 202a</td>
<td>Two electives</td>
<td>EENG 471a</td>
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<tr>
<td>ENAS 151a or MATH 120a</td>
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<td>One elective</td>
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<tr>
<td>PHYS 180a</td>
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<tr>
<td>EENG 201b</td>
<td>EENG 203b</td>
<td>One elective</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 222b</td>
<td>ENAS 194b</td>
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<tr>
<td>PHYS 181b</td>
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For students who must start with \( \text{MATH} \ 112a \text{ or } b \), a typical program for this degree might include:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 112a</td>
<td>EENG 200a</td>
<td>EENG 202a</td>
<td>EENG 471a</td>
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<tr>
<td>ENAS 151a or MATH 120a</td>
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<td>One elective</td>
<td>Two electives</td>
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<tr>
<td>PHYS 180a</td>
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<tr>
<td>EENG 201b</td>
<td>ENAS 194b</td>
<td>EENG 203b</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 115b</td>
<td>MATH 222b</td>
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</tr>
<tr>
<td>PHYS 181b</td>
<td></td>
<td>One elective</td>
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</tbody>
</table>

Faster-paced and slower-paced variations are possible, depending on the student’s level of preparation and commitment to the major; consult with the director of undergraduate studies. The implied flexibility during the junior and senior years in the schedules above is often used to accommodate a second major, such as Economics, or to master a related technical area, such as recent developments in biology or environmental studies.

**B.A. degree program in Engineering Sciences (Electrical).** This program is appropriate for those planning a career in fields such as business, law, or medicine where scientific and technical knowledge is likely to be useful. It requires eight technical term courses beyond the prerequisites, specifically: \( \text{MATH} \ 222a \text{ or } b \text{ or } 225a \text{ or } b; \ \text{ENAS} \ 194a \text{ or } b; \ \text{EENG} \ 200a, 201b, 202a, 471a \) (the senior requirement); and three approved electives.

**Senior requirement.** A research or design project carried out in the fall term of the senior year is required in all three programs. The student must take \( \text{EENG} \ 471a \text{ or } 481a \), present a written report, and make an oral presentation during the fall term. The written report is due in the departmental office by the last day of reading period. Arrangements to undertake a project in
fulfillment of the senior requirement must be made by the end of the reading period of the preceding term, when a registration form (available from the departmental office), signed by the intended faculty adviser and the director of undergraduate studies, must be submitted.

Approval of programs. All Electrical Engineering and Engineering Sciences majors must have their programs approved by the director of undergraduate studies. Arrangements to take EENG 235a, 236b, 471a, 472b, 481a, or 482b must be made during the term preceding enrollment in the course. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Transition from previous requirements. The major requirements described above apply to the Class of 2011 and subsequent classes. Students in the Class of 2010 and previous classes should refer to previous editions of this bulletin for the appropriate major requirements. Juniors and seniors who have completed only part of the previous sophomore sequence EENG <226a>, <227a>, <228b>, <229b> should consult with the director of undergraduate studies. In 2008–2009, sophomores are advised to take both EENG 200a and 202a in the fall term in order to fulfill the prerequisites for taking 203b in the spring term.

Select Program in Engineering. Qualified students majoring with a B.S. degree in Electrical Engineering or Engineering Sciences (Electrical) may be eligible to apply for a special program that includes industry research experience. See under Engineering.

REQUIREMENTS OF THE MAJOR

ELECTRICAL ENGINEERING, B.S.

Prerequisites:  
MATH 112a or b, 115a or b; ENAS 151a or MATH 120a or b or higher; 
PHYS 180a, 181b or higher

Number of courses:  
18 term courses beyond prereqs, incl senior req

Specific courses required:  
ENAS 194a or b; MATH 222a or b or 225a or b; APHY 322b; STAT 241a; EENG 200a, 201b, 202a, 203b, 310b, 320a, 325b, 348a; ENAS 335a or equivalent

Senior requirement:  
One-term research or design project (EENG 481a)

ENGINEERING SCIENCES (ELECTRICAL), B.S. AND B.A.

Prerequisites:  
Both degrees—MATH 112a or b, 115a or b; ENAS 151a or MATH 120a or b or higher; B.S.—PHYS 180a, 181b or higher; B.A.—PHYS 150a, 151b or higher

Number of courses:  
B.S.—13 term courses beyond prereqs, incl senior req; 
B.A.—8 term courses beyond prereqs, incl senior req

Specific courses required:  
B.S.—ENAS 194a or b; MATH 222a or b or 225a or b; 
EENG 200a, 201b, 202a, 203b; 
B.A.—1 from ENAS 194a or b, or MATH 222a or b or 225a or b; EENG 200a, 201b, 202a

Senior requirement:  
Both degrees—one-term research or design project (EENG 471a)

[eeng 001a, introduction to nanoscience]

eeng 200a, introduction to electronics.  Tso-Ping Ma.

TTTh 11.35-12.50; Lab 1 HTBA  QR (24)

Introduction to the basic principles of analog and digital electronics. Analysis, design, and synthesis of electronic circuits and systems. Topics include current and voltage laws that govern electronic circuit behavior, node and loop methods for solving circuit problems, DC and AC circuit elements, frequency response, nonlinear circuits, semiconductor devices, and small-signal amplifiers. A lab session approximately every other week. After or concurrently with MATH 115a or b or equivalent.
eeng 201b, Introduction to Computer Engineering.
Eugenio Culurciello.

MW 1-2.15; lab HTBA QR (0)
Introduction to the theoretical principles underlying the design and programming of simple processors that can perform algorithmic computational tasks. Topics include data representation in digital form, combinational logic design and Boolean algebra, sequential logic design and finite state machines, and basic computer architecture principles. Hands-on laboratory involving the active design, construction, and programming of a simple processor.

eeng 202a, Communications, Computation, and Control.
Roman Kuc.

MW 2.30-3.45; lab 1 HTBA QR (37)
Introduction to systems that sense, process, control, and communicate. Techniques that analyze system performance are applied to first- and second-order systems that operate on continuous-time waveforms and numerical data. Applications include robotics, digital image processing, and voice recognition systems. MATLAB programming and laboratory experiments illustrate concepts. Prerequisite: MATH 115a or b.

eeng 203b, Circuits and Systems Design.
Janet Pan, Peter Schultheiss.

Lect. MF 1.30-2.20; lab W or Th 1.30-5.30 QR Meets RP (36)
Introduction to design in a laboratory setting. A wide variety of practical systems are designed and implemented to exemplify the basic principles of systems theory. Systems include audio filters and equalizers, electrical and electromechanical feedback systems, radio transmitters and receivers, and circuits for sampling and reconstructing music. Prerequisites: EENG 200a and 202a.

*EENG 235a and 236b, Special Projects.
Kumpati Narendra, Tso-Ping Ma.

HTBA ½ C Credit per term (0)
Faculty-supervised individual or small-group projects with emphasis on laboratory experience, engineering design, or tutorial study. Students are expected to consult the director of undergraduate studies and appropriate faculty members about ideas and suggestions for suitable topics during the term preceding enrollment, so as to arrive at the necessary prospectus. These courses may be taken at any time during the student’s career. Enrollment requires permission of both the instructor and the director of undergraduate studies, and submission to the latter of a one- to two-page prospectus signed by the instructor. The prospectus is due in the departmental office one day prior to the date that the student’s course schedule is due. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

EENG 310b, Signals and Systems.
Kumpati Narendra.

Th 2.30-3.45 QR (27)
Concepts for the analysis of continuous and discrete-time signals including time series. Techniques for modeling continuous and discrete-time linear dynamical systems including linear recursions, difference equations, and shift sequences. Topics include continuous and discrete Fourier analysis, Laplace and Z transforms, convolution, sampling, data smoothing, and filtering. Prerequisite: MATH 115a or b. Recommended preparation: EENG 202a.

*EENG 320a, Introduction to Semiconductor Devices.
Mark Reed.

Th 1-2.15; lab 3 HTBA QR, Sc (26)
An introduction to the physics of semiconductors and semiconductor devices. Topics include crystal structure; energy bands in solids; charge carriers with their statistics and dynamics; junctions, p-n diodes, and LEDs; bipolar and field-effect transistors; and device fabrication. Prepares for EENG 325b and 401b. Prerequisites: PHYS 180a and 181b or permission of instructor. Recommended preparation: EENG 200a.

**APHY 322b, Electromagnetic Waves and Devices.**
Michel Devoret.

**EENG 325b, Electronic Circuits.** Jung Han.

MW 11.35-12.50; lab 3 HTBA  QR  Meets RP (34)
Models for active devices; single-ended and differential amplifiers; current sources and active loads; operational amplifiers; feedback; design of analog circuits for particular functions and specifications, in actual applications wherever possible, using design-oriented methods. Includes a team-oriented design project for real-world applications, such as a high-power stereo amplifier design. Electronics Workbench is used as a tool in computer-aided design. Prerequisite: EENG 200a.

**EENG 348a, Digital Systems.** Andreas Savvides.

TTH 2.30-3.45; lab HTBA  QR (27)
Development of engineering skills through the design and analysis of digital logic components and circuits. Introduction to gate-level circuit design, beginning with single gates and building up to complex systems. Hands-on experience with circuit design using computer-aided design tools and microcontroller programming. Recommended preparation: EENG 201b.

[eeng 350b, Embedded Systems]

**EENG 352b/BENG 352b, Biomedical Engineering II.** James Duncan, Fahmeed Hyder.
For description see under Biomedical Engineering.

**EENG 397b/ENAS 397b, Mathematical Methods in Engineering.**

J. Rimas Vaišnys.

TTH 11.35-12.50  QR (24)
Exploration of several areas of mathematics useful in engineering. Topics are drawn from complex analysis and differential equations: complex variables, Fourier series, Fourier transforms, Laplace transforms, Z transforms, boundary value problems, and linear partial differential equations. Application to physical problems. Prerequisites: MATH 222a or b, and ENAS 194a or b or MATH 246a or b, or equivalents.

**EENG 401bG/APHY 321bG, Semiconductor Silicon Devices and Technology.** Tso-Ping Ma.

MW 9-10.15; lab 1 HTBA  QR, Sc (32)
Introduction to integrated circuit technology, theory of solid-state devices, and principles of device design and fabrication. Laboratory involves the fabrication and analysis of semiconductor devices, including Ohmic contacts, Schottky diodes, p-n junctions, MOS capacitors, MOSFETs, and integrated circuits. Prerequisite: EENG 320a or equivalent or permission of instructor.

**EENG 402LaG/MENG 402LaG, Nano and Microsystems Technology.** Hong Tang.

TH 1.30-5.30  (0)
Cross-disciplinary laboratory experiments covering microfabrication, silicon micromachining, MEMS device fabrication and characterization, scanned probe microscopy, electron microscopy, microfluidics, and lab-on-a-chip systems. Students fabricate MEMS, bio-MEMS, and microfluidic devices in a cleanroom environment. **Prerequisite:** EENG 320A or equivalent.

**EENG 406bG**, **Photovoltaic Energy.** Minjoo Lee.

**MW 1-2.15** QR, Sc (0)
Survey of photovoltaic energy devices, systems, and applications, including review of optical and electrical properties of semiconductors. Topics include solar radiation, solar cell design, performance analysis, solar cell materials, device processing, photovoltaic systems, and economic analysis. **Prerequisite:** EENG 320A or permission of instructor.


**MW 11.35-12.50** QR, Sc (34)
Survey and review of fundamental issues associated with modern microelectronic and optoelectronic materials. Topics include band theory, electronic transport, surface kinetics, diffusion, materials defects, elasticity in thin films, epitaxy, and Si integrated circuits. **Prerequisite:** EENG 320A or permission of instructor.

**EENG 410aG**, **Physics and Devices of Optical Communication.** Jung Han.

**MW 1-2.15** QR, Sc (36)
A survey of the enabling components and devices that constitute modern optical communications systems. Focus on the physics and principles of each functional unit, its current technological status, important design issues relevant to the overall performance, and future directions. **Prerequisites:** EENG 320A and PHY 322b, or permission of instructor.

**EENG 418bG/PHY 418bG**, **Heterojunction Devices.** Mark Reed.

**TH 9-10.15, 1 HTBA** QR, Sc (22)
A survey of the physics, technology, and fabrication of semiconductor heterojunction materials and devices. Topics include contemporary compound semiconductor material properties and epitaxial growth techniques, high-speed analog and digital devices, microwave and millimeter wave devices for radar and wireless communications, the physics and device properties of quantum wells and superlattices, HEMTs and modulation-doped structures, resonant tunneling physics and devices, and device modeling using computer simulation tools. Laboratory includes fabrication of GaAs FETs and HBTs, fabrication and measurement of quantum Hall effect standards, LEDs, and resonant tunneling devices. **Prerequisite:** PHY 439A or equivalent.

**EENG 425aG**, **Introduction to VLSI System Design.** Richard Lethin.

**TH 1.30-3.20** QR (26)
Chip design; integrated devices, circuits, and digital subsystems needed for design and implementation of silicon logic chips. CMOS fabrication overview, complementary logic circuits, design methodology, computer-aided design techniques, timing, and area estimation. Exploration of recent and future chip technologies. A course project is the design, through layout, of a digital CMOS subsystem chip; selected projects are fabricated for students. **Prerequisite:** familiarity with computer programming and with circuits at the level of introductory physics.

[EENG 428bG/ENAS 428bG, Sensors and Biosensors]
**EENG 436b, Systems and Control.** Kumpati Narendra.

**TTh 11.35-12.50 QR (24)**

Design of feedback control systems with applications to engineering, biological, and economic systems. Topics include state-space representation, stability, controllability, and observability of discrete-time systems; system identification; optimal control of systems with multiple outputs. **Prerequisite:** ENAS 194a or b, MATH 222a or b or 225a or b, and EENG 310b or permission of instructor.

**EENG 437a*/AMTH 437a, Optimization Techniques.** A. Stephen Morse.

For description see under Applied Mathematics.

**EENG 442a/G*/AMTH 342a, Linear Systems.** A. Stephen Morse.

**MW 1-2.15, 1 HTBA QR (36)**

Introduction to finite-dimensional, continuous, and discrete-time linear dynamical systems. Exploration of the basic properties and mathematical structure of the linear systems used for modeling dynamical processes in robotics, signal and image processing, economics, statistics, environmental and biomedical engineering, and control theory. **Prerequisite:** MATH 222a or b or permission of instructor.

**EENG 444a/G, Digital Communication Systems.** Edmund Yeh.

**TTh 1-2.15 QR (26)**

Introduction to the fundamental theory underlying modern digital communication. Quantitative measures of information and data compression: the Huffman and Lempel-Ziv algorithms, scalar and vector quantization. Representations of signal waveforms: sampling, orthonormal expansions, waveforms as vectors in signal space. Transmission of signals through noisy channels; pulse amplitude and quadrature amplitude modulation, orthogonal signaling, signal design, noise processes, optimal detection, and error probability analysis. Applications to practical systems such as CD players, telephone modems, and wireless networks. **Prerequisites:** knowledge of signals and systems at the level of EENG 310b; knowledge of basic probability at the level of STAT 241a (may be taken concurrently).

**EENG 445a/G/BENG 445a/G, Biomedical Image Processing and Analysis.** James Duncan, Lawrence Staib.

For description see under Biomedical Engineering.

**EENG 449b/G, Computer Systems.** Sobeeh Almukhaizim.

**TTh 2.30-3.45 QR (27)**

The organization of computer systems as hardware and software systems. Instruction-set architecture, assembly programming, computer arithmetic, data-path architecture and control, pipelining, memory hierarchy. Concepts illustrated by exploration of a RISC microprocessor. Laboratory assignments include programming on an embedded processor and its peripherals. **Recommended preparation:** EENG 201b and CPSC 223b or permission of instructor.

**EENG 450a, Applied Digital Signal Processing**

**EENG 454b/AMTH 364b/G/STAT 364b/G, Information Theory.** Hannes Leeb.

For description see under Statistics.

**EENG 460b/G*/CPSC 436b, Networked Embedded Systems and Sensor Networks.** Andreas Savvides.

**TTh 1-2.15 (26)**

Introduction to the fundamental concepts of networked embedded systems and wireless sensor networks, presenting a cross-disciplinary approach to the design
and implementation of smart wireless embedded systems. Topics include embedded systems programming concepts, low-power and power-aware design, radio technologies, communication protocols for ubiquitous computing systems, and mathematical foundations of sensor behavior. Laboratory work includes programming assignments on low-power wireless devices. Open to seniors in Electrical Engineering or Computer Science only. Prerequisite: CPSC 223b or equivalent programming experience in a high-level language.

Sobeeh Almukhaizim.

Th 11:35-12:50 QR (0)
Introduction to the fundamental concepts, algorithms, and design techniques for testing digital systems. Topics include test issues and economics, fault modeling, logic and fault simulation, test generation algorithms for combinational and sequential circuits, testability analysis, and design for testability. Laboratory work consists of projects employing logic and fault simulation, automatic test pattern generation, and design for testability software tools. Prerequisite: EENG 348a or permission of instructor. Understanding of algorithms and data structures desirable but not essential.

Prabhakar Kudva.

T 1:30-2:50 (26)
Theory and practice of fault-tolerant systems. Sources of defects; fault-tolerance techniques in hardware and software that mitigate the impact of defects. Case studies demonstrate practical applications of the theory presented in lectures. Recommended preparation: EENG 348a, 425a, and CPSC 323a, or equivalents.

EENG 471a and 472b, Advanced Special Projects. Consult the director of undergraduate studies.

HTBA (0)
Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory), engineering design, or tutorial study. Students are expected to consult the director of undergraduate studies and appropriate faculty members about ideas and suggestions for suitable topics during the term preceding enrollment, so as to arrive at the necessary prospectus. These courses may be taken at any appropriate time during the student’s career and may be taken more than once. Enrollment requires permission of both the instructor and the director of undergraduate studies, and submission to the latter of a one- to two-page prospectus signed by the instructor. The prospectus is due in the departmental office one day prior to the date that the student’s course schedule is due.

EENG 475bG/CPSC 475bG, Computational Vision and Biological Perception. Steven Zucker.
For description see under Computer Science.

EENG 481a and 482b, Advanced ABET Projects. Consult the director of undergraduate studies.

HTBA Meets RP (0)
Faculty-supervised individual or small-group projects that satisfy ABET guidelines for a capstone project. Emphasis on engineering design and application of concepts learned in courses to a realistic engineering problem. The project should demonstrate an ability to apply and synthesize knowledge of mathematics, science, and engineering in the service of articulated goals. The student is expected not only to design a system or a process but also to collect, analyze, and interpret appropriate data. In addition, the student should demonstrate an
understanding of the professional and ethical responsibilities associated with the engineering activities. Students are expected to consult the director of undergraduate studies and appropriate faculty members about ideas and suggestions for suitable topics during the term preceding enrollment. *Enrollment requires permission of the instructor and the director of undergraduate studies.*

**ELECTRICAL ENGINEERING AND COMPUTER SCIENCE**

Directors of undergraduate studies: Kumpati Narendra (Electrical Engineering), 512 DL, 432-9909, kumpati.narendra@yale.edu; Stanley Eisenstat (Computer Science), 208 AKW, 432-1246, stanley.eisenstat@yale.edu

Electrical Engineering and Computer Science is an interdepartmental major designed for students who want to integrate work in these two fields. It covers discrete and continuous mathematics, algorithm analysis and design, digital and analog circuits, signals and systems, systems programming, and computer engineering. It provides coherence in its core program, but allows flexibility to pursue technical electives.

The prerequisites for the major are *Math* 112a or b, 115a or b, and ENAS 151a or Math 120a or b; and Phys 180a and 181b, or 200a and 201b. Students who must take *Math* 112a or b may take Phys 150a and 151b instead of Phys 180a and 181b. Acceleration credits may be used to satisfy some of these requirements. However, since the B.S. programs in Electrical Engineering and in Engineering Sciences (Electrical) both limit the use of such credits, students who wish to retain the option of switching to these programs should consult the director of undergraduate studies in Electrical Engineering when planning their course schedules.

The major requires fifteen term courses beyond the prerequisites: CPSC 201a or b, 202a, 223b, 323a, and 365b; EENG 200a, 201b, 202a, and 203b; one from *Math* 222a or b, 225a or b, or STAT 241a; four advanced electives, two in electrical engineering, two in computer science; and a senior project. Electives must be 300- or 400-level courses in the departments of Electrical Engineering and Computer Science, or must be approved by the director of undergraduate studies in each department. Double-titled courses may be counted either way to fulfill this requirement. CPSC 480a or b and 490a or b may not be used as electives. With permission of the director of undergraduate studies in each department, EENG 471a or 472b may be used as an electrical engineering elective.

For the Class of 2010 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

For students who have taken the equivalent of one year of calculus in high school and have some programming experience, a typical program would be:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>EENG 200a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Senior project</td>
</tr>
<tr>
<td>ENAS 151a</td>
<td>EENG 202a</td>
<td>CPSC 323a</td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 180a</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>EENG 201b</td>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Two electives</td>
</tr>
<tr>
<td>PHYS 181b</td>
<td>EENG 203b</td>
<td>One elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MATH 222b</td>
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</tbody>
</table>
Students with no programming experience should take CPSC 112a in the fall of their freshman year and either postpone EENG 200a until their sophomore year or take MATH 120b in the spring instead of ENAS 151a in the fall.

For students with only one term of calculus and no programming experience, a typical program would be:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 115a</td>
<td>EENG 200a</td>
<td>CPSC 323a</td>
<td></td>
</tr>
<tr>
<td>PHYS 180a</td>
<td>EENG 202a</td>
<td>STAT 241a</td>
<td></td>
</tr>
<tr>
<td>EENG 201b</td>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Senior project</td>
</tr>
<tr>
<td>MATH 120b</td>
<td>EENG 203b</td>
<td></td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 181b</td>
<td></td>
<td></td>
<td>One elective</td>
</tr>
</tbody>
</table>

For students with no calculus and no programming experience, a typical program would be:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 112a</td>
<td>EENG 200a</td>
<td>CPSC 323a</td>
<td></td>
</tr>
<tr>
<td>PHYS 150a</td>
<td>ENAS 151a</td>
<td>EENG 202a</td>
<td></td>
</tr>
<tr>
<td>EENG 201b</td>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Senior project</td>
</tr>
<tr>
<td>MATH 115b</td>
<td>MATH 222b</td>
<td>EENG 203b</td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 151b</td>
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</tbody>
</table>

Students who start with MATH 112a may satisfy the physics prerequisite by taking PHYS 150a and 151b in their freshman year, as shown in the table above. However, since the B.S. programs in Electrical Engineering and in Engineering Sciences (Electrical) do not allow this substitution, students who wish to retain the option of switching to these programs should postpone physics until their sophomore year.

**Senior requirement.** The senior project must be completed in CPSC 490a or b or EENG 471a or 472b, depending upon the adviser’s department, and must be approved by the director of undergraduate studies in each department.

**Approval of programs.** The entire program of a student majoring in Electrical Engineering and Computer Science must be approved by the director of undergraduate studies in each department.

**Select Program in Engineering.** Qualified students may be eligible to apply for a special program that includes industry research experience. See under Engineering.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** MATH 112a or b, 115a or b, and ENAS 151a or MATH 120a or b; CPSC 112a or b; PHYS 180a, 181b, or 200a, 201b (PHYS 150a, 151b is acceptable for students who need to take MATH 112a or b)

**Number of courses:** 15 term courses beyond prereqs (incl senior project)

**Specific courses required:** CPSC 201a or b, 202a, 223b, 323a, and 365b; EENG 200a, 201b, 202a, and 203b; one from MATH 222a or b or 225a or b or STAT 241a

**Distribution of courses:** 4 addtl 300- or 400-level electives, 2 in electrical engineering, 2 in comp sci

**Substitution permitted:** Advanced courses in other depts, with permission of DUS in each dept

**Senior requirement:** Independent project (CPSC 490a or b or EENG 471a or 472b) approved by DUS in each dept
ENGINEERING

(See Applied Physics, Biomedical Engineering, Chemical Engineering, Electrical Engineering, Engineering and Applied Science, Environmental Engineering, and Mechanical Engineering.)

At Yale, engineering is taught in a number of programs offered by departments within Yale College rather than in a separate school distinct from the arts and sciences, as in many other universities. Thus, students following one of the degree programs in engineering have ready access to a wide range of courses in the arts and sciences and the opportunity to explore other disciplines in addition to pursuing their specialization. At the same time, those interested in engineering but not intending to specialize in it can become acquainted with various aspects of modern technology.

Engineering programs at Yale are offered in the departments of Applied Physics, Biomedical Engineering, Chemical Engineering, Electrical Engineering, and Mechanical Engineering, and under the interdepartmental major in Environmental Engineering; interdisciplinary courses bearing on these programs are listed under Engineering and Applied Science. The departments are administered by the dean of Engineering. Curricula in the programs range from rigorous ones accredited by the Accreditation Board for Engineering and Technology (ABET) to those with a lesser technical content that allow students considerable freedom to include courses of a non-technical nature in their studies. A related major in Applied Mathematics is also available. For a description of all of the programs above, see the entries in this bulletin in their respective alphabetical positions.

Select Program in Engineering. The Select Program in Engineering is designed to position students upon graduation for advanced entry placement in the corporate world. Students fulfill the requirements of their B.S. major plus the specific requirements of the Select Program. This enhanced bachelor’s degree includes industrial research experience. The Select Program in Engineering is open to majors in Applied Physics, Biomedical Engineering, Chemical Engineering, Electrical Engineering, Environmental Engineering, Mechanical Engineering, Computer Science, and Electrical Engineering and Computer Science. Students are normally accepted into the program in their junior year; however, qualified seniors and sophomores may also be admitted to the program. Students should discuss their interest in the Select Program in Engineering with their director of undergraduate studies and also with the director of the Select Program.

Students in the Select Program must achieve a B+ average in science and quantitative reasoning courses and in courses required by the program.

The following courses are required for the Select Program: ENAS 335a, ACCT 170a or b, ENVE 120b or CPSC 180a or b, ECON 115a or b, and two courses with significant engineering design content. Students in ABET-accredited programs in Chemical, Electrical, and Mechanical Engineering meet the design requirement as part of the accredited program. Students earning a B.S. in Engineering Sciences must take two courses from the following list according to their major:

Biomedical Engineering: BENG 355L, and 471a or 472b
Chemical Engineering: CENG 480a, and 416b or 471a or b
Electrical Engineering: EENG 471a and 472b
Environmental Engineering: CENG 480a, and 416b or 471a or b
Mechanical Engineering: MENG 185b and one from MENG 471a, 472b, or 489a
Applied Physics: APHY 471a and 472b
Computer Science: CPSC 421a and 422b

Students in the Select Program must spend one summer doing research in industry. Most students acquire their industrial research experience during the summer following their junior year.

The deadline for applications is in late September. Application materials should be submitted to the director of the Select Program in Engineering, 226 DL. Students must submit a completed application form for the Select Program and a copy of a recent transcript. Applicants are notified in early October whether they have been admitted to the program.

ENGINEERING AND APPLIED SCIENCE

Director of undergraduate studies: Roman Kuc, 233 DL, 432-0159, roman.kuc@yale.edu

Courses in Engineering and Applied Science fall into three categories: those intended primarily for students majoring in one of the several engineering disciplines; those designed for students majoring in subjects other than engineering and the natural sciences; and those designed to meet common interests of students majoring in engineering or the natural sciences.

In the first category, the departments of Applied Physics, Biomedical Engineering, Chemical Engineering, Electrical Engineering, Mechanical Engineering, and the program in Environmental Engineering offer courses intended primarily for majors in these fields. These courses are listed under the individual programs. Courses in these majors may also be relevant for students with appropriate backgrounds who are majoring in chemistry, physics, biology, geology and geophysics, mathematics, and computer science.

The Faculty of Engineering is responsible for courses in the other two categories: technology for students majoring in subjects other than engineering and the natural sciences, and topics common to students majoring in engineering or the natural sciences. Courses for non-science majors are intended for all students seeking a broad perspective on issues of scientific and technological import, and they introduce students who may be planning careers in law, business, or public service to concepts and methods of engineering and applied science. Courses for science and engineering majors include topics in applied mathematics and computation.

COURSES WITHOUT PREREQUISITES IN ENGINEERING

*ENAS 060b/APHY 060b/PHYS 060b, Energy Technology and Society. Paul Fleury.
  TTh 2.30-3.45 QR, Sc (27) Fr sem
The technology and use of energy. Impacts on the environment, climate, security, and economy. Application of scientific reasoning and quantitative analysis. Intended for non-science majors with strong backgrounds in math and science. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

  TTh 11.35-12.50 QR, Sc (24)
An exploration of modern technologies that play a role in everyday life, including the underlying science, current applications, and future prospects. Examples include solar cells, light-emitting diodes (LEDs), computer displays, the global positioning system, fiber-optic communication systems, and the application of technological advances to medicine. For students not committed to a major in science or engineering; no college-level science or mathematics required. **Prerequisite:** some high school physics or chemistry. Enrollment limited to 80.

**ENAS 115b, Data Analysis and Forecasting.** Roman Kuc.

**MW 2.30-3.45 QR (37)**
Quantitative reasoning applied to evaluation of physical formulas and to interpretation of actual data. Concepts illustrated with models that simulate random data. Statistical measures predict forecast precision. Analysis ranges from paper-and-pencil and scientific calculator to Excel spreadsheets. Case studies include problems involving technological issues, such as information transmission over the Internet and performance improvement in Olympic sporting events. **No prior knowledge of calculus or statistics required. Enrollment limited to freshmen and sophomores.**

**ENAS 120b/CENG 120b/ENVE 120b, Introduction to Environmental Engineering.** Jordan Peccia.
For description see under Environmental Engineering.

**ENAS 140b, Physics of the Game of Golf.** Robert Grober.

**MW 1-2.15 Sc (0)**
Focus on the golf swing and its related biomechanics, with some attention to golf ball aerodynamics, putting, and statistical analysis of the USGA handicap system. Concepts from introductory physics applied to fundamentals of the game of golf. **Prerequisites:** PHYS 150a and MATH 112a or b or equivalents.

**ENAS 323a, Creativity and New Product Development.** Henry Bolanos.

323a–1: T 1.30-3.20 So (0)
323a–2: T 3.30-5.20 So (0)
An overview of the stages of product development in a competitive marketplace by simulating the process in class. A hands-on approach to creativity and the development process.

**ENAS 335a/EP&E 204a, Professional Ethics.** Mercedes Carreras.

**TTh 11.35-12.50 So (24)**
A theoretical and case-oriented approach to ethical decision making. Provides students with concepts, tools, and methods for constructing and justifying their own solutions to moral problems they may face as professionals.

**ENAS 360b/ENVE 360b, Green Engineering and Sustainable Design.** Julie Zimmerman.
For description see under Environmental Engineering.

For description see under Environmental Engineering.

**ENAS 443a/ENVE 443a/F&ES 380a, Greening Business Operations.** Thomas Graedel, Julie Zimmerman.
For description see under Environmental Engineering.
APPLIED MATHEMATICS AND COMPUTATION COURSES

**enas 130b, Introduction to Computing for Engineers and Scientists.** Marshall Long.

**MWF 1:30-2:20 QR Meets RP (36)**

An introduction to the use of the Fortran and C++ programming languages and the software packages Mathematica and MATLAB to solve a variety of problems encountered in mathematics, the natural sciences, and engineering. Topics include general problem-solving techniques, object-oriented programming, elementary numerical methods, data analysis, and a brief introduction to numerical simulations. **Prerequisite:** MATH 115a or b; some computer experience is recommended.

**enas 151a, Multivariable Calculus for Engineers.** Robert Grober.

**TTTh 9-10.15 QR Meets RP (22)**

An introduction to multivariable calculus focusing on applications to engineering problems. Topics include vector-valued functions, vector analysis, partial differentiation, multiple integrals, vector calculus, and the theorems of Green, Stokes, and Gauss. **Prerequisite:** MATH 115a or b or equivalent.

**enas 194a or b, Ordinary and Partial Differential Equations with Applications.** Juan Fernández de la Mora [F], Mitchell Smooke [Sp].

**194a: MWF 10:30-11:20 QR Meets RP (33)**

**194b: TTTh 9-10.15 QR Meets RP (22)**

Basic theory of ordinary and partial differential equations useful in applications. First- and second-order equations, separation of variables, power series solutions, Fourier series, Laplace transforms. **Prerequisites:** enas 151a or equivalent, and knowledge of matrix-based operations.

**enas 391a, Dynamics of Evolving Systems.** J. Rimas Vaišnys.

**TTTh 9-10.15 QR Meets RP (22)**

Use of a computer to investigate the behavior of increasingly complex natural systems; construction of quantitative theories about natural phenomena. Emphasis on systems of biological interest. **After enas 194a or b or equivalent.**

**enas 397b/eeng 397b, Mathematical Methods in Engineering.** J. Rimas Vaišnys.

For description see under Electrical Engineering.

**enas 440a/eng 440a, Applied Numerical Methods I.** Beth Anne Bennett.

**TTTh 11:35-12:50 QR Meets RP (24)**

A variety of numerical methods applied to problems in engineering and applied science. Topics include root-finding methods, numerical solution of systems
of linear and nonlinear equations, eigenvalue/eigenvector approximation, polynomial-based interpolation, and numerical integration. Prerequisites: MATH 115A or B, and 222A or B or 225A or B, or equivalents; ENAS 130B or some knowledge of MATLAB, C, or Fortran programming.

ENAS 441B/ENG 441B, Applied Numerical Methods II.
Beth Anne Bennett.

TH 11:35-12:50 QR Meets RP (24)
An introduction to numerical methods for solution of ordinary and partial differential equations, both linear and nonlinear. One-step, multistep, and Runge-Kutta methods for initial value problems. Finite difference methods for the solution of parabolic, elliptic, and hyperbolic partial differential equations. Prerequisites: MATH 115A or B, and 222A or B or 225A or B, or equivalents; ENAS 130B or some knowledge of MATLAB, C, or Fortran programming; ENAS 194A or B equivalent.

[ENAS 452A, MEMS DESIGN]

For description see under Geology & Geophysics.


MW 1-2:15 QR Meets RP (36)

ENGLISH LANGUAGE AND LITERATURE

Director of undergraduate studies: John Rogers [F]; Amy Hungerford [Sp]; associate director of undergraduate studies: Tanya Agathocleous; 107 LC, 432-2233, english-dus@yale.edu, www.yale.edu/english/undergraduate.html

FACULTY OF THE DEPARTMENT OF ENGLISH

Professors
Elizabeth Alexander, Harold Bloom, Leslie Brisman, David Bromwich, Jill Campbell, Janice Carlisle, Michael Denning, Wai Chee Dimock, Anne Fadiman (Adjunct), Roberta Frank, Paul Fry, Louise Glück (Adjunct), Sara Suleri Goodyear, Langdon Hammer, Margaret Homans, Amy Hungerford, David Scott Kastan, Traugott Lawler (Emeritus), Pericles Lewis, Lawrence Manley, Donald Margulies (Adjunct), J. D. McClatchy (Adjunct), Alastair Minnis, Lee Patterson, Linda Peterson, Caryl Phillips, David Quint, Claude Rawson, Joseph Roach, Marc Robinson, John Rogers, Robert Stepto, Katie Trumpener, Michael Warner, Ruth Yeazell

Associate Professors
Ala Alyryes, Murray Biggs (Adjunct), Jessica Brantley, Christopher R. Miller

Assistant Professors
Tanya Agathocleous, Shameem Black, El Mokhtar Ghambou, Paul Grimstad, Stefanie Markovits, Susan Miller, Justin Neuman, Catherine Nicholson, Jessica Pressman, Caleb Smith, Elliott Visconsi, Brian Walsh

Senior Lecturers
Amy Bloom, John Crowley, Richard Maxwell
Courses offered by the Department of English are designed to develop students’ understanding of important works of English, American, and other literatures in English; to provide historical perspectives from which to read and analyze these works; and to deepen students’ insight into their own experience. Courses also aim to develop students’ abilities to express their ideas orally and in writing.

Introductory courses. Courses numbered from 114 to 149 are introductory. Students planning to elect an introductory course in English should refer to the Freshman Handbook, which contains an explanation of the levels of placement and of the guidelines according to which courses should be chosen. The listings below contain a detailed description of each course.

Prerequisite. It is valuable for students majoring in English to have both a detailed understanding of major poets who have written in English and some acquaintance with the classics of European and American literature. The prerequisite for the major is ENGL 125. It is strongly recommended that prospective English majors take at least one term of ENGL 125 by the end of the sophomore year. If a student takes two terms of ENGL 125, then any two terms of ENGL 115–117, 127, 129, or DRST 001 in the Directed Studies program, or THST 110a and 111b, or ENGL 114a in combination with 115b, 116b, or 117b, may count toward the twelve remaining terms in the major. If ENGL 125 is not taken, two terms of ENGL 127 or 129 or DRST 001 may count as the prerequisite so long as the student also takes, as part of the major, four advanced courses that deal substantially and intensively with poets included in ENGL 125. Two of these courses should substitute for two of the three units in the first term of ENGL 125 (Chaucer, Spenser, and a Renaissance lyric poet), and two should substitute for two of the four units in the second term of ENGL 125 (Milton, Pope, a major romantic poet, and a major modern poet). Courses that deal with more than one poet are acceptable for this purpose. Such courses may also count toward the requirement of three term courses in English literature before 1800 and one term course in English literature before 1900.

Regardless of how the prerequisite is fulfilled, the total number of term courses toward the major may not be fewer than fourteen, of which no more than four may be introductory (below the level of 150).

Advanced courses. Courses numbered 150 and above are open to upper-classmen after two terms of English or with permission of the instructor. Starred (•) courses, limited in enrollment, are seminars intended primarily for junior and senior English majors. Sophomores and nonmajors may be admitted where openings are available. Seminar preregistration dates for some seminars will be posted in the office of the director of undergraduate studies, 107 LC, and on the English department Web site at www.yale.edu/english/undergraduate.html. During the first weeks of November and April, the department issues a booklet containing fuller course descriptions than
those given below and information about how to register for certain courses; it is available in 107 LC and on the departmental Web site. Students are strongly encouraged to consult the director of undergraduate studies, the departmental representative in their residential college, and their departmental adviser for advice.

When choosing courses, students should bear in mind that the English department’s lecture courses and seminars play different roles in the curriculum. Lecture courses cover major periods and genres of English and American literature. They serve as general surveys of their subjects, and are typically offered every year or every other year. Seminars, by contrast, offer more specialized or intensive treatment of their topics, or engage topics not addressed in the lecture courses (for example, topics that span periods and genres). While seminars are often offered more than once, students should not expect the same seminars to be offered from one year to the next. Sophomores and juniors are encouraged to enroll in lecture courses in order to gain broad perspectives in preparation for more specialized study.

The major. Each student, in consultation with a departmental faculty adviser, bears the responsibility for designing a coherent program, which must include the following elements.

The major for the Class of 2010 and previous classes. Each student must take: (1) three term courses in literature written in English before 1800, and one term course in literature written in English before 1900, all representing a variety of periods and figures. Courses satisfying this requirement are indicated by the phrase “Pre-1800” or “Pre-1900” in the data line. Pre-1800 courses can, by definition, satisfy the pre-1900 requirement; (2) at least one starred seminar in both the junior and the senior years. The nature of senior seminars (400-level literature seminars) is discussed below.

The major for the Class of 2011 and subsequent classes. Each student must take: (1) three term courses in literature written in English before 1800, one term course in literature written in English before 1900, and one term course in American literature, all representing a variety of periods and figures. Courses satisfying this requirement are indicated by the phrase “Pre-1800,” “Pre-1900,” or “Amer” in the data line. Pre-1800 courses can, by definition, satisfy the pre-1900 requirement. Courses in American literature in the pre-1800 or pre-1900 periods can satisfy both one of the period requirements and the American requirement; (2) at least one starred seminar in both the junior and the senior years. The nature of senior seminars (400-level literature seminars) is discussed below.

Certain residential college seminars, with permission of the director of undergraduate studies, may be substituted for a starred seminar; courses in creative writing may not. ENGL 120a or b, LITR 120a, and THST 110a and 111b may be among the four introductory courses allowed. Courses taken Credit/D/Fail may be counted toward the major. A student whose program meets these requirements may count toward the major two upper-level literature courses in other departments, whether in English translation or in another language; alternatively, the student may count one such literature course and, with the permission of an adviser, one other upper-level course in any subject that is relevant to the student’s major in English. Such courses may not be counted toward the pre-1800 or the pre-1900 requirement. Two courses in creative writing may be counted toward the major. A student may petition the director of undergraduate studies for permission to include a third writing course.
In exceptional cases, a student whose interests and aims are well defined may, in consultation with the director of undergraduate studies, work out a program of study departing from the usual requirements of the major. Such a program must, however, meet the stated general criteria of range and coherence. For interdepartmental programs that include courses covering English literature, see the Literature Major; Directed Studies; American Studies; African American Studies; Theater Studies; Renaissance Studies; Women's, Gender, and Sexuality Studies; and Teacher Preparation and Education Studies.

Students considering graduate work in English should be aware that a reading knowledge of certain classical and modern European languages is ordinarily required for admission to graduate study.

Library requirement. The English department requires all majors either to complete a ninety-minute research session for English majors or to take a seminar that has a significant research component. Such courses are indicated by the designation “Libr” in the data line. Students who elect to take the library research session must do so no later than the second term of their junior year, and they are strongly encouraged to take it during their sophomore year. Students should register on the Web at www.library.yale.edu/humanities/english/englishform.html. For questions, students should contact the director of undergraduate studies.

Senior requirement for the Class of 2010 and previous classes. The senior requirement may be satisfied in one of two ways: by a senior seminar taken in the senior year, as described below; or by a senior essay (ENGL 490a or b).

Senior requirement for the Class of 2011 and subsequent classes. Students must complete a two-course senior requirement consisting of one of the following combinations: (1) a senior seminar and a senior essay; (2) two departmental seminars, one of which must be a senior seminar; (3) a two-term senior essay, with permission of the director of undergraduate studies; (4) a senior seminar or senior essay followed by the senior project in the writing concentration. Students who wish to complete the senior requirement by the end of the fall term of the senior year may begin it in the spring of the junior year.

Senior seminar. Senior seminars are open to interested juniors as well, but one must be taken in the senior year to fulfill the senior requirement. These courses, usually numbered 400–449, are listed in the section “Senior Seminars.” Seniors, with the permission of the director of undergraduate studies and the instructor, may arrange to take a junior seminar for senior seminar credit. The final essay written for a senior seminar should provide an appropriate culmination to the student’s work in the major and in Yale College. It should rest on substantial independent work and should be approximately twenty double-spaced pages in length. In researching and writing the essay, the student should consult regularly with the seminar instructor, and may consult with other faculty members as well.

The senior essay. The senior essay is an independent literary-critical project on a topic of the student’s own design, which is undertaken in regular consultation with a faculty adviser. It should ordinarily be written on a topic in an area on which the student has focused in previous studies. See ENGL 490a or b for the procedure. Students in the Class of 2010 and earlier classes who choose to write a senior essay must take a seminar during their senior year, but it need not be a 400-level seminar. Students in the Class of 2011 and subsequent classes fulfilling the senior requirement through a two-term senior essay or through a senior essay followed by the senior writing concentration
project must take a seminar during their senior year, but it need not be a 400-level seminar.

**Writing courses.** Besides introductory courses that concentrate on the writing of expository prose (ENGL 114a or b, 115a or b, 116b, 117b, 120a or b), the English department offers several introductory, intermediate, and advanced creative writing courses (ENGL 140–141 and 450–469). These courses are open to all students on the basis of the instructor’s judgment of their work. Instructions for the submission of writing samples for admission to creative writing seminars and workshops are available in 107 L.C. Students may in some cases arrange a tutorial in writing (ENGL 470a or b), normally after having taken intermediate and advanced writing courses. All students interested in creative writing courses should also consult the current listing of residential college seminars.

**The writing concentration.** The writing concentration is a special course of study open to students in the English major with demonstrated interest and achievement in writing. Admission is competitive. Interested English majors normally apply for admission to the concentration during the second term of their junior year. Application can also be made during the first term of the senior year. Every student admitted to the concentration must complete at least eleven literature courses as well as the other requirements of the major. Students admitted to the writing concentration may count up to four 400-level courses in writing toward completion of the B.A. degree in English; the four courses must include at least two courses in one genre and at least one course in another genre. Residential college seminars are not acceptable for credit toward the writing concentration, unless the director of undergraduate studies gives permission. As one of the four writing courses, each student must complete ENGL 489a or b, The Writing Concentration Senior Project, a tutorial in which students produce a single sustained piece of writing or a portfolio of shorter works. For the Class of 2010 and previous classes, the senior project does not replace the senior requirement in the major (a senior seminar or senior essay). For the Class of 2011 and subsequent classes, the writing concentration senior project may be offered in partial fulfillment of the senior requirement.

Applications to the writing concentration are due by noon on November 21, 2008, for spring 2009; by noon on April 9, 2009, for fall 2009. Students are admitted selectively on the overall strength of their performance in the major and on the quality of their writing samples.

**Advising.** The student planning a program of study in English should consult as early as possible with the appropriate residential college departmental representative:

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<tr>
<th>BR, J. Rogers</th>
<th>MC, L. Brisman</th>
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<td>BR, L. Peterson [F]; R. Frank [Sp]</td>
<td>PC, S. Markovits</td>
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<td>CC, E. M. Ghambou</td>
<td>SY, M. Robinson</td>
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<td>DC, A. Hungerford</td>
<td>SM, C. Miller</td>
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<td>TD, T. Agathocles</td>
<td>ES, P. Fry</td>
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<td>JE, D. Bromwich</td>
<td>TC, S. Black</td>
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Schedules for all majors must be discussed with, and approved by, a faculty adviser from the English department, the director of undergraduate studies, or the associate director of undergraduate studies. Only then may they be submitted to the residential college dean’s office. During the sixth term, each student completes a statement outlining progress in the major, in consultation with the student’s adviser.
Applications and prospectuses for ENGL 490a or b and writing samples for admission to writing courses are received in the office of the English major in 107 LC. Prospectuses and applications for senior essays should be submitted during the designated sign-up period in the term before enrollment is intended. Enrollment lists for seminars with preregistration and lists of approved senior essays and individual writing projects are posted in 107 LC.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** ENGL 125 or, with 4 addtl courses in major English poets, DRST 001, ENGL 127, or ENGL 129

**Number of courses:** 14 term courses (incl prereq and senior req)

**Distribution of courses:**
- **Class of 2010 and earlier classes**—3 courses in lit in English before 1800, and 1 course in lit in English before 1900, all representing a variety of figures and periods; 2 starred sems, 1 in junior, 1 in senior year; no more than 4 intro-level courses; 3 courses in lit in English before 1800, 1 course in lit in English before 1900, and 1 course in American lit, all representing a variety of figures and periods (courses in pre-1800 or pre-1900 lit may also fulfill the requirement in American lit); 2 starred sems, 1 in junior, 1 in senior year; no more than 4 intro-level courses

**Substitutions permitted:** 2 upper-level lit courses in other depts or, with permission, 1 upper-level lit course and 1 addtl upper-level course in other depts may count toward the major; 2 creative writing courses (ENGL 140–141, 450–469) may count toward the major; college sem designated by DUS for starred sem

**Other:** Library research session or Libr sem

**Senior requirement:**
- **Class of 2010 and earlier classes**—1 senior sem (ENGL 400–449) in senior year, or senior essay (ENGL 490a or b);
- **Class of 2011 and later classes**—1 senior sem (ENGL 400–449) and senior essay (ENGL 490a or b); or 2 starred sems in senior year, 1 of which is a senior sem; or, with DUS permission, two-term senior essay; or 1 senior sem or senior essay and writing concentration senior project (ENGL 489a or b)

**INTRODUCTORY COURSES**

Freshmen who wish to take a fall-term introductory course in English must register for a specific section during the electronic registration process on Tuesday, September 2. Details about electronic registration will be available in the Calendar for the Opening Days and on the English department Web site at www.yale.edu/english/undergraduate.html. Syllabi listing the different topics taught in ENGL 114a and 115a will be posted on this site approximately two weeks before the beginning of classes. For further information about the levels of introductory courses and the guidelines for placement, see the Freshman Handbook. Students uncertain about which course to take or with questions about enrollment in introductory courses should consult with a faculty member during English Department Placement on September 2 from 9 to 11:30 A.M. in 102 LC. Those who miss the initial registration may petition to enter an introductory course or to change sections by completing and submitting a form in 107 LC after classes begin.

Upperclassmen should register for introductory courses during the same electronic registration period on September 2.

*ENGL 114A or b, Writing Seminars I. Suzanne Young and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR (0)*
Instruction in writing well-reasoned analyses and academic arguments, with emphasis on the importance of reading, research, and revision. Using examples of nonfiction prose from a variety of academic disciplines, individual sections focus on topics such as vision, word games, science and education, experts and expertise, the good life, and dissent in American culture.

*ENGL 115a or b, LITERATURE SEMINARS I. Stefanie Markovits and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR, Hu (o)
Exploration of major themes in selected works of literature. Individual seminars focus on topics such as war, justice, childhood, and the natural world. Emphasis on the development of writing skills and the analysis of fiction, poetry, drama, and nonfiction prose. For topics and descriptions of specific sections, see the English department Web site and the Online Course Information Web site.

*ENGL 116b, WRITING SEMINARS II. Suzanne Young and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR (o)
Continues the work of ENGL 114a or b by refining the tools of rhetorical analysis and argument through study of writing related to specific fields of endeavor or inquiry. Typical topics of individual sections are the environment, the arts, the law, documentary film, politics, and medicine. Varied writing assignments, with frequent review and revision, culminate with the development of a longer research essay. Prerequisite: ENGL 114a or b.

*ENGL 117b, LITERATURE SEMINARS II. Tanya Agathocleous and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR, Hu (o)
Continues the work of ENGL 115a or b through in-depth study of specific themes, genres, or authors. Topics may range from literature and globalism to tragedy or science fiction to the works of Shakespeare, Austen, or Faulkner. Intensive instruction in writing culminates with the production of a major research essay. For topics and descriptions of individual seminars, see the English department Web site and the Online Course Information Web site. Prerequisite: ENGL 115a or b or permission of the course director.

English for Freshmen and Sophomores

ENGL 120a or b, 125, 127, and 129 are open to freshmen whose SAT and English Advanced Placement test scores fall within the range specified for these courses (see the Freshman Handbook), and to upperclassmen, normally after one or two terms of English for freshmen.

ENGL 120a or b, READING AND WRITING THE MODERN ESSAY.
Fred Strebeigh and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR (o)
Close study of selected works of nonfiction prepares students to become critical readers and to apply professionals’ strategies to their own writing. Readings from such authors as Joan Didion, Malcolm Gladwell, Maxine Hong Kingston, N. Scott Momaday, George Orwell, Brent Staples, Jonathan Swift, Henry David Thoreau, Tom Wolfe, and Alice Walker. Written assignments, involving frequent revision, include autobiography, portraiture, nature writing, cultural critique, and formal argument.

ENGL 125, MAJOR ENGLISH POETS. Christopher R. Miller and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR, Hu (63)
A study of the diversity and the continuity of the English literary tradition through close study of the work of its major poets. Emphasis on developing skills of interpretation and critical writing. In the fall term, Chaucer, Spenser, and a Renaissance lyric poet. In the spring term, Milton, Pope, Wordsworth, and a modern poet.
ENGL 127, INTRODUCTION TO THE STUDY OF AMERICAN LITERATURE.
Paul Grimstad and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR, Hu (63)
An exploration of American literature from the seventeenth century to the present. Ranging across historical periods and literary genres (from works of early discovery and slave narratives to contemporary poetry and the modern novel), examination of the ways authors contribute to a national literary tradition by reworking ideas of literature and nationhood. Authors in the fall term include Hawthorne, Bradstreet, Rowlandson, Equiano, Franklin, Stowe, Emerson, Melville, Whitman, Poe, Baldwin, and Reed; authors in the spring term include Twain, Hemingway, Dickinson, Williams, Frost, Faulkner, Morrison, American Paredes, Simon Ortiz, August Wilson, Suzan Lori Parks, and Chang-Rae Lee.

ENGL 129, THE EUROPEAN LITERARY TRADITION.
Timothy Robinson [F], Stefanie Markovits [Sp], and staff.
3 HTBA For sections see www.yale.edu/courseinfo WR, Hu (63)
In the fall term, Homer (the Iliad) and study of representative dramatists including Aeschylus, Sophocles, Euripides, and Aristophanes; Shakespeare, Racine, Molière, and Goethe; and a selection of modern and contemporary dramatists. In the spring term, the epic and novel traditions: Homer (the Odyssey), Vergil, Dante, Cervantes, Joyce, and one other novelist.

ADVANCED COURSES

The courses listed below are open to students normally after two terms of English or the equivalent, or with the permission of the instructor. Starred (*) courses may be used to fulfill the two-seminar requirement for English majors.

ENGL 154b/HIST 228b, VIKINGS. Roberta Frank, Anders Winroth.
MW 2.30-3.20, 1 HTBA Hu (0) Pre-1800
Introduction to the history, literature, and culture of Scandinavia between 700 and 1250. Viking raids, skaldic and eddic poetry, Icelandic sagas, and northern myths; rune-stones, ships, halls, and swords in literature and history; Viking women, northern trade, colonization, Christianization, and Viking landings in America.

ENGL 170a, CHAUCER: THE CANTERBURY TALES. Alastair Minnis.
MW 10.30-11.20, 1 HTBA Hu (33) Pre-1800
A reading of selected Canterbury Tales, with reference to the work as a whole. The significance of the tales within medieval culture, including issues of pilgrimage, chivalry, tolerance and intolerance for non-Christian peoples, courtly love, discourses of class and gender, the balance of tragedy and comedy, beast fable and moral truth, and the purpose and ends of literature.

*ENGL 184b, THE MEDIEVAL NOVEL. Lee Patterson.
TTH 11.35-12.30 WR, Hu (0) Pre-1800
Close reading of two medieval English novels, Chaucer’s Troilus and Criseyde and Malory’s Morte d’Arthur. Focus on the works’ novelistic qualities, including explorations of psychology, interrelationships of plot and character, and narratorial point of view. Readings in Middle English.

*ENGL 185b, MEDIEVAL LITERATURE AT THE MOVIES. Alastair Minnis.
M 2.30-4.20 WR, Hu (0) Pre-1800
Medieval narrative traditions and their appropriation in modern film. Beowulf and Gawain and the Green Knight (read in modern translation) and selections from The Canterbury Tales and Malory’s Morte d’Arthur (read in Middle English) explored in relation to modern film and television adaptations.
engl 190a, Spenser. Leslie Brisman.
MW 11.35-12.30 WR, Hu Meets RP (0) Pre-1800
A reading of most of The Faerie Queene, together with a selection of the minor poems. Emphasis on Spenser's preoccupation with his precursors and on the difficulties of fitting recalcitrant ethical problems into the limits of allegory.

engl 200b, Shakespeare: Comedies and Romances.
Lawrence Manley.
TH 10.30-11.20, 1 HTBA Hu (23) Pre-1800
A study of love, sex, gender, society, and theater practice in Shakespeare's comic genres, from the early farces and romantic comedies to the problem plays and late romances.

engl 201a, Shakespeare: Histories and Tragedies.
David Scott Kastan.
TH 1.30-2.20, 1 HTBA Hu (26) Pre-1800
Shakespeare on the stage and on the page. The histories and tragedies as public theater and as studies in politics and psychology.

engl 207b, The Outlandish in Early Modern Theater.
Catherine Nicholson.
TH 1-2.15 WR, Hu (0) Pre-1800
Early modern English drama as a way of seeing the world and its peoples. Individual and community identity; the interdependence of the foreign and the familiar; proximity between seemingly remote peoples and places. Focus on the plays of Marlowe and Shakespeare and their contemporaries.

engl 210b, Reading and Writing in Renaissance England.
David Scott Kastan.
TH 11.35-12.50 WR, Hu (0) Pre-1800 Libr
A study of the material forms in which texts circulated in early modern England. Early modern literary culture; the overlapping worlds of manuscript and print and the habits of reading they promoted. Focus on Shakespeare's sonnets and Hamlet, Donne's poetry, and early English translations of the Bible.

engl 220b, Milton.
John Rogers.
MW 11.35-12.25, 1 HTBA WR, Hu (34) Pre-1800
A study of Milton's poetry, with some attention to his literary sources, his contemporaries, his controversial prose, and his decisive influence on the course of English poetry.

engl 239a/wgss 239a, Women Writers from the Restoration to Romanticism.
Jill Campbell.
MW 1-2.15 WR, Hu (0) Pre-1800 Libr
Readings of poems, plays, novels, essays, and letters by English women from the late seventeenth century to the early nineteenth, with attention to historical context and change. Writers include Aphra Behn, Mary Astell, Anne Finch, Lady Mary Wortley Montagu, Sarah Scott, Maria Edgeworth, Phyllis Wheatley, Dorothy Wordsworth, Jane Austen, and Mary Shelley. Topics include the reputation and reception of female authors; women's appropriation of male literary forms; the implications of generic choice; accounts of female utopian communities; and treatments of love, marriage, female friendship, and homoerotic desire.

engl 242a/hums 305a/litr 416a, The Enlightenment Today:
Literature and Secularization. Ala Alryyes.
For description see under Literature.
**ENGL 248a, Nature Writing in Britain and the Colonies.**
Linda Peterson.

MW 1-2.15 WR, Hu Meets RP (o) Pre-1900
Natural history and environmental writing in the English-speaking world from the late eighteenth century to the present. Readings include such classics as Gilbert White’s *Natural History of Selborne*, Thoreau’s *Walden*, and Darwin’s *Voyage of the Beagle*, as well as recent work by writers from Canada, the United States, Australia, and East Africa.

**ENGL 250a, Romantic Poetry.** Leslie Brisman.

MW 2.30-3.45 WR, Hu Meets RP (o) Libr
Introduction to an exhilarating period of English poetry and its major authors: Blake, Wordsworth, Coleridge, Shelley, Keats, and Byron. Extended attention to what is arguably the period’s greatest long poem, Wordsworth’s *The Prelude*.

**ENGL 265b, The Victorian Novel.** Stefanie Markovits.

TT H 1.30-2.20, 1 HTBA Hu (26) Pre-1900
A selection of nineteenth-century novels, with attention to cultural contexts. Authors chosen from the Brontës, Gaskell, Dickens, Collins, Eliot, Hardy, and Trollope.

**ENGL 276a, Ways of Knowing in Nineteenth-Century American Literature.** Pamela Schirmeister.

TT H 2.30-3.45 Hu (o) Pre-1900 Amer
An exploration of the philosophical and epistemological tensions that characterize emergent American literature and its development in the nineteenth century. Readings in Edwards, Brockden Brown, the journals of Lewis and Clark, Emerson, Hawthorne, Melville, Thoreau, Douglass, Henry James, and William James. Readings also include relevant criticism and historical materials.

**ENGL 279b, Hawthorne.** Kevin Hicks.

TH 9.25-11.15 WR, Hu (o) Pre-1900 Amer
A study of Hawthorne’s major novels and other writings, with additional readings in nineteenth-century culture and politics and in criticism. Focus on Hawthorne’s responses and contributions to literary and social movements of his day and on the contemporary and recent reception of his work.

**ENGL 289a/amst 246a, Hemingway, Fitzgerald, Faulkner.**
Wai Chee Dimock.

TH 11.35-12.25, 1 HTBA Hu (24) Amer
An in-depth study of the major novels and short stories. Exploration of the relationship between linguistic usage and political and ethnic identities, with close attention to words and the speech communities revolving around them.

**ENGL 291b/amst 261b, The American Novel since 1945.**
Amy Hungerford.

MW 1.30-2.20, 1 HTBA Hu (36) Amer
American fiction, including works by Richard Wright, Flannery O’Connor, Jack Kerouac, Vladimir Nabokov, Philip Roth, Thomas Pynchon, John Barth, Maxine Hong Kingston, Louise Erdrich, Cormac McCarthy, and Edward P. Jones.

**ENGL 294a/AFAM 294a, African American Literature I: 1740–1900.** Michele Stepto.
For description see under African American Studies.
ENGL 300b/LITR 300b*, Introduction to Theory of Literature.
Paul Fry.
For description see under Literature.

*ENGL 302a/LITR 273a, International Britain. Tanya Agathocleous.
TH 1-2.15 Hu (0)
Twentieth-century British and Commonwealth literature, predominantly fiction, in the context of war and decolonization. Authors include Virginia Woolf, Kazuo Ishiguro, Michael Ondaatje, Pat Barker, Salman Rushdie, and J. M. Coetzee. Topics include historical change, nationalism and cosmopolitanism, trauma and memory, and the reconstitution of ethics.

ENGL 310a, Modern Poetry. Susan Miller.
MW 11.35-12.25, 1 HTBA Hu (34) Amer
An introduction to major twentieth-century poets, including Yeats, Frost, Pound, Eliot, Moore, Stevens, and Auden.

MW 1-2.15 WR, Hu (0) Libr
Close reading of individual works by Stevenson, Wilde, Kipling, James, Shaw, Hardy, Conrad, and Lawrence, with attention to new narrative techniques and to developments in contemporary drama and nonfiction.

*ENGL 321a/HUMS 246a/LITR 357a, Visual Culture in Literature, Drama, and Film. Edward Barnaby.
For description see under Literature.

W 1.30-3.20 WR, Hu (0)
Study of key First Amendment protections, such as freedom of speech and religious liberty, through the lens of literary, philosophical, and legal texts. Some attention to relationships between law and literature and the problems of constitutional interpretation.

ENGL 328a/ER&M 310a/LITR 270a, Fiction without Borders. Shameem Black.
MW 1.30-2.20, 1 HTBA Hu (36)

*ENGL 330a, Religion and Violence. Sara Sulieri Goodyear.
TH 1.30-3.20 WR, Hu (0)
A study of works dealing with twentieth-century modernity, the idiom of nationalism, and the concomitant growth of violence attached to religion. Selected works by writers from Ireland, India, the Middle East, and Africa.

*ENGL 336b/LITR 323b/THST 303b, The Opera Libretto. J. D. McClatchy.
T 1.30-3.20 WR, Hu (0)
A selective survey of the genre from its seventeenth-century Italian origins to the present day. The libretto’s history, from opera seria to opéra comique to melodrama, featuring original libretti by writers such as Hofmannsthal, W. S. Gilbert, and
Auden. Emphasis on literary adaptations, from Da Ponte and Beaumarchais to Britten and Thomas Mann. Source material includes works by Shakespeare, Schiller, Hugo, Melville, and Tennessee Williams. *Readings in English; musical background not required.*

**ENGL 337a/*LITR 404a, STORIES OF THE STRANGE.** Richard Maxwell.  
For description see under Literature.

**ENGL 342b, RELIGION AND POSTWAR GLOBAL FICTION.**  
Justin Neuman.  
MW 2:30-3:45, Hu (0)  
Study of post–World War II global fiction, with a focus on issues concerning secularism and religion and their intersections with politics, power, subjectivity, and ethics. Authors include J. M. Coetzee, Bharati Mukherjee, Salman Rushdie, Ben Okri, Hanif Kureishi, Yann Martel, and Ian McEwan; works by Orhan Pamuk and Elie Wiesel in translation.

**ENGL 343a/*AFST 343a/*LITR 269a, INTRODUCTION TO POSTCOLONIAL LITERATURES.** El Mokhtar Ghambou.  
Th 3:30-5:20, WR, Hu (0)  
Introduction to the major thematic concerns and narrative preoccupations of postcolonial literature from Africa, South Asia, and the Caribbean. Focus on language, nationalism, gender, and migrancy. Authors include Salih, Dangarembwa, Rushdie, Naipaul, Kincaid, Said, and Bhabha.

**ENGL 345b/*HUMS 401b, ORIENTALISM.** El Mokhtar Ghambou.  
Th 3:30-5:20, WR, Hu (0)  
A study of English and American representations of the Islamic Orient in the eighteenth and nineteenth centuries, exploring issues of identity, difference, East-West interactions, and the possibilities of dialogue across diverse literary and cultural traditions. Writers include Moore, Carlyle, Irving, Emerson, Melville, Kipling, Said, and Mernissi.  *Pre-1900 with permission of instructor.*

**ENGL 358b, LITERATURE FOR YOUNG PEOPLE.** Michele Stepto.  
M 1:30-3:20, Hu Meets RP (0)  
An eclectic approach to stories and storytelling for and by children. Texts include Nathaniel Hawthorne’s *A Wonder Book*, Louisa May Alcott’s *Little Women*, J. K. Rowling’s *Harry Potter and the Sorcerer’s Stone*, and works by Leo Lionni, Laurent de Brunhoff, Dr. Seuss, and Maurice Sendak, as well as stories written by children themselves.

**ENGL 359b/*WGSS 352b, FEMINIST PERSPECTIVES ON LITERATURE.**  
Jill Campbell.  
For description see under Women’s, Gender, & Sexuality Studies. Libr

**ENGL 360b/HUMS 243b/LITR 223b/THST 223b, THE FOUNDATIONS OF MODERN DRAMA.** Murray Biggs.  
For description see under Theater Studies.

**ENGL 364a/*AFAM 369a/*AMST 370a/*LITR 271a/*THST 369a, AFRICAN AMERICAN THEATER.** Paige McGinley.  
For description see under Theater Studies.

**ENGL 369a/*ER&M 367a/*WGSS 369a, ADOPTION NARRATIVES.**  
Margaret Homans.  
TTh 11:35-12:50, WR, Hu (0) Amer
A survey of nineteenth- and twentieth-century U.S. and British representations of adoption in fiction, memoir, poetry, drama, film, and social science writing. Special attention to the implications for adoption narratives of recent theories of race, gender, identity, and trauma.

**ENGL 383a/LITR 275a/THTST 348a, THE COMMON WEALTH OF DRAMA.** Murray Biggs.
For description see under Theater Studies.

**ENGL 384a/FILM 461aG, BRITISH CINEMA.** Katie Trumpener.
For description see under Film Studies.

**ENGL 391a, DIGITAL LITERATURE.** Jessica Pressman.
W 1:30-3:20 WR, Hu (0)
Study of literature created on the computer to be read on the computer. Examination of digital literature across genres and in relation to print textuality and traditional literary study.

**ENGL 396b/LITR 154b, THE BIBLE AS LITERATURE.** Leslie Brisman.
MW 11:30-12:50, 1 HTBA WR, Hu Meets RP (34) Libr
Study of the Bible as a collection of works exhibiting a variety of attitudes toward the conflicting claims of tradition and originality, historicity and literariness. 
Pre-1800 with permission of instructor and completion of supplementary assignments in the language of the King James Bible.

**ENGL 397b/LITR 414b, THE EIGHTEENTH-CENTURY EUROPEAN NOVEL.** Katie Trumpener.
For description see under Literature. Pre-1800

COURSES IN OTHER DEPARTMENTS THAT COUNT TOWARD THE MAJOR

**HUMS 228a, SHAKESPEARE AND THE CANON: HISTORIES, COMEDIES, AND POEMS.** Harold Bloom. Pre-1800

**HUMS 229b, SHAKESPEARE AND THE CANON: TRAGEDIES AND ROMANCES.** Harold Bloom. Pre-1800

**HUMS 235a, ART OF READING A POEM.** Harold Bloom.

**HUMS 236b, FOUR TWENTIETH-CENTURY POETS: W. B. YEATS, WALLACE STEVENS, D. H. LAWRENCE, HART CRANE.** Harold Bloom.

**TPRP 290aG, THE TEACHING OF ENGLISH.** Staff.

**WGSS 449b, FICTIONS OF INDIAN WOMEN.** Geetanjali Singh Chanda.

SENIOR SEMINARS

The seminars below are for seniors fulfilling the senior requirement. They are open to interested juniors and seniors outside the major when space is available.

**ENGL 406a, RENAISSANCE LYRIC.** Christopher R. Miller.
TTh 2:30-3:45 WR, Hu (0) Pre-1800
A survey of English lyric poetry from the early sixteenth century through the mid-seventeenth, focusing on poetic forms and traditions and the place of poetry in the social, political, and religious life of the time. Authors include Wyatt, Surrey, Sir Philip Sidney, Mary Sidney, Spenser, Shakespeare, Aemylia Lanyer, Lady Mary Wroth, Donne, Jonson, Herbert, Herrick, Milton, Lovelace, and Marvell.

*ENGL 415b, Milton's Paradise Lost.* David Scott Kastan.

**Th 2:30-3:45 WR, Hu (0) Pre-1800**

Close study of Paradise Lost, focusing on the literary, political, and theological pressures that affected Milton's writing and that continue to affect his reputation.

*ENGL 420a, The Literature of the Middle Passage.* Shameem Black, Caryl Phillips.

**M 3:30-5:20 WR, Hu (0) Amer**

An examination of literature produced as a result of encounters between Africa and the West in the wake of the Atlantic slave trade. Writers include Joseph Conrad, George Lamming, Charles Johnson, V. S. Naipaul, Derek Walcott, and Jamaica Kincaid. The course includes a fully funded eight-day visit to Barbados during the fall recess.

*ENGL 422b/LITR 440b, James Joyce's Ulysses.* Pericles Lewis.

**Th 1-2:15 Hu Meets RP (0) Libr**

Study of James Joyce's Ulysses in relation to three precursor texts: Homer's Odyssey, Shakespeare's Hamlet, and Joyce's Portrait of the Artist as a Young Man. Topics include Joyce's experiments in form and representation, literary and historical context, and critical approaches to Ulysses. *No previous knowledge of Joyce's work assumed.*

*ENGL 425b/AMST 259b, Colonial Literatures of America.* Michael Warner.

**T 9:25-11:15 WR, Hu Meets RP (0) Pre-1800 Amer**

Readings from the British Atlantic world in the first period of empire, from the earliest New World accounts through the American and French revolutions. Authors include William Bradford, Anne Bradstreet, Mary Rowlandson, Daniel Defoe, Jonathan Edwards, Benjamin Franklin, Thomas Jefferson, Thomas Paine, Olaudah Equiano, John Marrant, Phyllis Wheatley, and Charles Brockden Brown. (Formerly ENGL 268a)

*ENGL 426b, Poems about Works of Art.* Paul Fry.

**W 3:30-5:20 WR, Hu (0)**

A survey of ecphrasis, poets' descriptions of works of art, beginning with Homer's "Shield of Achilles" and concluding with contemporary poetry. Works by Homer, Wordsworth, Shelley, Rossetti, Yeats, Auden, Bishop, Merrill, and Hollander.

*ENGL 430a/LITR 243a, British Literature of the Sixties.* Nigel Alderman.

**M 1:30-3:20; screenings HTBA Hu (0) Libr**

An examination of British novels, drama, and poetry of the 1960s. Selected authors include Spark, Beckett, Stoppard, Larkin, Plath, and Hill. Relevant selections of music, films, and television programs are also included.

*ENGL 434a, The Age of Lincoln and Whitman.* David Bromwich.

**W 2:30-4:20 WR, Hu (0) Pre-1900 Amer**

Ideas of the self, the nature of democracy, and the relationship between slavery and constitutional liberty in the years 1840–70. Extensive readings in Lincoln and Whitman, as well as Emerson, Thoreau, Douglass, Webster, Dickinson, and Melville.
*ENGL 436a, Detective Fiction: Poe to the Present. Paul Grimstad.
TTh 1-2:15 WR, Hu (0) Amer
A reconstruction of the literary and historical contexts in which Edgar Allan Poe invented the genre known as detective fiction. More recent examples of the genre, including novels (*The Maltese Falcon*), films (*Chinatown, The Long Goodbye*), television programs (*Law and Order*), and books and films that combine detective fiction with science fiction (*Neuromancer, Blade Runner*). (Formerly ENGL 381b)

*ENGL 443a/b, AFAM 403a/b, AMST 460a, Twentieth-Century African American Poetry. Elizabeth Alexander.
For description see under African American Studies. Amer

*ENGL 446b, Virginia Woolf. Margaret Homans.
W 1:30-3:20 WR, Hu (0) Libr
A study of the major novels and other writings by Virginia Woolf, with additional readings in twentieth-century culture and politics and in Woolf biography and criticism. Focus on Woolf’s responses and contributions to literary and political movements of her day and on the contemporary and recent reception and adaptation of her work.

T 1:30-3:20 WR, Hu (0) Amer Libr
A study of Eliot’s work as poet, critic, playwright, and man of letters.

**COURSES IN WRITING**

*Introductory and Intermediate Courses*

These courses are designed to provide students who already have some ability in writing with an opportunity to explore more fully the demands and possibilities of specific literary forms. Admission is by application, based chiefly on work submitted by the student. For all application deadlines, consult the English department Web site or visit 107 LC. Application forms are available on the Web at [www.yale.edu/english/undergraduate.html](http://www.yale.edu/english/undergraduate.html).

*ENGL 140a or b, Introduction to Writing Fiction.
140a: M 3:30-5:20 (0) Leslie Woodard
140b: M 1:30-3:20 (0) John Crowley
An intensive introduction to the craft of fiction, designed for aspiring creative writers. Focus on the fundamentals of narrative technique and peer review. In the fall term, open to sophomores, juniors, and seniors; in the spring term, open to all students. Prerequisite: a previous course in English or in another literature.

[ENGL 141a, Introduction to Verse Writing]

*ENGL 450b, Daily Themes. Linda Peterson.
M 2:30-4:20, 1 HTBA WR (0)
Writing of prose at the intermediate level. Daily assignments of 250–300 words, a weekly lecture, and a weekly 30-minute tutorial. Application forms available on the Web by mid-November. Application deadline: noon on Friday, December 12, 2008. Enrollment limited to sophomores, juniors, and seniors.

ENGL 451–457, Workshops in Poetry, Prose, and Drama.
Workshops in the writing of drama, fiction, nonfiction, or poetry. Assignment to a specific course is made at the time of admission. Open only to upperclassmen
on the basis of their work, a sample of which should be submitted to 107 lc. Consult www.yale.edu/english/undergraduate.html for applications and due dates. The prerequisite for these workshops is one previous course in English or in another literature, or the permission of the instructor.

*ENGL 451b, The Writing of Verse.  J. D. McClatchy.  
M 1.30-3.20  Meets RP  (o)  
A study of the writing of verse through a consideration of its use in a range of poems and through weekly assignments.

*ENGL 452a or b, Intermediate Fiction Writing.  
452a: M 1.30-3.20  (o)  Emily Barton  
452b: F 9.25-11.15  (o)  Amy Bloom  
Emphasis on the writing of short fiction. Criticism of student work; rhetorical and technical exercises in narrative form, genre, and style; readings in classical and contemporary fiction. Classes conducted in workshop style with frequent conferences.

*ENGL 453a/*THST 320a, Playwriting.  Donald Margulies.  
T 2.30-5  (o)  
A seminar and workshop in writing for the stage. Readings emphasize contemporary plays, with some theory. Writing assignments include weekly exercises and the execution of a one-act play.

*ENGL 454a, Nonfiction Writing: Voice and Structure.  Fred Strebeigh.  
Th 1.30-4  WR  Meets RP  (o)  
A nonfiction workshop, confronting the challenges of journalism as an art. Emphasis on voice and structure. Study and discussion of texts that may suggest modes, voices, forms, and styles for nonfiction pieces. Frequent writing projects and revisions.

*ENGL 455b, Writing about Oneself.  Anne Fadiman.  
Th 2.30-5  WR  (o)  
A seminar and workshop in first-person writing. Students explore a series of themes (e.g., family, love, loss, joy) both by writing about their own lives and by reading British and American memoirs, autobiographies, and personal essays. An older work, usually from the nineteenth or early twentieth century, is paired each week with a more recent one on the same theme.

*ENGL 457b, Profiles and Portraits.  Cynthia Zarin.  
Th 1.30-3.20  (o)  
Exemplary nonfiction portraits and profiles studied as a basis for student experimentation in composing literary portraits of others. Readings focus on nonfiction essays and articles, with occasional work in other genres such as poetry, the visual arts, and film.

Advanced Courses

These courses are primarily for juniors and seniors. Admission is by application, based chiefly on work submitted by the student. For all application deadlines, consult the English department Web site or visit 107 lc. Application forms are available on the Web at www.yale.edu/english/undergraduate.html. Unless otherwise indicated, the prerequisite for an advanced course in writing is one workshop from ENGL 451–457, or permission of the instructor.
*ENGL 460a, Advanced Verse Writing.  Henri Cole.
M 3.30-5.20 (0)
An advanced seminar and workshop in the writing of verse.

*ENGL 461a, Writing for Film: Voice and Vision.
John Crowley.
T 1.30-3.20 (0)
Practice in all aspects of writing a screenplay, focusing on aspects that screenplays share with other fiction such as story, character, narrative, personal voice, and audience expectations. Study of one or more published screenplays in conjunction with viewings of the resulting films. Students put words to pictures to communicate vision, and collaborate on conceiving and writing a treatment and a screenplay.

*ENGL 462b, Writing for Television.  Amy Bloom.
F 1.30-3.20 (0)
Workshop on the reading and critiquing of great television scripts and adaptations (Paddy Chayefsky, Robert Altman, David Mamet, Agnes Nixon, Sarah Waters, *As Time Goes By*, Chris Rock) and on learning to write well for television. The final project is a complete television script with accompanying commentary.

T 2.30-4.20 (0)
A workshop in the craft of writing fiction.  *May be repeated for credit.*

*ENGL 467a or b, Journalism.  Steven Brill [F], Jill Abramson [Sp].
M 9.25-11.15 WR (0)
An intensive workshop in the art and changing role of journalism. Topics include definitions of journalism; the role of journalism in a democracy and a free market; differences among information, news, vicarious news, and entertainment; how different media work; knowing and telling a good story; the structure of newspaper articles, magazine features, television reports, and non-fiction books; interviewing; fairness; sourcing; the economics of journalism; and the importance of audience. *Fulfills the core seminar requirement for Yale Journalism Scholars.* No prerequisites.

*ENGL 468b/THST 327b, Advanced Playwriting Workshop.
Donald Margulies.
T 2.30-5 Meets RP (0)
A playwriting workshop for students who have taken courses in intermediate playwriting or screenwriting.

*ENGL 469a, Advanced Nonfiction Writing.  Anne Fadiman.
Th 2.30-5 WR, Hu (0)
A seminar/workshop with the theme “At Home in America.” Students consider the varied ways in which modern American literary journalists write about place, and address the theme themselves in both reportorial and first-person work. *No prerequisites.*

*ENGL 470a or b, Tutorial in Writing.  Staff.
HTBA (0)
A writing tutorial in fiction, poetry, playwriting, screenwriting, or nonfiction for students who have already taken writing courses at the intermediate and advanced levels. Conducted with a faculty member after approval by the director of undergraduate studies.  *Prerequisites: two courses in writing.*
SPECIAL PROJECTS

*engl 471a or b, Special Projects for Juniors or Seniors.

Staff.

HTBA (o)

Special projects set up by the student in an area of particular interest with the help of a faculty adviser and the director of undergraduate studies, intended to enable the student to cover material not otherwise offered by the department. The course may be used for research or for directed reading, but in either case a term paper or its equivalent is normally required. The student meets regularly with the faculty adviser. To apply for admission, a student must submit an application and prospectus signed by the faculty adviser to the office of the director of undergraduate studies by Thursday of the last week of classes in the term before the project is to be done. Application forms are available on the Web at www.yale.edu/english/undergraduate.html.

*engl 489a or b, The Writing Concentration Senior Project.

Staff.

HTBA (o)

A term-long project in writing, under tutorial supervision, aimed at producing a single longer work (or a collection of related shorter works). An application and prospectus signed by the student’s adviser must be submitted to the office of the director of undergraduate studies by Thursday of the last week of classes in the term before the project is to be done. The project is due by the end of the last week of classes (fall term), or the end of the next-to-last week of classes (spring term). Application forms are available on the Web at www.yale.edu/english/undergraduate.html.

THE SENIOR ESSAY COURSE

*engl 490a or b, The Senior Essay.

Staff.

HTBA (o)

An application and prospectus signed by the student’s adviser must be submitted to the office of the director of undergraduate studies by Thursday of the last week of classes in the term before the project is to be done. Application forms are available on the Web at www.yale.edu/english/undergraduate.html.

The senior essay itself is due in the office of the director of undergraduate studies according to the following schedule:

1. End of the fourth week of classes: five to ten pages of writing and/or an annotated bibliography
2. End of the ninth week of classes: a rough draft of the complete essay
3. End of the last week of classes (fall term) or end of the next-to-last week of classes (spring term): the completed essay.

ENVIRONMENT

At Yale, the environment is studied from a variety of perspectives. Majors are offered in Architecture, Biology, Chemical Engineering, Environmental Engineering, Environmental Studies, and Geology and Geophysics. Forestry & Environmental Studies offers courses in environmental science, policy, and management. Many other departments and programs offer courses pertinent to the study of environment, including American Studies, Anthropology, Chemistry, Economics, English, History, History of Art, International Studies, Philosophy, Political Science, Sociology, and Study of the City.
Some professional schools and programs offer relevant courses that may admit undergraduates, including Epidemiology and Public Health, Forestry & Environmental Studies, the Law School, and the School of Management.

ENVIRONMENTAL ENGINEERING

Director of undergraduate studies: William Mitch, 313B ML, 432-4386, william.mitch@yale.edu [F]; Jordan Peccia, 313C ML, 432-4385, jordan.peccia@yale.edu [Sp]

FACULTY ASSOCIATED WITH THE PROGRAM IN ENVIRONMENTAL ENGINEERING

Professors
Gaboury Benoit (Forestry & Environmental Studies), Menachem Elimelech (Chemical Engineering), Thomas Graedel (Chemical Engineering, Forestry & Environmental Studies), Edward Kaplan (School of Management), Lisa Pfefferle (Chemical Engineering), Joseph Pignatello (Adjunct) (Chemical Engineering), James Saiers (Forestry & Environmental Studies)

Associate Professors
Ruth Blake (Geology & Geophysics), Yehia Khalil (Adjunct) (Chemical Engineering), William Mitch (Chemical Engineering)

Assistant Professors
Michelle Bell (Chemical Engineering, Forestry & Environmental Studies), Jordan Peccia (Chemical Engineering), Julie Zimmerman (Chemical Engineering, Forestry & Environmental Studies)

Lecturer
James Wallis (Chemical Engineering)

Environmental engineering is involved with many aspects of society’s interaction with the environment. It encompasses the scientific assessment and development of engineering solutions to environmental problems affecting land, water, and air (the biosphere). The field embraces broad environmental concerns, including the safety of drinking water, groundwater protection and remediation, wastewater treatment, indoor and outdoor air pollution, solid and hazardous waste disposal, cleanup of contaminated sites, preservation of sensitive wetlands, and the prevention of pollution through product and process design. Implementation of strategies for sustainable water and energy usage is also of critical importance.

Environmental engineers must balance competing technical, social, and legal issues concerning the use of environmental resources. Because of the complexity of these challenges, environmental engineers need a broad understanding not only of engineering disciplines but also of chemistry, biology, geology, economics, and management. Accordingly, the program allows students in the major to select an emphasis on technology, sustainability, public health, environmental economics and management, or chemical, biological, and geological systems.

The program prepares students for leadership positions in industry and government agencies or for further studies in engineering, science, business, law, and medicine.

Three degree programs are offered: the B.S. in Environmental Engineering, the B.S. in Engineering Sciences (Environmental), and the B.A. in Engineering Sciences (Environmental). The B.S. degree program in Environmental
Engineering is for students who may be interested in a career as a practicing environmental engineer. The B.S. degree program in Engineering Sciences (Environmental) is for students who desire a strong background in environmental engineering and more flexibility for course work in other, sometimes indirectly related, fields. The B.A. degree program in Engineering Sciences (Environmental) is intended for students whose careers will involve, but not be dominated by, the skills of environmental engineering. The B.A. program is appropriate for those contemplating a career in which scientific and technological problems can play an important role, as is often the case in law, business, medicine, or public service.

Requirements of the major: The requirements of the major outlined below apply to majors in the Class of 2011 and subsequent classes. Students in the Classes of 2009 and 2010 should refer to previous editions of this bulletin for the appropriate major requirements.

Prerequisites. The B.S. degree programs in Environmental Engineering and in Engineering Sciences (Environmental) both have the following prerequisites in mathematics and basic sciences: MATH 112a or b, 115a or b; MATH 120a or b or ENAS 151a; either CHEM 112a and 113b or 114a and 115b with 116La and 117 Lb, or CHEM 118a and 119La by Advanced Placement test only, or one from CHEM 328a, 332a, or 333b with 330La or 331Lb by Advanced Placement test only; and PHYS 180a, 181b. The B.A. degree program in Engineering Sciences (Environmental) requires MATH 112a or b and 115a or b; CHEM 112a and 115b or 114a and 115b; and PHYS 150a, 151b.

B.S. degree program in Environmental Engineering. This program requires at least eighteen term courses beyond the prerequisites, including the senior requirement (seventeen courses are required if CHEM 118a, 328a, 332a, or 333b is used to satisfy the chemistry prerequisite).

1. Required courses: CHEM 102a; CENG 300a or MENG 211a or one from CHEM 328a, 332a, or 333b (not required after CHEM 118a); ENAS 194a or b; ENVE 120b, 210a, 360b, 371a, 373a, and 377b; ENVE 448a or 315b; EVST 344b; MCDB 290b; MENG 361a

2. Electives: at least four courses within one of the following tracks must be chosen in consultation with the director of undergraduate studies:
   - Environmental engineering technology: ENAS 130b, ENVE 441a, 444a, 445a, or any statistics course
   - Green engineering and sustainability: ECON 330a, MENG 280a, or courses approved by the director of undergraduate studies that are listed in the bulletin of the School of Forestry & Environmental Studies
   - Public health: courses approved by the director of undergraduate studies that are listed in the bulletin of the School of Public Health

B.S. degree program in Engineering Sciences (Environmental). This program offers four specialization tracks: the environmental engineering technology track for students desiring an environmental technology emphasis; the environmental engineering science track for students desiring an environmental and earth science emphasis; the environmental chemical and biological science track for students desiring a chemical, biological, and public health emphasis; and the environmental resource management track for students desiring an emphasis on environmental policy and management. At least fifteen term courses are required beyond the prerequisites, including the senior requirement.

1. Required courses: CHEM 102a; ENAS 194a or b; ENVE 120b, 360b, 371a, 373a, and 377b; ENVE 448a or 315b; EVST 344b; MCDB 290b
2. Electives: at least four courses must be chosen in consultation with the director of undergraduate studies within one of the four specialization tracks according to the following guidelines:

For the **environmental engineering technology track**, two electives must be technical and one must be selected from each of the following categories: earth sciences, biological sciences, and sustainable engineering.

For the **environmental engineering science track**, one elective must be selected from each of the following categories: earth sciences, biological sciences, and sustainable engineering.

For the **environmental chemical and biological science track**, two electives must be chemical and one must be selected from each of the following categories: biological sciences, public health or toxicology, and earth sciences.

For the **environmental resource management track**, one elective must be selected from each of the following categories: economics, management, and sustainable engineering.

**B.A. degree program in Engineering Sciences (Environmental).** This program includes the following required courses or their equivalents, totaling nine term courses beyond prerequisites, including the senior requirement:

1. Environmental engineering: ENVE 120b, 371a

2. Electives: six courses must be chosen in consultation with the director of undergraduate studies. One of these electives must be selected from the following:
   - CENG 300a
   - CHEM 328a, 332a
   - MENG 361a, 360b, 373a, 377b, 441a, 444a, 445a, 448a, or EVST 344b

**Senior requirement.** Students in all three programs must pass ENVE 490a or b in their senior year.

**Select Program in Engineering.** Qualified students majoring with a B.S. degree in Environmental Engineering or Engineering Sciences (Environmental) may be eligible to apply for a special program that includes industry research experience. See under Engineering.

**REQUIREMENTS OF THE MAJOR**

**ENVIRONMENTAL ENGINEERING, B.S.**

**Prerequisites:**
- MATH 112a or b, 115a or b; MATH 120a or b or ENAS 151a; either CHEM 112a, 113b or 114a, 115b with 116La, 117Lb, or CHEM 118a and 119La by AP test only, or 1 from CHEM 328a, 332a, or 333b with 330La or 331Lb by AP test only; PHYS 180a, 181b

**Number of courses:** At least 18 term courses beyond prereqs, incl senior req (17 if CHEM 118a, 328a, 332a, or 333b is used for chem prereq)

**Specific courses required:**
- CHEM 102a; CENG 300a OR MENG 211a OR 1 from CHEM 328a, 332a, or 333b (not required after CHEM 118a); ENAS 194a OR b; ENVE 120b, 210a, 360b, 371a, 373a, 377b; ENVE 448a OR 315b; EVST 344b; MCDB 290b; MENG 361a

**Distribution of courses:** 4 electives as specified

**Senior requirement:** ENVE 490a or b

**ENGINEERING SCIENCES (ENVIRONMENTAL), B.S.**

**Prerequisites:**
- MATH 112a or b, 115a or b; MATH 120a or b or ENAS 151a; either CHEM 112a, 113b or 114a, 115b with 116La, 117Lb, or CHEM 118a and 119La by AP test only, or 1 from CHEM 328a, 332a, or 333b with 330La or 331Lb by AP test only; PHYS 180a, 181b

**Number of courses:** At least 15 term courses beyond prereqs (incl senior req)

**Specific courses required:**
- CHEM 102a; ENAS 194a OR b; ENVE 120b, 360b, 371a, 373a, 377b; ENVE 448a OR 315b; EVST 344b; MCDB 290b

**Distribution of courses:** 4 electives as specified

**Senior requirement:** ENVE 490a or b
ENGINEERING SCIENCES (ENVIRONMENTAL), B.A.

Prerequisites: MATH 112a or b, 115a or b; either CHEM 112a, 113b or 114a, 115b; PHYS 150a, 151b

Number of courses: 9 term courses beyond prereqs (incl senior req)

Specific courses required: ENVE 120b, 371a

Distribution of courses: 6 electives approved by DUS

Senior requirement: ENVE 490a or b

ENVE 120b/CENG 120b/ENAS 120b, INTRODUCTION TO ENVIRONMENTAL ENGINEERING. Jordan Peccia.

TH 1-2.15, F 9.25-10.15 QR, SC (26)
Introduction to engineering principles related to the environment, with emphasis on causes of problems and technologies for abatement. Topics include air and water pollution, global climate change, hazardous chemical and radioactive wastes, and green technology. Prerequisites: high school calculus and chemistry or CHEM 114a and 115b (may be taken concurrently) or permission of instructor.

ENVE 210a/CENG 210a, PRINCIPLES OF CHEMICAL ENGINEERING AND PROCESS MODELING. André Taylor.
For description see under Chemical Engineering.

ENVE 315b/CENG 315b, TRANSPORT PHENOMENA. Daniel Rosner.
For description see under Chemical Engineering.

ENVE 360b/ENAS 360bG, GREEN ENGINEERING AND SUSTAINABLE DESIGN. Julie Zimmerman.

MW 11.35-12.50 (34)
Study of green engineering, focusing on key approaches to advancing sustainability through engineering design. Topics include current design, manufacturing, and disposal processes; toxicity and benign alternatives; policy implications; pollution prevention and source reduction; separations and disassembly; material and energy efficiencies and flows; systems analysis; biomimicry; and life cycle design, management, and analysis. Prerequisites: CHEM 112a and 113b or 114a and 115b or permission of instructor.

ENVE 371a/ENAS 371a, INTRODUCTION TO HYDROLOGY AND WATER RESOURCES. James Wallis.

TH 11.35-12.50 QR, SC Meets RP (24)
Constraints on permanent human settlements caused by limited availability of reliable water sources. Environmental problems that arise when either the quality of naturally occurring water is deficient, or its quantity is excessive (floods) or insufficient (droughts). The designing of modifications to supplement the natural hydrologic cycle at a specific location.

ENVE 373a/CENG 373a, AIR POLLUTION CONTROL. Lisa Pfefferle.

TH 4-5.15 QR, SC Meets RP (27)
Kinetics, thermodynamics, and transport of chemical reactions of common air pollutants including suspended particulate matter. The role of surface chemistry and transport phenomena in air pollution. Pollutant dispersion modeling. Technology available to prevent or control air pollutants. Prerequisite: ENVE 210a or permission of instructor.

*ENVE 377b/CENG 377b, WATER QUALITY CONTROL. William Mitch.

TH 2.30-3.45 SC Meets RP (27)
Study of the preparation of water for domestic and other uses and treatment of wastewater for recycling or discharge to the environment. Topics include processes for removal of organics and inorganics, regulation of dissolved oxygen, and techniques such as ion exchange, electrodialysis, reverse osmosis, activated carbon adsorption, and biological methods. **Prerequisite:** ENVE 120b or permission of instructor.

**ENVE 416b/CENG 416b, Chemical Engineering Process Design.**
Yehia Khalil.
For description see under Chemical Engineering.

**ENVE 441a G, Biological Processes in Environmental Engineering.**
Jason White.
**MW 1-2.15 Sc (36)**
Fundamental aspects of microbiology and biochemistry, including stoichiometry, kinetics, and energetics of biochemical reactions, microbial growth, and microbial ecology as they pertain to biological processes for the transformation of environmental contaminants; principles for analysis and design of aerobic and anaerobic processes, including suspended- and attached-growth systems, for treatment of conventional and hazardous pollutants in municipal and industrial wastewaters and in groundwater. **Prerequisite:** CHEM 112a, 113b, or 114a, 115b, or 118a (may be taken concurrently), or permission of instructor.

**ENVE 443a G, ENAS 443a/F&ES 380a G, Greening Business Operations.**
Thomas Graedel, Julie Zimmerman.
**MW 1-2.15 (36)**
Engineering, environmental, and financial perspectives applied to selected industries. Methods from operations management, industrial ecology, green chemistry and engineering, and accounting and finance are used to investigate sustainability approaches and the relationship between environmental and economic considerations. Tools include discounted cash-flow analysis, life-cycle assessment, and environmental cost accounting. Field trips to companies.

**ENVE 444a/ENAS 444a G, Management of Environmental Resources and Environmental Systems.**
Gideon Oron.
**TH 1-2.15 (26)**
Broad analysis of problems related to water resources and environmental issues. Management modeling that simultaneously considers engineering aspects, water quality, environmental characteristics, economic aspects, and community welfare. Decision-making tools for reaching a quantitatively optimal situation within a series of given limitations.

***ENVE 445a/ENAS 445a, Environmental Risk Assessment.**
Yehia Khalil.
**WF 4-5.15 (37)**
Fundamentals and applications of probabilistic risk assessment and management in the context of environmental issues. Focus on developing and applying probabilistic and deterministic models to quantify potential risks of industrial processes and support risk-based decisions that account for societal, environmental, and economic constraints. Case studies emphasize the importance of green energy sources, professional ethics, and public health and safety. **Prerequisite:** ENVE 120b or permission of instructor.

**ENVE 448a G, Environmental Transport Processes.**
Menachem Elimelech.
**MW 2.30-3.45 QR, Sc (37)**
Analysis of transport phenomena governing the fate of chemical and biological contaminants in environmental systems. Emphasis on quantifying contaminant transport rates and distributions in natural and engineered environments. Topics include distribution of chemicals between phases; diffusive and convective transport; interfacial mass transfer; contaminant transport in groundwater, lakes, and rivers; analysis of transport phenomena involving particulate and microbial contaminants. Prerequisite: ENVE 120b or permission of instructor. (Formerly ENVE 372a)

*ENVE 471a and 472b, Special Projects. Staff.

HTBA (0)
Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory), engineering design, or tutorial study. Students are expected to consult the director of undergraduate studies and appropriate faculty members about ideas and suggestions for suitable topics. Permission of both instructor and director of undergraduate studies required.

*ENVE 490a or b, Senior Project. Staff.

HTBA (0)
Individual research and design projects supervised by a faculty member in Environmental Engineering, or in a related field with permission of the director of undergraduate studies.

ENVIRONMENTAL STUDIES

Director of undergraduate studies: John Wargo, Rm. 102, 210 Prospect St., 432-9868, studies.environment@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF ENVIRONMENTAL STUDIES

Professors
Paul Anastas (Forestry & Environmental Studies), Gaboury Benoit (Forestry & Environmental Studies), Graeme Berlyn (Forestry & Environmental Studies), Derek Briggs (Geology & Geophysics), Benjamin Cashore (Forestry & Environmental Studies), Michael Donoghue (Ecology & Evolutionary Biology, Forestry & Environmental Studies), Michael Dove (Forestry & Environmental Studies, Anthropology), Menachem Elimelech (Chemical Engineering, Environmental Engineering), John Mack Faragher (History), Durland Fish (School of Medicine), Thomas Graedel (Forestry & Environmental Studies), Leo Hickey (Geology & Geophysics), Vivian Irish (Molecular, Cellular, & Developmental Biology), Stephen Kellert (Forestry & Environmental Studies), Daniel Kevles (History, History of Science), Benedict Kiernan (History), Robert Mendelsohn (Forestry & Environmental Studies, Economics), Jeffrey Park (Geology & Geophysics), Peter Perdue (History), Jeffrey Powell (Ecology & Evolutionary Biology), Susan Rosc-Ackerman (Law School, Political Science), James Saiers (Forestry & Environmental Studies), Oswald Schmitz (Forestry & Environmental Studies, Ecology & Evolutionary Biology), Kalyanakrishnan Sivaramakrishnan (Anthropology, Forestry & Environmental Studies), David Skelly (Forestry & Environmental Studies, Ecology & Evolutionary Biology), Brian Skinner (Geology & Geophysics), Ronald Smith (Geology & Geophysics), J. Gustave Speth (Forestry & Environmental Studies), Stephen Stearns (Ecology & Evolutionary Biology), Karl Turekian (Geology & Geophysics), John Wargo (Forestry & Environmental Studies, Political Science), Harvey Weiss (Near Eastern Languages & Civilizations, Anthropology), Robert Wyman (Molecular, Cellular, & Developmental Biology)

Associate Professors
Ruth Blake (Geology & Geophysics), William Mitch (Chemical Engineering), Sheila Olmstead (Forestry & Environmental Studies), Mark Pagani (Geology & Geophysics), Peter Raymond (Forestry & Environmental Studies)

Assistant Professors
Hagit Affek (Geology & Geophysics), David Post (Ecology & Evolutionary Biology), Zhongrong Wang (Geology & Geophysics), Julie Zimmerman (Chemical Engineering)
Environmental Studies provides an interdisciplinary approach to understanding and responding to environmental problems. From the natural sciences, students learn experimental techniques and methods of analysis needed to make accurate observations, to document change, to distinguish those changes resulting from human activity, and to understand what comprises healthy landscapes and functioning ecosystems. Students look to the humanities and social sciences for explanations of the ways people behave and for analyses of our institutions and their social, political, and economic activities. The Environmental Studies major prepares students for graduate study in a range of disciplines including law, medicine, and public health, and for careers in business, environmental management and conservation, teaching, and writing.

Introductory courses. CHEM 102a and ENVE 120b may be taken without prerequisites and cover subjects important to the Environmental Studies major. These courses, however, do not count toward the major.

Prerequisites. Required for the major are: CHEM 112a, 113b, or 114a, 115b, or G&G 160a, 161b; MCDB 120a or E&EB 122b; CHEM 116La and 117Lb, or MCDB 121La, or E&EB 123Lb; MATH 112a or above (except MATH 190a) or PHYS 150a or above. Students are advised to take chemistry and biology during the freshman year before enrolling in the core courses in natural sciences. Students should finish the prerequisites before the end of the sophomore year. Where relevant, students may employ acceleration credit to fulfill the prerequisites. Students entering Yale with advanced placement in both biology and chemistry must complete one term of introductory laboratory science. Students with advanced placement in only one of these subjects must take the remaining science prerequisite and its associated laboratory. Students should take a course in statistical methods of data analysis and probability (STAT 101–106 or 230b) prior to undertaking research in the natural and social sciences.

Requirements of the major. In addition to the prerequisites, thirteen or fourteen course credits are required for the major, including four core courses, two core laboratories, a concentration of six courses, a junior seminar (EVST 466a), and a one- or two-term senior project and colloquium (EVST 496a or b). All courses in the major must be taken for a letter grade.

Core courses. Students are required to take at least two core courses from Group A (humanities and social sciences), and two from Group B (environmental sciences) with their associated labs. At least one course in each group should be completed before the end of the sophomore year.

Group A, humanities and social sciences: EVST 117a, 120a, 226b, 255b, 345a
Group B, environmental sciences: EVST 201a, 202La, 262a, 263La

Application to the Environmental Studies major. Students must apply to enter the major by May 15 at the end of the sophomore year. Admission requires successful completion of the prerequisites and one core course from each group, and a preliminary written plan for an area of concentration. Students considering a major in Environmental Studies should consult the director of undergraduate studies as early as possible in the freshman year.

Area of concentration. Prior to the end of the sophomore year students plan an area of concentration. They should consult with their adviser and the
director of undergraduate studies in developing a coherent interdisciplinary program of six courses for their third and fourth years. Students may select up to four electives at the intermediate and upper level from the same department and at least two additional electives from relevant disciplines outside the immediate area of concentration. Students may also use core courses to fulfill the requirement for interdisciplinary electives during the third and fourth years. Students interested in history should include at least one junior seminar in history in their program. Students must have taken the core course in environmental history (EVST 120A) and one other course in history before enrolling in a junior seminar in history.

Study in the area of concentration prepares students to select and undertake a research project in the senior year. Possible areas of concentration include environmental issues in technologically advanced societies; the environment and the developing world; problems of continuing growth of human population; pollution, environmental medicine, and public health; sustainable environmental management; the impact of globalization and multinational corporations on development and natural resources; conservation of biodiversity; energy supplies for the future; ecological restoration of urban landscapes; remediation of polluted sites and restoration of degraded landscapes; assessment of the extent of environmental change; ethical and religious beliefs of different cultures regarding the natural world.

Junior seminar. In the first term of the junior year all majors enroll in the junior seminar, EVST 466A. Students also consult with their advisers on the design of a senior research project and submit a preliminary plan for approval.

Summer environmental internship. During the summer between the junior and senior years, many students gain practical experience in the field through courses, research positions, or internships in an area pertinent to their senior research project. Internships may be arranged with nonprofit organizations, government agencies, or corporations. Although the summer program is optional, many students take advantage of this opportunity with some financial support from the program.

Senior requirement. Seniors must complete an independent research project, taken as EVST 496A or B. Students may undertake a one- or two-term senior project.

REQUIREMENTS OF THE MAJOR

Prerequisites: CHEM 112A, 113B, or 114A, 115B, or G&G 160A, 161B; MCDB 120A or E&EB 122B; CHEM 116La and 117Lb, or MCDB 121La, or E&EB 123Lb; MATH 112A or B or above (except MATH 190A) or PHYS 150A or above

Number of courses: 14 or 15 courses beyond prereqs, incl one- or two-credit senior project, totaling 13 or 14 course credits

Specific course required: EVST 466A

Distribution of courses: 2 core courses from Group A, 2 from Group B with associated labs, 6 courses in area of concentration

Senior requirement: One- or two-term research project and colloq (EVST 496A or B)

INTRODUCTORY COURSES


ENVE 120B/CENG 120B/ENAS 120B, Introduction to Environmental Engineering. Jordan Peccia.

For description see under Environmental Engineering.
CORE COURSES

**Group A**

**EVST 117A/ECON 117A/F&ES 117A, Microeconomics with Environmental Applications.** Sheila Olmstead.

MW 9-10.15 QR, So (32)

An introduction to microeconomics with an emphasis on topics relevant to the study of the environment, including externalities, regulations, public goods, and consumer-surplus analysis. *May not be taken after ECON 108A or b, 110A, or 115A or b.*

**EVST 120A/HIST 120A, Introduction to Environmental History.** Paul Sabin.

TTh 10.30-11.20, 1 HTBA Hu (23)

Survey of interactions between people and natural environments in North America from precolonial times to the present, including ecological, political, cultural, and economic dimensions. The rise of modern conservation and environmental movements; development of public policy.

**EVST 226B/ARC 226B, Global Environmental History.** Harvey Weiss.

TTh 11.35-12.50 So (24)

The dynamic relationship between environmental and social forces from the Pleistocene to the present. Pleistocene extinctions; transition from hunting and gathering to agriculture; origins of cities, states, and civilization in Mesopotamia and Egypt; adaptations and collapses of early Old and New World civilizations in the face of environmental disasters; the destruction and reconstruction of the New World by the Old.


TTh 10.30-11.20, 1 HTBA So (23)

Exploration of the politics, policy, and law associated with attempts to manage environmental quality and natural resources. Themes of democracy, liberty, power, property, equality, causation, and risk. Case histories include air quality, water quality and quantity, pesticides and toxic substances, land use, agriculture and food, parks and protected areas, and energy.

**EVST 345A/ANTH 382A/F&ES 384A, Environmental Anthropology.** Carol Carpenter.

Th 2.30-4.30 So (0)

History of the anthropological study of the environment. The nature-culture dichotomy, ecology and social organization, methodological debates, and the politics of the environment.

**Group B**

**EVST 201A/G&G 140A, Atmosphere, Ocean, and Environmental Change.** Ronald Smith.

MWF 9.25-10.15 QR, Sc (32)

Physical and chemical processes that control Earth’s atmosphere, ocean, and climate, and that influence human activities. Development of quantitative methods for constructing energy, water, and chemical budgets. Topics include severe storms, regional climate, the ozone layer, air pollution, ocean currents and productivity, El Niño, the history of Earth’s climate, global warming, energy, and water resources. *Must be taken concurrently with EVST 202La.*
**EVST 202La/G&G 141La, Laboratory for Atmosphere, Ocean, and Environmental Change.** Ronald Smith.

3 HTBA Sc $\frac{1}{2}$ C Credit (0)
Laboratory and field exercises to accompany EVST 201a. Must be taken concurrently with EVST 201a.

EVST 262a/F&ES 262a, Ecology and Conservation. Oswald Schmitz.
MWF 10.30-11.20 Sc (33)
Ecological principles and their potential application to problems in conserving biodiversity. Topics include the biosphere; organizational hierarchies and time scales; individual behavior in an evolutionary context; ecology of species interactions; ecological complexity; and links among species and ecosystem functions. Some laboratory and field exercises. Basic ecological sampling methods.

**EVST 263La, Laboratory for Ecology and Conservation.** Staff.
3 HTBA Sc $\frac{1}{2}$ C Credit (0)
A grounding in the principles of sampling and quantifying biodiversity and defining landscape-level patterns. Experiments and computer simulations clarify the relationship between biodiversity and ecosystem function. Emphasis on quantitative aspects of sampling, analysis and modeling, and scientific communication through report writing.

**INTERMEDIATE AND ADVANCED COURSES**

The following courses have been approved for developing areas of concentration. Other courses may be suitable for designing an area of concentration with permission of the director of undergraduate studies.

**Humanities**

**EVST 420a/HIST 313Ja, Asian Environments and Frontiers.** Peter Perdue.
For description see under History.

**EVST 443a/HIST 180Ja, Energy in American History.** Paul Sabin.
For description see under History.

For description see under American Studies.

**AMST 258a, Wilderness in the North American Imagination.** April Merleaux.


**ARCH 344a, Urban Life and Landscape.** Elihu Rubin.

**Social Sciences**

**EVST 170b, Sustainability: Theory to Practice in Institutions.** Julie Newman.
W 2.30-4.30 So (0)
Sustainable development as it relates to institutional change, decision-making processes, and systems thinking. The origins, theory, and grounding principles of sustainable development. The application of those principles, using Yale University as the case example.
[evst 245b/f&es 245b, International Environmental Policy and Governance]

**EVST 389a/anth 389a/f&es 389a/plsc 405a, Agriculture, Farmers, Food: Foundational Matters. James Scott.**
For description see under Political Science.

**EVST 440b/f&es 440bG, Environmental Hydrology. James Saiers.**
MW 1-2.15, 1 HTBA So (36)
An overview of the principles that govern the distribution and flows of water and waterborne constituents between the land, atmosphere, and oceans.

[evst 451b/arcg 451b, Environmental Archaeology of the Near East]

**EVST 473a/anth 473aG/arcg 473aG/nelc 188aG, Civilizations and Collapse. Harvey Weiss.**
For description see under Anthropology.

**ANTH 436aG/arcg 436aG, Reconstructing Human Evolution: An Ecological Approach. Andrew Hill.**
For description see under Anthropology.

**ECON 330aG, Economics of Natural Resources. Robert Mendelsohn.**

**ECON 331b, The Economics of Energy and Climate Change. William Nordhaus.**

**INTS 330aG/ep&e 370a/f&es 270aG/plsc 270a, Capitalism and Its Critics. Douglas Rae.**
For description see under International Studies.

**PLSC 212a, Democracy and Sustainability. Michael Fotos.**

**PLSC 245a, Urban Politics and Policy. Cynthia Horan.**

**PSYC 123a, The Psychology, Biology, and Politics of Food. Kelly Brownell.**

**STCY 176b, Introduction to the Study of the City. Alexander Garvin.**

**Natural Sciences**

**EVST 125b/g&g 120b, Earth’s Changing Climate.**
Steven Sherwood.
For description see under Geology & Geophysics.

[evst 160a and 161b/g&g 160a and 161b, Chemical Applications for Earth and Environmental Sciences]

**EVST 220b/f&es 220bG, Local Flora. Staff.**
For description see under Forestry & Environmental Studies.

**EVST 221a/e&eb 230aG/f&es 221a, Field Ecology. John Cooley.**
For description see under Biology.
EVST 260A/G, STRUCTURE, FUNCTION, AND DEVELOPMENT OF VASCULAR PLANTS. Graeme Berlyn.

TTh 2:30-3:45 Sc (27)

Morphogenesis and adaptation of trees from seed formation and germination to maturity. Physiological and developmental processes associated with structural changes in response to environment are discussed from both a phylogenetic and an adaptive point of view. After MCDB 120A.

[EVST 261Lb/G, LABORATORY FOR STRUCTURE, FUNCTION, AND DEVELOPMENT OF VASCULAR PLANTS]

*EVST 275A/G, ECOSYSTEMS PATTERNS AND PROCESSES.

Oswald Schmitz.

TTh 8:30-9:45 Sc Meets RP (22)

Introduction to the ecosystem concept. Topics include the structure and functioning of ecological systems, the response of systems to changing environmental conditions, and preservation and management issues. Discussion of both terrestrial and marine/aquatic systems. Undergraduate enrollment limited to 15.

*EVST 276L/G, LABORATORY FOR ECOSYSTEMS PATTERNS AND PROCESSES.

Staff.

WTh or F 1-5 Sc 1/3 C Credit Meets RP (0)

Field trips to interpret the ecosystem-level functions of a wide variety of natural landscapes. Must be taken concurrently with EVST 275A.

EVST 307B/G, ORGANIC POLLUTANTS IN THE ENVIRONMENT.

Shimon Anisfeld.

MW 1-2:15 (36)

An overview of pollution problems posed by synthetic organic chemicals, including petroleum products, pesticides, PCBs, dioxins, phthalates, and chlorinated solvents. Processes governing the environmental fate of organic pollutants, e.g., evaporation, bioconcentration, and biodegradation. Technologies for prevention and remediation of organic pollution. No background in organic chemistry required.

*EVST 344B/G, AQUATIC CHEMISTRY.

Helmut Ernstberger.

TTh 4:30-5:45 Sc (27)

A detailed examination of the principles governing chemical reactions in water. Emphasis on developing the ability to predict the aqueous chemistry of natural and perturbed systems based on a knowledge of their biogeochemical setting. Calculation of quantitative solutions to chemical equilibria. Focus on inorganic chemistry. Topics include elementary thermodynamics, acid-base equilibria, alkalinity, speciation, solubility, mineral stability, redox chemistry, and surface complexation reactions.

*EVST 362B/G, OBSERVING EARTH FROM SPACE.

Ronald Smith and staff.

For description see under Geology & Geophysics.

EVST 365A/G, LANDSCAPE ECOLOGY. David Skelly.

MW 9-10:15 Sc (32)

An introduction to the study of large-scale ecological patterns and processes. Topics include species viability, ecosystem management, and the design of nature reserves. Focus on when and how to integrate a spatial perspective into consideration of major ecological questions. After E&EB 220A.

[EVST 370A/G, AQUATIC ECOLOGY]
**EVST 4044G**, MINERALS AND HUMAN HEALTH.
Catherine Skinner.
For description see under Geology & Geophysics.

**E&EB 2203G**, GENERAL ECOLOGY. Leo Buss, John Cooley.
For description see under Biology.

**G&G 205b**, NATURAL RESOURCES AND THEIR SUSTAINABILITY.
Brian Skinner.

**G&G 322aG**, PHYSICS OF WEATHER AND CLIMATE. Steven Sherwood.

**MCDB 150G**, GLOBAL PROBLEMS OF POPULATION GROWTH.
Robert Wyman.
For description see under Biology.

**STAT 230G**/**MATH 235**, INTRODUCTORY DATA ANALYSIS. Hannes Leeb.
For description see under Statistics.

Environmental Engineering

[**EVST 300b**/**F&ES 300b**, TECHNOLOGY AND THE ENVIRONMENT]

**ENVE 360b/ENAS 360bG**, GREEN ENGINEERING AND SUSTAINABLE DESIGN. Julie Zimmerman.
For description see under Environmental Engineering.

**ENVE 371a/ENAS 371a**, INTRODUCTION TO HYDROLOGY AND WATER RESOURCES. James Wallis.
For description see under Environmental Engineering.

**ENVE 373a/CENG 373a**, AIR POLLUTION CONTROL. Lisa Pfefferle.
For description see under Environmental Engineering.

**ENVE 377b/CENG 377b**, WATER QUALITY CONTROL. William Mitch.
For description see under Environmental Engineering.

**ENVE 444a/ENAS 444aG**, MANAGEMENT OF ENVIRONMENTAL RESOURCES AND ENVIRONMENTAL SYSTEMS. Gideon Oron.
For description see under Environmental Engineering.

**ENVE 445a/ENAS 445a**, ENVIRONMENTAL RISK ASSESSMENT. Yehia Khalil.
For description see under Environmental Engineering.

Junior Seminar and Senior Project Courses

**EVST 466a**, RESEARCH METHODS FOR ENVIRONMENTAL STUDIES.
John Wargo.
Th 1:30-3:20 (O) Junior sem
Critical evaluation of research methods as they are used to explore significant environmental problems. Exploration of interdisciplinary research strategies. Each student develops an independent research prospectus to plan and guide the senior essay.

**EVST 496a** or **b**, SENIOR RESEARCH PROJECT AND COLLOQUIUM.
John Wargo.
496a: W 1:30-3:20 (O)
496b: W 7-8:50 P.M. (O)
Independent research under the supervision of members of the faculty, resulting in a senior essay. Students meet with peers and faculty members regularly throughout the fall term to discuss the progress of their research. Projects should offer substantial opportunity for interdisciplinary work on environmental problems. Students may choose to do either a one- or a two-term senior project.

**EPIDEMIOLOGY AND PUBLIC HEALTH**

*(See under Public Health.)*

**ETHICS, POLITICS, AND ECONOMICS**

Director of undergraduate studies: Bryan Garsten, 31 Hillhouse Ave., 432-7178, bryan.garsten@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF ETHICS, POLITICS, AND ECONOMICS**

**Professors**

Jeffrey Alexander (Sociology), David Apter (Emeritus) (Sociology), Seyla Benhabib (Director) (Political Science, Philosophy), David Cameron (Political Science), Maurizio d’Entreves (Political Science) (Visiting), Tamar Gendler (Philosophy), Alan Gerber (Political Science), Philip Gorski (Sociology), Donald Green (Political Science), Jacob Hacker (Political Science), Shelly Kagan (Philosophy), Stathis Kalyvas (Political Science), Boris Kapustin (Political Science) (Visiting), Thomas McCarthy (Philosophy) (Visiting), Benjamin Polak (Economics), Douglas Rae (Political Science), John Roemer (Political Science), Susan Rose-Ackerman (Political Science, Law School), Bruce Russett (Political Science), James Scott (Political Science), Ian Shapiro (Political Science), Lorenzo Simpson (Philosophy) (Visiting), Steven Smith (Political Science), Peter Swenson (Political Science), Ivan Szelenyi (Sociology), Elisabeth Wood (Political Science)

**Associate Professors**

Bryan Garsten (Political Science), Pierre Landry (Political Science), Ellen Lust-Okar (Political Science), James Vreeland (Political Science)

**Assistant Professors**

Seok-ju Cho (Political Science), Ange-Marie Hancock (Political Science), Karuna Mantena (Political Science), Vivek Sharma (Political Science), Matthew Smith (Philosophy), Peter Stamatov (Sociology)

**Lecturers**

Cynthia Farrar (Political Science), Howard Forman (School of Management), Stephen Latham (Visiting), Adam Simon (Political Science), Roy Tsao (Political Science)

The problems confronting us now and in the future require an analytical capacity to bring together expertise from several disciplines. In an era of global interdependence and rapid technological change, we need to think practically about the institutional dynamics of power and governance. We have to understand the technical complexities of economic and statistical analysis at the same time that we think critically about basic moral and political choices. Constructive responses to such problems as coping with natural and social hazards, allocation of limited social resources (e.g., medical care), or morally sensitive political issues (e.g., affirmative action and war crimes) require close knowledge of their political, economic, and social dimensions, and a capacity to think rigorously about the basic questions they raise.

The major in Ethics, Politics, and Economics joins the analytic rigor of the social sciences and the enduring normative questions of philosophy to promote an integrative and critical understanding of the institutions, practices, and policies that shape the contemporary world.
Requirements of the major. Fourteen term courses are required for the major, including five introductory courses, four core courses, one intermediate microeconomics course, and four courses comprising a student's individual area of concentration. The concentration is developed in consultation with the director of undergraduate studies and should culminate in a senior essay written in the area defined by the concentration.

Introductory courses. Introductory courses provide a basic familiarity with contemporary economic analysis and survey central issues in ethics and political philosophy. Such a background is necessary to understand theories that combine different approaches to the three areas of inquiry and to assess policies with complex social, economic, and moral implications.

The five introductory courses include two in economics (microeconomics and macroeconomics), one in political philosophy, one in ethics, and one in statistics. An intermediate course in microeconomics is also required.

Core courses. Four core courses comprise the center of the Ethics, Politics, and Economics major; three of them must be taken before the senior year. The first core course, required for all majors, is EP&E 341a or b, Classics of Ethics, Politics, and Economics. Each of the three remaining core courses must be selected from a different one of the following four groups:

Rationality and social choice: EP&E 319a, 320a, 328b, 345b, 352b, 376a, 377a
Political systems: EP&E 321b, 339a, 342b, 344b, 347a, 366b, 370a, 373b, 374b
Advanced topics in ethics and the human sciences: EP&E 312a, 326a, 334a, 338a, 350b, 353b, 363b, 368b, 372b, 375a, 378b, 379b, 380b
Social theory and cultural analysis: EP&E 304b, 306a, 307a, 308a, 309b, 357a

Area of concentration. Each student defines an area of concentration in consultation with the director of undergraduate studies. The concentration is intended to enable students to frame an important problem and shape a systematic course of inquiry, employing analytical methods and substantive theories drawn from the three fields. Students should not only recognize the accomplishments of varied interdisciplinary efforts, but also attempt to represent and in some cases further develop those accomplishments in their own work.

For most students the concentration will treat a contemporary problem with a substantial policy dimension (domestic or international), but some students may wish to emphasize philosophical and methodological issues. Areas of concentration must consist of at least four courses appropriate to the theme, including a course in which the senior essay is written (see “Senior essay” below). For many students the concentration may expand to include five or more courses. In designing the area of concentration, students are encouraged to include seminars from departments related to their interests. The director of undergraduate studies will also require students to show adequate competence in data analysis when the themes of the area of concentration require it.

The following are examples of possible areas of concentration: distributive justice; government regulation of market economies; environmental policy; philosophy of law; gender relations; democracy and multiculturalism; contemporary approaches to public policy; war and coercion; war crimes and crimes against humanity; medical ethics; international political economy; philosophy of the social sciences; social theory and ethics; cultural analysis and political thought; civil society and its normative implications.
Senior essay. A senior essay is required for the major. The essay, which should constitute an intellectual culmination of the student's work in Ethics, Politics, and Economics, should fall within the student's area of concentration and may be written within a relevant seminar, with the consent of the instructor and approval of the director of undergraduate studies. Students who wish to undertake a more substantial essay may enroll in EP&E 492 or may combine a seminar and one term of EP&E 491a or b in their senior year.

The senior essay reflects more extensive research than an ordinary Yale College seminar paper and employs a method of research appropriate to its topic. Some papers might be written entirely from library sources; others may employ field interviews and direct observation; still others may require statistical or econometric analysis. The student should consult frequently with the seminar instructor or adviser, offering partial and preliminary drafts for criticism.

Senior essays written in the fall term are due December 5, 2008. Senior essays written in the spring term and yearlong essays are due April 13, 2009. One-term essays are normally expected to be forty to fifty pages in length; yearlong essays are normally expected to be eighty to one hundred pages in length.

Credit/D/Fail option. Students admitted to the major may take any one of their Ethics, Politics, and Economics courses Credit/D/Fail. Such courses count as non-A grades in calculations for Distinction in the Major.

Application to the Ethics, Politics, and Economics major. Students must apply to enter the major at the end of the fall term of their sophomore year. Application must be made in writing to the director of undergraduate studies no later than Monday, December 8, 2008, in the program registrar's office, 31 Hillhouse Avenue. Applications must include the following information: name, address, phone number, e-mail address, a transcript of work at Yale that indicates fall-term 2008 courses, and a brief application essay. If possible, applicants should include a copy of a paper written for a course related to the subject matter of Ethics, Politics, and Economics. More information regarding the application process will be posted at www.yale.edu/epe. A list of accepted applicants will be posted on the same Web site by December 31, 2008.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 14 (incl senior req)
Distribution of courses: 1 intro course each in microeconomics, macroeconomics, political phil, ethics, and stat; 4 core courses, as specified; 1 intermediate microeconomics course; 4 courses, incl course for senior req, in area of concentration defined by student in consultation with DUS
Senior requirement: Senior essay in area of concentration (either in a sem or in EP&E 491a or b or 492)

EP&E 203a/PLSC 452a/STAT 102a/C, INTRODUCTION TO STATISTICS:

POLITICAL SCIENCE. Jonathan Reuning-Scherer, Alan Gerber.
For description see under Statistics.

EP&E 204a/ENAS 335a, PROFESSIONAL ETHICS. Mercedes Carreras.
For description see under Engineering & Applied Science.
For description see under Statistics.

For description see under Political Science.

**EP&E 211A/PLSC 204A, Ethics and the Media.** Stanley Flink.
For description see under Political Science.

For description see under Political Science. (Formerly EP&E 305b)

**EP&E 304B, Social Studies of Science and Technology.**
Lorenzo Simpson.

W 1.30-3.20 So (o) Core
Comparison of philosophical/normative and sociological/descriptive approaches to science and technology. Philosophy of science from Popper to Bhaskar; social studies of science from Mannheim to Latour; philosophy of technology from Heidegger to Habermas; sociology of technology from Beck to Woolgar. Topics include rationalism vs. relativism, internalism vs. externalism, constructivism vs. realism, "science wars," ethnography of science, technoscience, and risk society.

Ivan Szelényi.
For description see under Sociology. Core

For description see under Sociology. Core

For description see under Sociology. Core

For description see under Sociology. Core

Th 1.30-3.20 So (o) Core
A study of how and why people make costly moral choices in politics. Figures studied include Thomas More, Abraham Lincoln, Nelson Mandela, Václav Havel, and Aung San Suu Kyi. (Formerly EP&E 446A)

**EP&E 319A/ECON 467A, Issues in Health Economics.**
Howard Forman.
For description see under Economics. Core (Formerly EP&E 414A or b)

**EP&E 320A/ECON 463A, Economic Problems of Latin America.**
Eduardo Engel.
For description see under Economics. Core (Formerly EP&E 437A)

**EP&E 321B/PLSC 401B, Promoting Democracy in Developing Countries.** Harry Blair.
For description see under Political Science. Core
**EP&E 326a/INTS 360a/PLSC 141a, Ethics of Humanitarian Intervention.** Robin Theurkauf.
For description see under Political Science. Core

**EP&E 328b/PLSC 341b, Positive Political Theory.**
Humberto Llavador.
For description see under Political Science. Core

Hu (0) Core
334a–1: W 1.30-3.20 334a–2: M 1.30-3.20
A systematic examination of normative ethics, the part of moral philosophy that attempts to articulate and defend the basic principles of morality. The course surveys and explores some of the main normative factors relevant in determining the moral status of a given act or policy (features that help make a given act right or wrong). Brief consideration of some of the main views about the foundations of normative ethics (the ultimate basis or ground for the various moral principles).
Enrollment in EP&E 334a–1 limited to 20. If there is sufficient interest, EP&E 334a–2 will be offered on Mondays.

**EP&E 338a/HUMS 373a/PLSC 288aG, Postcolonial Political Thought.** Karuna Mantena.
For description see under Political Science. Core

For description see under Political Science. Core

[EP&E 340b/PHIL 459bG, Philosophy of Social Science]

**EP&E 341a or b, Classics of Ethics, Politics, and Economics.**
341a: TH 1-2.15 Hu, So Core (0) Boris Kapustin
341b–1: T 3.30-5.20 Hu, So Core (0) Thomas Donahue
341b–2: TH 1.30-3.20 Hu, So Core (0) Roy Tsao
A critical examination of classic and contemporary works that treat problems of ethics, politics, and economics as unities. Topics include changing conceptions of private and public spheres, the content and domain of individual freedom, and ethical and political limits to the market. Readings from the works of Aristotle, Hobbes, Locke, Smith, Bentham, Mill, Hegel, Marx, Hayek, Rawls, and others.

**EP&E 342b/PLSC 354bG, The European Union.**
David Cameron.
For description see under Political Science. Core

**EP&E 344b/PLSC 368b, Global Politics.** Stathis Kalyvas.
For description see under Political Science. Core

M 1.30-3.20 So (0) Core
An evaluation of models of political-economic systems derived from work in economic theory and liberal political thought. Topics include equity, efficiency, collective action, prisoners’ dilemmas, voting, agenda control, utilitarianism, rationality, and justice. Readings drawn from works by Arrow, Axelrod, Barry, Downs, Fiorina, Gauthier, Hirschman, Olson, Rawls, Sen, and others.
For description see under Political Science.  Core

[ep&e 349b/plsc 282b, CAPITALISM VS. SOCIALISM: THE DEBATE]

*ep&e 350b, The Idea of Progress Reconsidered.
Thomas McCarthy.
W 1.30-3.20 Hu, So (0) Core
Examination of the classical theories of progress set forth by Kant, Hegel, and Marx, as well as the critiques of these theories by Nietzsche, Weber, Horkheimer, and Adorno. Consideration of the attempt by Habermas to rethink the idea of progress. Some attention to contemporary debates in which the idea of progress figures.

*ep&e 352b/econ 473b/plsc 343b, EQUALITY.  John Roemer.
T 1.30-3.20 So (0) Core
Egalitarian theories of justice and their critics. Readings in philosophy are paired with analytic methods from economics. Topics include Rawlsian justice, utilitarianism, the veil of ignorance, Dworkin’s resource egalitarianism, Roemer’s equality of opportunity, Marxian exploitation, and Nozickian procedural justice. Some discussion of American economic inequality, Nordic social democracy, and the politics of inequality.  Recommended preparation: intermediate microeconomics.

*ep&e 353b/ints 363b/plsc 305b, CRITIQUE OF POLITICAL VIOLENCE.
Boris Kapustin.
Th 1.30-3.20 So (0) Core
Methods of conceptualizing political violence that are prevalent in contemporary political philosophical discourse. Use of theoretical-analytical tools to examine the modes violence assumes and the functions it performs in modern political life as well as the meanings and possibilities of nonviolence in politics.  
(Formerly ep&e 416a)

*ep&e 357a, MODERNITY AND BEYOND.  Maurizio d’Entreves.
T 3.30-5.20 Hu (0) Core
Analysis of transformations that societies worldwide have undergone since the 1970s through critical examination of the debates on modernity and modernization, postmodernism, and globalization.

*ep&e 363b/plsc 316b, ETHICS OF PUBLIC RESPONSIBILITY.
Roy Tsao.
ThTh 1-2.15 So (0) Core
Ethical questions pertaining to the nature of political leadership and public accountability. Readings from classic texts and contemporary writings in political theory, including works by Plato, Machiavelli, Burke, Mill, and Weber.

*ep&e 366b/plsc 152b, GLOBAL FIRMS AND NATIONAL GOVERNMENTS.
Joseph LaPalombara.
For description see under Political Science.  Core

ep&e 368bG/phil 328bG/plsc 293b, EUROPEAN POLITICAL THOUGHT FROM WEBER TO DERRIDA.  Maurizio d’Entreves.
ThTh 2.30-3.20, 1 hTBA So (0) Core
A survey of major themes in twentieth-century Continental political thought. Topics include reason and rationalization in modernity; legality, legitimacy, and
sovereignty; decline of the public sphere; origins of totalitarianism; and com-
municative ethics and the inclusion of the “other” in the new Europe. Readings
from Max Weber, the Frankfurt school, Walter Benjamin, Hannah Arendt, Mar-
tin Heidegger, Carl Schmitt, Jürgen Habermas, and Jacques Derrida.

CRITICS. Douglas Rae.
For description see under International Studies. Core

*EP&EE 372b/PHIL 461b, NORMATIVE ECONOMICS AND MORAL
PHILOSOPHY. Daniel Hausman.
T 3:30-5:20 So (o) Core
Moral dimensions of the policy questions with which normative economists grapple. Ethical presuppositions of the approaches to policy evaluation that economists favor. Alternative criteria for policy evaluation and their practical implications.

*EP&EE 373b/AFST 403b/PLSC 403b, THE POLITICS OF HUMAN RIGHTS.
Ato Kwamena Onoma.
For description see under Political Science. Core

*EP&EE 374b/PLSC 423b, POLITICAL ECONOMY OF POVERTY
ALLEVIGATION. Ana De La O.
For description see under Political Science. Core

*EP&EE 375a/PHIL 450aG/PLSC 326aG, POLITICAL THEORY AND
MEMBERSHIP. Seyla Benhabib.
For description see under Political Science. Core

*EP&EE 376a/ECON 486a, TOPICS IN LABOR ECONOMICS.
Kenneth Couch.
For description see under Economics. Core

For description see under Economics. Core

*EP&EE 378b/PHIL 456bG, TOPICS IN FEMINIST PHILOSOPHY.
Rae Langton.
For description see under Philosophy. Core

*EP&EE 379b/PHIL 458bG/PLSC 157b, PHILOSOPHY AND POLITICS:
GLOBAL HEALTH. Thomas Pogge.
For description see under Philosophy. Core

*EP&EE 380b/PLSC 313b, BIOETHICS, POLITICS, AND ECONOMICS.
Stephen Latham.
Th 1:30-3:20 (o) Core
Ethical, political, and economic aspects of a number of contemporary issues in biomedical ethics. Topics include abortion, assisted reproduction, end-of-life care, research on human subjects, and stem cell research.

*EP&EE 411b/PLSC 287b, DEMOCRACY AND DISTRIBUTION. Ian Shapiro,
Michael Graetz.
For description see under Political Science.

*EP&EE 413a or b/ECON 470a or b, TOPICS IN AMERICAN ECONOMIC
HISTORY. Benjamin Chabot.
For description see under Economics.
ep&e 442b/hist 133b/intp 345b, Strategic, Political, and Moral Dilemmas of the Nuclear Age. Jonathan Schell.
For description see under International Studies.

INDIVIDUAL RESEARCH AND SENIOR ESSAY COURSES

*ep&e 471a or b, Directed Reading and Research. Consult the director of undergraduate studies.
HTBA (0)
For individual reading and research unrelated to the senior essay. Students must obtain the signature of the faculty member supervising their independent work on an Independent Study Form (available from the Ethics, Politics, and Economics registrar’s office). This form must be submitted to the director of undergraduate studies at the time the student’s class schedule is submitted.

*ep&e 491a or b, The Senior Essay. Consult the director of undergraduate studies.
HTBA (0)
A one-term senior essay. One term of ep&e 491a or b may also be combined with a seminar for a two-term senior essay. The senior essay should fall within the student’s area of concentration. If no appropriate seminar is offered in which the essay might be written, the student, in consultation with the director of undergraduate studies, should choose an appropriate member of the faculty to supervise the senior essay.

Students must obtain the signature of the faculty member supervising their independent work on an Independent Study Form (available from the Ethics, Politics, and Economics registrar’s office). This form must be submitted to the director of undergraduate studies at the time the student’s class schedule is submitted.

*ep&e 492, The Yearlong Senior Essay. Consult the director of undergraduate studies.
HTBA (0)
A two-term senior essay. The senior essay should fall within the student’s area of concentration. The student, in consultation with the director of undergraduate studies, should choose an appropriate member of the faculty to supervise the senior essay.

Students must obtain the signature of the faculty member supervising their independent work on an Independent Study Form (available from the Ethics, Politics, and Economics registrar’s office). This form must be submitted to the director of undergraduate studies at the time the student’s class schedule is submitted.

GRADUATE AND PROFESSIONAL SCHOOL COURSES OF INTEREST TO UNDERGRADUATES

Some graduate and professional school courses are open to qualified undergraduates and may be of interest to EP&E majors (e.g., courses in the Schools of Nursing, Forestry & Environmental Studies, Management, and Public Health). Permission to enroll is required from the instructor as well as the appropriate representative of the graduate or professional program. Note that not all professional school courses yield a full course credit in Yale College. (See “Courses in the Yale Graduate and Professional Schools” in chapter III, section K.)
The program in Ethnicity, Race, and Migration enables students to combine a disciplinary requirement of a first major with an interdisciplinary, comparative study of forces that have created a multicultural, multiethnic, and multiracial world. The major emphasizes familiarity with the intellectual traditions and debates surrounding the concepts of ethnicity, nationality, and race; grounding in both the history of migration and its contemporary manifestations; and knowledge of the cultures, structures, and peoples formed by these migrations.

Second major. Ethnicity, Race, and Migration can be taken only as a second major. Students combine Ethnicity, Race, and Migration with a major that coordinates with research into ethnicity and migration. They should consult the director of undergraduate studies early in their academic careers about other departments that meet this criterion. Departments or programs that already have concentrations of courses dealing with ethnic issues—African American Studies, African Studies, American Studies, Anthropology, English, History, Literature, Political Science, Sociology, and Women’s, Gender, and Sexuality Studies—are particularly appropriate, but a student may choose any traditional discipline that provides the tools for a rigorous senior project in Ethnicity, Race, and Migration. Course selections and choices of linked majors must be approved by the appropriate directors of undergraduate studies.

In working out programs for their two majors, students should note that, in accordance with the academic regulations concerning two majors (see
“Two Majors” in chapter III, section K), each major must be completed independently, with no more than two term courses overlapping. This overlap must not be in the senior essay or senior project unless the essay or project is unusually substantial and represents at least the equivalent of the minimum essay or project requirement of the one major in addition to the minimum essay or project requirement of the other major.

Permission to complete two majors must be secured from the Committee on Honors and Academic Standing; forms are available from the residential college deans. Assistance in completing the form is available from the director of undergraduate studies in Ethnicity, Race, and Migration.

Requirements of the major. In addition to fulfilling the requirements of the other major, a student must complete twelve term courses in Ethnicity, Race, and Migration, including the senior seminar and the senior essay or project. There are no prerequisites.

Introductory course. ER&M 200b offers an introduction to the issues and disciplines involved in the study of ethnicity, race, and migration. Students interested in the major should take this course early in their studies, preferably during the sophomore year.

Area of concentration. In consultation with the director of undergraduate studies, each student defines an area of concentration consisting of six term courses including the one-term senior essay or project. Advanced work in the foreign language related to a student’s area of concentration is advised.

Distributional requirements. In order to acquire a comparative sense of ethnicity, race, and migration, students are expected to take at least two courses in each of two distinct geographic areas. To gain familiarity with global movements of people within and across national borders, majors must take at least one course that examines historical or contemporary migrations. Students must also demonstrate evidence of interdisciplinary work related to ethnicity, race, and migration in at least two departments or academic fields.

As a multidisciplinary program, Ethnicity, Race, and Migration draws on the resources of other departments and programs in the University. Students are encouraged to examine the offerings of other departments in both the humanities and the social sciences, interdisciplinary programs of study housed in the MacMillan Center and elsewhere, and residential college seminars for additional relevant courses. The stated area of concentration of each student determines the relevance and acceptability of other courses. Majors are encouraged to pursue academic research and other experiences abroad.

Senior requirement. Students must take the senior colloquium (ER&M 491a) on theoretical and methodological issues and complete a one-term senior essay or project (ER&M 492b).

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:** 12 term courses (incl senior req)

**Specific course required:** ER&M 200b

**Distribution of courses:** 6 term courses in area of concentration (1 term of senior req may count); at least 2 term courses in each of 2 distinct geographic areas; at least 1 term course on historical or contemporary migrations; at least 2 term courses demonstrating interdisciplinary engagement with ethnicity, race, and migration

**Senior requirement:** Senior sem (ER&M 491a) and senior essay or project (ER&M 492b)
INTRODUCTORY COURSE

ER&M 200b, INTRODUCTION TO ETHNICITY, RACE, AND MIGRATION.
Alicia Schmidt Camacho.
MW 11:35-12:30 Hu, So (0)
Historical roots of contemporary ethnic and racial formations and competing theories of ethnicity, race, and migration. Cultural constructions and social practices of race, ethnicity, and migration in the United States and around the world.

ELECTIVES WITHIN THE MAJOR

ER&M 180a/e&eb 118a, HUMAN GENETIC VARIATION AND EVOLUTION.
Kenneth Kidd.
For description see under Biology.

ER&M 190a/amst 192a, WORK AND DAILY LIFE IN GLOBAL CAPITALISM.
Michael Denning.
For description see under American Studies.

ER&M 223b/amst 230b/hist 137b, INTERNATIONAL HISTORY OF THE UNITED STATES IN THE TWENTIETH CENTURY. Seth Fein.
For description see under History.

ER&M 230b/anth 210b, TWENTIETH-CENTURY ANTHROPOLOGICAL THEORY. Staff.
For description see under Anthropology.

ER&M 231b/amst 229b/hist 183a, ASIAN AMERICAN HISTORY, 1800 TO THE PRESENT. Mary Lui.
For description see under American Studies.

ER&M 232a/amst 235a/hist 143Ja, INDIAN-COLONIAL RELATIONS IN COMPARATIVE PERSPECTIVE. Alyssa Mt. Pleasant.
For description see under American Studies.

ER&M 233b/afam 403a/thst 431a, BLACK FEMINIST MUSICAL SUBCULTURES. Daphne Brooks.
For description see under African American Studies.

ER&M 265b/span 247b, CULTURAL STUDIES: LATIN AMERICA. Staff.
For description see under Spanish.

For description see under History.

ER&M 300a/engl 328a/litr 270a, FICTION WITHOUT BORDERS.
Shameem Black.
For description see under English Language & Literature.

*ER&M 322a/amst 325a/hist 143Ja, INDIAN-COLONIAL RELATIONS IN COMPARATIVE PERSPECTIVE. Alyssa Mt. Pleasant.
For description see under American Studies.

*ER&M 331a/afam 403a/thst 431a, BLACK FEMINIST MUSICAL SUBCULTURES. Daphne Brooks.
For description see under African American Studies.

*ER&M 332b/afam 374b/amst 374b, BLACK TRAVEL AND TRANSNATIONALITY. Naomi Pabst.
For description see under African American Studies.
ER&M 336a/AFAM 400a/FILM 422a, Black American Paris.
Terri Francis.
For description see under African American Studies.

ER&M 340a/ANTH 207a, Peoples and Cultures of Latin America.
Enrique Mayer.
For description see under Anthropology.

ER&M 341a/HIST 358a, Mexico in the Nineteenth and Twentieth Centuries.
Gilbert Joseph.
For description see under History.

*ER&M 342b/HIST 372Jb, Revolutionary Change in Twentieth-Century Latin America.
Gilbert Joseph.
For description see under History.

*ER&M 344a/AFAM 367a/AMST 431a/WGSS 455a, Representation and the Black Female.
Hazel Carby.
For description see under African American Studies.

*ER&M 345b/AFAM 415bG/AMST 415b/SOCY 366bG, Race, Racisms, and Social Theory.
Alondra Nelson.
For description see under Sociology.

ER&M 348a, Music and Performance from the Hispanophone Caribbean.
Alexandra Vázquez.
W 2.30-4.20 Hu (o)
Survey of the musical cultures of Puerto Rico, the Dominican Republic, and Cuba. The development of music against specific histories of conquest, colonialism, and U.S. intervention. The effects of transnational migration on musical performance and reception. Readings from novels, theoretical texts, and social histories.

ER&M 349a/AMST 376a/FILM 376a, Asian American Film and Video.
Denise Khor.
W 3.30-5.20; screenings T 7 P.M. Hu (o)
Introduction to films and videos, both fiction and nonfiction, that address the histories of Asian Americans. Topics include diaspora and globalzation, politics of representation and identity, cross-racial relations, war and refugee communities, and social movements.

Jasmina Beširević-Regan.
For description see under Sociology.

ER&M 367a/ENGL 369a/WGSS 369a, Adoption Narratives.
Margaret Homans.
For description see under English Language & Literature.

ER&M 390a/AMST 411a/HIST 165Ja, The Idea of the Western Hemisphere.
Seth Fein.
For description see under History.

ER&M 410b/AMST 412b/FILM 405b/HIST 164Jb, Film and History.
Seth Fein.
For description see under History.

ER&M 430a/AMST 450a, Islam in the American Imagination.
Zareena Grewal.
M 1.30-3.20 So Meets RP (o)
The representation of Muslims in the United States and abroad throughout the twentieth century. The place of Islam in the American imagination; intersections between concerns of race and citizenship in the United States and foreign policies directed toward the Middle East.

*ER&M 447b/*AMST 409b/*HIST 163Jb, NORTHEASTERN NATIVE AMERICA, 1850 TO TODAY. Alyssa Mt. Pleasant.
For description see under American Studies.

AFAM 162b/AMST 162b/HIST 187b, AFRICAN AMERICAN HISTORY: FROM EMANCIPATION TO THE PRESENT. Jonathan Holloway.
For description see under African American Studies.

*AFAM 368b/*AMST 321b, INTERRACIALITY AND HYBRIDITY. Naomi Pabst.
For description see under African American Studies.

For description see under American Studies.

*AMST 380a/*FILM 339a, CULTURAL ENCOUNTERS IN AMERICAN FILM. Zareena Grewal.
For description see under American Studies.

ANTH 170b, CHINESE CULTURE, SOCIETY, AND HISTORY. Helen Siu.

ANTH 282b, SPORT, SOCIETY, AND CULTURE. William Kelly.

*ANTH 414b, URBAN ANTHROPOLOGY AND GLOBAL HISTORY. Helen Siu.

*ECON 465a/*EP&E 377a, DEBATING GLOBALIZATION. Ernesto Zedillo.
For description see under Economics.

*ENGL 343a/*AFST 343a/*LITR 269a, INTRODUCTION TO POSTCOLONIAL LITERATURES. El Mokhtar Ghambou.
For description see under English Language & Literature.

*ENGL 345b/*HUMS 401b, ORIENTALISM. El Mokhtar Ghambou.
For description see under English Language & Literature.


HIST 310a, HISTORY OF MODERN SOUTH ASIA. Mridu Rai.

HIST 323b, SOUTHEAST ASIA SINCE 1900. Benedict Kiernan.

HIST 325a, RACE, SPIRITUALITY, AND REVOLUTION IN THE CARIBBEAN. Lillian Guerra.

*HIST 377Jb, TRANSNATIONALISM IN THE CARIBBEAN. Lillian Guerra.

*INTS 387a/*PLSC 407a, THE POLITICS OF NATIONALISM AND ETHNICITY. Matthew Kocher.
For description see under International Studies.

PLSC 223b/AFAM 332b, ETHNIC POLITICS IN THE UNITED STATES. Khalilah Brown-Dean.
For description see under Political Science.
**plsc 264b, Big City Politics in America: New York, Los Angeles, Chicago.** Cynthia Horan.

**socy 143a, Race and Ethnicity.** Averil Clarke.

**wgss 295b, Globalizing Gender.** Geetanjali Singh Chanda.

**wgss 296a, Introduction to LGBT Studies.** Graeme Reid, Shana Goldin-Perschbacher.

**wgss 371a/amst 322a, Gender, Family, and Cultural Identity in Asia and the United States: A Dialogue.**
Geetanjali Singh Chanda.
For description see under Women’s, Gender, & Sexuality Studies.

**INDIVIDUAL RESEARCH AND SENIOR ESSAY COURSES**

**er&m 471a and 472b, Individual Reading and Research for Juniors and Seniors.** Director of undergraduate studies.

**HTBA (O)**
For students who wish to cover material not otherwise offered by the program. The course may be used for research or for directed reading. In either case a term paper or its equivalent is required. Students meet regularly with a faculty adviser. To apply for admission, students submit a prospectus signed by the faculty adviser to the director of undergraduate studies.

**er&m 491a, The Senior Colloquium: Theoretical and Methodological Issues.** Patricia Pessar.

T 1:30-3:20 (O)
A research seminar intended to move students toward the successful completion of their senior projects, combining discussions of methodological and theoretical issues with discussions of students’ fields of research.

**er&m 492b, The Senior Essay or Project.** Patricia Pessar.

Th 1:30-3:20 (O)
Independent research on a one-term senior essay or project.

**FILM STUDIES**

Director of undergraduate studies: Terri Francis, Room 218, 53 Wall St., 432-7193, terri.francis@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF FILM STUDIES**

**Professors**

*D Dudley Andrew (Co-chair) (Comparative Literature, Film Studies), Ora Avni (French), Hazel Carby (African American Studies, American Studies), Francesco Casetti (Humanities, Film Studies) (Visiting), *Katerina Clark (Comparative Literature, Slavic Languages & Literatures), Michael Denning (American Studies, English), Thomas Elsaesser (Film Studies) (Visiting), *John Mack Faragher (History), Benjamin Harshav (Comparative Literature), *David Joselit (History of Art), Stathis Kalyvas (Political Science), *Thomas Kavanagh (French), John MacKay (Film Studies, Slavic Languages & Literatures), *Millicent Marcus (Italian), Donald Margulies (Adjunct) (English, Theater Studies), Giuseppe Mazzotta (Italian), Christopher L. Miller (African American Studies, French), *Charles Musser (Co-chair) (American Studies, Film Studies), Alexander Nemirov (History of Art), Brigitte Peucker (German, Film Studies), Joseph Roach (English, Theater Studies), *Michael Roemer (Adjunct) (Art, American Studies), John Szewed (Emeritus) (Anthropology, African American Studies), Alan Trachtenberg (Emeritus) (English, American Studies), *Katie Trumpener (Comparative Literature, English), Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)
ASSOCIATE PROFESSORS
  *Murray Biggs (Adjunct) (English, Theater Studies), *Noa Steimatsky (Film Studies, History of Art)

ASSISTANT PROFESSORS
  *Seth Fein (American Studies, History), *Terri Francis (African American Studies, Film Studies), *Aaron Gerow (East Asian Languages & Literatures, Film Studies), Karen Nakamura (Anthropology)

SENIOR LECTURERS
  *Ron Gregg (Film Studies), *Richard Maxwell (Comparative Literature, English)

LECTURERS
  Ashish Chadha (Anthropology), James Charney (School of Medicine), *John Crowley (English), Zareena Grewal (Ethnicity, Race, & Migration), *Chris Hegedus (Film Studies), *Michael Kerbel (American Studies), Denise Khor (Ethnicity, Race, & Migration, Film Studies), *Marc Lapadula (Film Studies), *D. A. Pennebaker (Film Studies)

CRITICS
  *Jonathan Andrews (Art, Film Studies), *Sandra Luckow (Art)

SENIOR LECTOR II
  Risa Sodi (Italian)

SENIOR LECTORS
  Seungja Choi (East Asian Languages & Literatures), Karen von Kunes (Slavic Languages & Literatures)

*Member of the Film Studies Committee.

Film Studies is an interdisciplinary major that focuses on the history, theory, and criticism of film. Courses examine cinema’s role as a unique modern art form and the contributions of moving image media as cultural practices of enduring social significance. Film Studies offers students latitude in defining their course of study within the framework established by the Film Studies Committee. With this freedom comes the responsibility of carefully planning a coherent and well-focused program. Because of the special demands of Film Studies and the diversity of its offerings, potential majors are encouraged to consult with the director of undergraduate studies early in their academic careers.

The major in Film Studies consists of fourteen term courses, including the prerequisite. A maximum of one course taken on a Credit/D/Fail basis may be counted toward the requirements of the major with permission of the director of undergraduate studies.

Prerequisite. Students normally take FILM 150A, Introduction to Film Studies, in their freshman or sophomore year. It is a prerequisite for many other courses in the major.

Required courses. Students are required to take FILM 320B, Close Analysis of Film, preferably during their sophomore year. They must also take either FILM 330B, Film Theory and Aesthetics, or FILM 340A, Issues in Contemporary Film Theory, preferably by the end of their junior year. Students are encouraged to take both. In addition, students must devote two term courses, preferably upper-level courses, to the study of representative films from at least two different nations or cultures (for example, German expressionist cinema, Italian cinema, American comedy).

Students must take one term course on the creative process in film. Appropriate courses are listed under “Production Seminars,” but other courses in art, theater studies, or creative writing may be substituted with the permission of the director of undergraduate studies.
Area of concentration. With the help of the director of undergraduate studies in Film Studies, each student defines an area of concentration comprising six courses. The six courses should form a coherent program in which the study of film is integrated with a particular discipline (history of art, literature, philosophy, the social sciences) or area of investigation (film theory, production, race and gender, photography, national or regional cultures and their cinemas). The focus of the concentration might also be a given historical or theoretical problem drawn from two areas, such as German expressionism in film and in art or narrative theory in film and in the novel. Students choosing a production-related concentration often start by completing ART 141a or b and/or FILM 350a or b by the end of their sophomore year, and continue with ART 341a or b and/or FILM 395b by the end of their junior year, to prepare for FILM 435, 483, or 487 in their senior year. They must take at least seven critical studies courses in the major. FILM 150a, 320b, 330b, 340a, and the two required courses on national cinemas may be counted among the seven. Critical studies courses are defined as those not listed under “Production Seminars.”

Senior requirement. During the senior year, each student takes one or two senior-level seminars or the equivalent and submits a senior essay or senior project, which should represent a culmination of work in the major and in Yale College. For the student writing a senior essay, several options are possible. First, the student may enroll in two terms of relevant senior-level seminars (usually courses numbered in the 400s) and write a substantial term paper of twenty-five pages, double-spaced, for one of these courses. Second, the student may do independent research on a yearlong senior essay (FILM 491a, 492b). This option is intended for students with clearly defined topics that do not relate closely to a senior-level seminar. During the first two weeks of the first term of senior year, a petition for permission to do independent research should be submitted to the director of undergraduate studies in the form of a brief prospectus, approved by the proposed faculty adviser to the essay. Such research receives two terms of credit; the product of a two-term research essay is a work of at least fifty pages. Third, the senior requirement may be completed by combining one single-term senior-level seminar with one term of an independent research project (FILM 491a or 492b), resulting in a paper of thirty-five pages. Whichever option is chosen, the essay should be written on a topic informed by the student’s area of concentration. In researching and writing the essay, the student should consult regularly with the seminar instructor, supplying preliminary drafts as appropriate, and may consult with other faculty members as well.

Students who wish to complete a senior project as an alternative to an essay petition the Film Studies Committee for approval of their project at the end of the junior year. Alternative projects might include writing a screenplay in Advanced Screenwriting (FILM 487) or producing a video. Students electing such an alternative should note that the project must be undertaken and accomplished over two terms. A limited number of students making films or videos are admitted to either the Fiction Film Workshop (FILM 483) or the Documentary Film Workshop (FILM 455), and receive three credits for their projects (two credits for FILM 483 or 455, and one for FILM 493a or 494b). Such a choice effectively commits students to one extra course in addition to the fourteen courses required for the major, because FILM 493a or 494b does not count toward the fourteen required courses when taken in conjunction with FILM 483 or 455. Students may undertake
a production project outside the workshops if (1) the Film Studies Commit-
fee approves their petition, (2) they have found a primary adviser qualified
and willing to provide the necessary supervision, and (3) they have identified
the equipment necessary to execute the project. Such students may count
film 493a and 494b toward the fourteen courses required for the major.

Majors graduating in December must submit their senior essays or senior
projects to the director of undergraduate studies by December 1; those grad-
uating in May, by April 20. A second reader assigned by the director of under-
graduate studies participates in evaluating the essay or project. In order to
graduate from Yale College, a student majoring in Film Studies must achieve
a passing grade on the senior essay or senior project.

Admission to senior-level seminars is at the instructor’s discretion, but the
Film Studies program will ensure that every senior major gains admission to
the required number of seminars.

The intensive major. Students of substantial accomplishment and commit-
ment to film studies may wish to pursue the intensive major. Students in the
intensive major complete a senior project in production and also write a
senior essay on an unrelated topic. The intensive major in Film Studies is
intended for students who are not pursuing two majors. Students must
request approval from the Film Studies Committee at the end of their junior
year by submitting a proposal that outlines their objectives and general area
of study.

All majors. Study of relevant foreign languages is urged for all Film Studies
majors. Students considering graduate work should become proficient in
French or another modern language. Those choosing to study film in rela-
tion to a foreign culture must have good listening and reading abilities in
that language.

Film Studies draws on the resources of many other departments and pro-
grams in the University. Students are encouraged to examine the offerings of
other departments in both the humanities and the social sciences, as well as
residential college seminars, for additional relevant courses. The stated area
of concentration for each student normally determines the relevance and ac-
ceptability of other courses.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** FILM 150a

**Number of courses:** 14 term courses, incl prereq and senior req

**Distribution of courses:**
- 6 courses in area of concentration;
- 2 courses in different
  national cinemas;
- 1 production course; if concentration is production-related, at least
  7 critical studies courses

**Specific courses required:** FILM 320b, and either 330b or 340a

**Senior requirement:** 2 terms of senior-level sems, or 2 terms of senior essay (FILM
491a, 492b), or 1 term of each; or 2 terms of senior project (FILM 435 or 483 or 487)

**Intensive major:** Both senior essay and senior project

**REQUIRED COURSES**

FILM 150a, INTRODUCTION TO FILM STUDIES. Aaron Gerow.

MWF 11.35-12.25; screenings T 7 or 9.30 p.m. WR, Hu (34)

A survey of film studies concentrating on theory, analysis, and criticism. Students
learn the critical and technical vocabulary of the subject and study important
films in weekly screenings. **Prerequisite for the major.**
*FILM 320b/HSAR 490b, Close Analysis of Film.

Noa Steimatsky.

T 1:30-3:20; screenings M 6:30 P.M. Hu (26)

Exploration of ways in which traditional genres and alternative film forms establish or subvert convention and expectation in thematic and ideological concerns, narrative containment and excess, the representation of the body, the use of music and voice, and the construction of space in the cinema. Close analysis of expressive techniques of cinematic image and sound in a selection of Hollywood and European films. Prerequisite: FILM 150a.

[FILM 330b, Film Theory and Aesthetics]

FILM 340a/HUMS 257a/LITR 352a, Issues in Contemporary Film Theory. Francesco Casetti.

MWF 10:30-11:20; screenings M 7 P.M. Hu (33)

A survey of contemporary theoretical issues in the study of film. Conceptualizations of the cinematic apparatus, the body, and the senses. After FILM 150a or LITR 300b or with permission of instructor.

NATIONAL CINEMAS

*FILM 264a/REN 230a/WGSS 262a, French Women Filmmakers.

Jean-Jacques Poucel.

For description see under French.


For description see under East Asian Languages & Literatures.


Ron Gregg.

TTh 11.35-12.25, 1 HTBA; screenings T 7 P.M. Hu (0)

Examination of how globalization and the global success of American films have affected Hollywood film production, stardom, distribution, and exhibition, as well as the aesthetics of film image, sound, and narration. Topics also include the effects of new digital technologies on film aesthetics, spectacle, spectatorship, and exhibition, and the responses of independent and other national cinemas to Hollywood’s hegemony.

*FILM 339a/AMST 380a, Cultural Encounters in American Film.

Zareena Grewal.

For description see under American Studies.

FILM 366a/HIST 224a/HUMS 251a/ITAL 323a, Modern Italy: History and Film. Millicent Marcus, Frank Snowden.

For description see under History.

*FILM 376a/AMST 376a/ER&M 349a, Asian American Film and Video.

Denise Khor.

For description see under Ethnicity, Race, & Migration.


For description see under History of Art.

*FILM 427a/AMST 319a, American Documentary Films.

Michael Roemer.

For description see under American Studies.
**FILM 438b/AMST 416b, U.S. Cinema from 1960 to the Mid-1970s.**
Michael Kerbel.
For description see under American Studies.

**FILM 441b/LITR 391b/RSEE 321b/RUSS 245b, Russian Film.**
John MacKay.
For description see under Literature.

**FILM 448a/JAPN 271a, Japanese Cinema after 1960.**
Aaron Gerow.
For description see under East Asian Languages & Literatures.

**FILM 442b/AMST 461b, D. A. Pennebaker and Contemporary Documentary.**
Charles Musser.
For description see under American Studies.

**FILM 452b/G/AMST 461b, D. A. Pennebaker and Contemporary Documentary.**
Charles Musser.
For description see under American Studies.

**FILM 461a/ENGL 384a, British Cinema.**
Katie Trumpener.
M 1.30-3.20; screenings Su 7 p.m. Hu (o)
Survey of the British film tradition, emphasizing overlaps with literature, drama, and art; visual modernism; documentary’s role in defining national identity; “heritage” filmmaking and alternative approaches to tradition; and auteur and actors’ cinema.

**FILM 462a/LITR 375a, Realist French Film: Renoir, Bazin, Rohmer.**
Dudley Andrew.
Th 9.25-11.15 Hu Meets RP (o)
Examination of an abundance of Bazin’s critical writings, alongside an analysis of the filmmaker he most revered, Renoir, and the one he most influenced, Rohmer.
Reading knowledge of French required.

**FILM 466b/GMST 370b/LITR 370b, The Films of Fassbinder, Herzog, and Wenders.**
Brigitte Peucker.
T 3.30-5.20; screenings M 7 p.m. Hu (o)
Close study of the three major directors of the New German Cinema. Topics include questions of authorship, cultural politics, intermediality, and postmodernism. Readings in English; conducted in English.

[FILM 468b/GMAN 405b/GMST 405b/LITR 394b, Weimar Cinema]

**FILM 469b, Italian Cinema.**
Risa Sodi.

**FILM 470b/AFAM 200b, Spike Lee.**
Terri Francis.
F 1.30-3.20; screenings Th 7 p.m. Hu (36)
Survey of Spike Lee’s films and writings, in the contexts of African American cultural movements and American independent films.

**FILM 310b/LITR 333b, Theory of TV and Media.**
John MacKay.
MWF 1.30-2.20 Hu (36)
Consideration of major issues in the study of visual and aural media, with a focus on screen- and console-based forms such as film, radio, television, and the Internet. Topics include theories of medium as they relate to theories of media; the interrelationships between television, cinema, radio, and the Internet; newsreel, documentary, and TV news; and the interactions between mass media and alternative visual practices.

**FILM 318b/PLSC 352b, Politics and Film.**
Stathis Kalyvas.
For description see under Political Science.
FILM 326b/ANTH 202b, SOUTH ASIAN ANTHROPOLOGY THROUGH DOCUMENTARIES. Ashish Chadha.
For description see under Anthropology.

*FILM 344b/PSYC 404b, PSYCHOPATHOLOGY IN FILM. James Charney.
For description see under Psychology.

FILM 353a/HSAR 344a, THE MUSICAL FILM. Noa Steimatsky.
For description see under History of Art.

*FILM 354b/AMST 328b/THST 328b, STAGE AND SCREEN. Charles Musser.
For description see under Theater Studies.

FILM 362b/FREN 384b/ITAL 384b/JDST 289b/LITR 338b, REPRESENTING THE HOLOCAUST. Maurice Samuels, Millicent Marcus.
For description see under French.

*FILM 363b/LITR 360b, LATIN AMERICAN CINEMA. Moira Fradinger.
W 1:30-3:20; screenings W 7 P.M. Hu (o)
An introductory overview of Latin American cinema, with an emphasis on post–World War II films produced in Cuba, Argentina, Brazil, and Mexico. Examination of each film in its historical and aesthetic aspects, and in light of questions concerning national cinema and “third cinema.” Examples from both pre-1945 and contemporary films. Conducted in English; knowledge of Spanish and Portuguese helpful but not required.

*FILM 364a/CZEC 246a/RSEE 240a, MILOS FORMAN AND HIS FILMS. Karen von Kunes.
For description see under Slavic Languages & Literatures.

*FILM 375a/AMST 375a/WGSS 375a, INTRODUCTION TO QUEER CINEMA. Ron Gregg.
Th 3:30-5:20; screenings M 7 P.M. Hu (o)
An introduction to queer film history. Focus on LGBTQ representation in Hollywood and experimental film from its beginning to the present, placed in social and political context. Topics include the impact of censorship, codes used to connote homosexuality, and how gay and antigay politics have affected representation.

[FILM 377a/AMST 352a/WGSS 454a, POSTWAR QUEER AVANT-GARDE FILM]

*FILM 390b/AMST 390b/LITR 390b, GENRE STUDY: THE WESTERN. Aaron Gerow.
Th 1-2.15 Hu (o)
An exploration of approaches to film genre, using the Western as a case study. Ways in which the Western has served to define the concept of genre; attempts by scholars to delineate what is and is not a Western. The Western genre’s relationship to other media and to the American West; its usage in defining American and racial identity. Native American, European, and Japanese attempts to critique, appropriate, and redefine the Western.

*FILM 405b/AMST 412b/ER&M 410b/HIST 164Jb, FILM AND HISTORY. Seth Fein.
For description see under History.

*FILM 407a/HUMS 256a/THST 357a, THE CINEMA OF WAR. Murray Biggs.
TTh 4-5:15 WR, Hu (o)
A study of the effects of military actions on combatants, civilian victims, and those left behind. Emphasis on films from or about the two world wars, with samples from Vietnam, Iraq, and other theaters.

[FILM 411A/LITR 380A, THE FILMS OF ALFRED HITCHCOCK]


T 3:30-5:20; screenings M 7 P.M. Hu (o)

An examination of the horror film genre, primarily in American cinema. Psycho-social determinants; spectatorship, affect, and identification; the uncanny and the monstrous; the body; abjection. Films by Hitchcock, Romero, Friedkin, De Palma, Carpenter, Kubrick, Cronenberg, Demme, and others.

*FILM 422A/*AFAM 400A/*ER&M 336A, BLACK AMERICAN PARIS.

Terri Francis.

For description see under African American Studies.

*FILM 432A/*AMST 222A, WORLD DOCUMENTARY. Charles Musser.

T 1:30-3:20; screenings M 7 P.M. Meets RP (o)

A survey of international documentaries that have emerged since the end of the Cold War. The new political alignments, moving image technologies, and exhibition practices that have made possible a new phase in documentary practice. Filmmakers include Chris Marker, Wu Wenguang, Agnes Varda, Anand Patwardhan, Annie Goldson, and Raoul Peck.

*FILM 472A/*HSAR 497A, BRESSON. Noa Steimatsky.

For description see under History of Art.


Dudley Andrew, David Bromwich.

T 1:30-3:20; screenings M 7 P.M. Hu (o)

A cultural interchange between France and the United States during the middle of the twentieth century. Focus on film, fiction, and criticism, with some attention to jazz. Discussion of how the arts of each culture were received by the other and what effects this had on cultural politics and artistic style.

*ANTH 402A, VISUAL ANTHROPOLOGY AND ETHNOGRAPHIC FILM.

Karen Nakamura.

LITR 300B/ENGL 300B, INTRODUCTION TO THEORY OF LITERATURE.

Paul Fry.

For description see under Literature.

PRODUCTION SEMINARS

[FILM 170B, MODES OF FILMMAKING]

[FILM 340A, SCRIPT TO SCREEN]

*FILM 350A or b, SCREENWRITING. Marc Lapadula.

350A: W 3:30-5:20 (o)

350B: TH 9:25-11:15 (o)

A beginning course in screenplay writing. Foundations of the craft introduced through the reading of professional scripts and the analysis of classic films. A series of classroom exercises culminates in intensive scene work. Prerequisite: FILM 150A. Not open to freshmen.
A workshop in writing short screenplays. Frequent revisions of each student’s script focus on uniting narrative, well-delineated characters, dramatic action, tone, and dialogue into a polished final screenplay. **Prerequisite:** Film 350a or b. 

Priority to Film Studies majors.

A workshop designed primarily for Film Studies majors making documentaries as senior projects. **Seniors in majors other than Film Studies admitted as space permits.**

Students write a feature-length screenplay. Emphasis on multiple drafts and revision. Admission in the fall term based on acceptance of a complete step-sheet outline for the story to be written during the coming year. **Primarily for Film Studies majors working on senior projects. Prerequisite:** Film 395b or permission of instructor.

For description see under Art.

Students write a feature-length screenplay. Emphasis on multiple drafts and revision. Admission in the fall term based on acceptance of a complete step-sheet outline for the story to be written during the coming year. **Primarily for Film Studies majors working on senior projects. Prerequisite:** Film 395b or permission of instructor.

For description see under Art.

For description see under Art.

For description see under English Language & Literature.

**MUSI 325a, Fundamentals of Music, Multimedia Art, and Technology.** Michael Klingbeil.

**THST 111b, Survey of Theater and Drama.** Marc Robinson.

**THST 321a, Production Seminar: Playwriting.** Deb Margolin.

**THST 322b, Advanced Playwriting.** Deb Margolin.

**THST 324b, Playwright-Director Laboratory.** Toni Dorfman.

**INdIVIDUAL RESEARCH AND SENIOR ESSAY COURSE OR PROJECT**

**FILM 471a or b, Independent Directed Study.** Director of undergraduate studies.

HTBA
For students who wish to explore an aspect of film studies not covered by existing courses. The course may be used for research or directed readings and should include one lengthy essay or several short ones as well as regular meetings with the adviser. To apply, students should present a prospectus, a bibliography for the work proposed, and a letter of support from the adviser to the director of undergraduate studies. Term credit for independent research or reading may be granted and applied to any of the requisite areas upon application and approval by the director of undergraduate studies.

*Film 491a and 492b, The Senior Essay. Director of undergraduate studies.

HTBA (O)
An independent writing and research project. A prospectus signed by the student’s adviser must be submitted to the director of undergraduate studies by the end of the second week of the term in which the essay project is to commence. A rough draft must be submitted to the adviser and the director of undergraduate studies approximately one month before the final draft is due. Essays are normally thirty-five pages long (one term) or fifty pages (two terms).

*Film 493a and 494b, The Senior Project. Director of undergraduate studies.

HTBA (O)
For students making a film or video, either fiction or nonfiction, as their senior project. Senior projects require the approval of the Film Studies Committee and are based on proposals submitted at the end of the junior year. An interim project review takes place at the end of the fall term, and permission to complete the senior project can be withdrawn if satisfactory progress has not been made. For guidelines, consult the director of undergraduate studies. Does not count toward the fourteen courses required for the major when taken in conjunction with film 455 or 483.

Other courses pertinent to film

*Plsc 204a/*Ep&E 211a, Ethics and the Media. Stanley Flink.

Port 246a/Spa 245a, Latin American Film: Brazil, Mexico, and Argentina. Paulo Moreira.
For description see under Portuguese.

*Spa 223b, Spanish in Film: An Introduction to the New Latin American Cinema. Margherita Tórtora.

*Thst 345b, Dramatic Theory and Criticism. Paul McKinley.

Forestry & Environmental Studies

Program adviser: John Wargo, 301 Prospect St., 432-5123, john.wargo@yale.edu

The School of Forestry & Environmental Studies is primarily a graduate and professional program designed to train leaders to solve worldwide environmental problems and to provide new understanding of local and global environments through interdisciplinary research in the natural and social sciences. The School offers numerous courses to undergraduates in Environmental Studies, and undergraduates from any major can take courses in the School. Those undergraduates with significant interest should contact the School’s
undergraduate program adviser to discuss a joint degree program that allows Yale College students to earn both a bachelor’s degree from Yale College and an M.E.M. or M.E.Sc. degree from the School of Forestry & Environmental Studies in five years. For more information on the joint program, see the Environmental Studies Web site at [www.yale.edu/evst](http://www.yale.edu/evst). Most graduate-level courses are open to qualified undergraduates. These courses are listed in the bulletin of the School of Forestry & Environmental Studies and most also appear in the bulletin of the Graduate School of Arts and Sciences. Information about the programs of the School of Forestry & Environmental Studies may be found on the Web at [http://environment.yale.edu](http://environment.yale.edu). Most lectures and symposia are open to undergraduates.

**F&ES 012a, Urban Ecology in New Haven.** Gordon Geballe. TTh 9-10.15 (o) Fr sem
Methods from ecosystem ecology, landscape ecology, and industrial ecology applied to questions of how cities work and how they can be more sustainable. Guest speakers, community projects, and field trips in New Haven. Application of theory to New Haven and to cities around the world. *Enrollment limited to freshmen.* Preregistration required; see under Freshman Seminar Program.

**F&ES/ECON 117a/EVST 117a, Microeconomics with Environmental Applications.** Sheila Olmstead. For description see under Environmental Studies.

**F&ES 220b/EVST 220b, Local Flora.** Staff. Th 1-5 Meets RP (o)
A winter field course in the collection and identification of plants. Discussion and interpretation of the communities and ecosystems in which they occur.

**F&ES 221a/E&EB 230a/G/EVST 221a, Field Ecology.** John Cooley. For description see under Biology.

**F&ES 255b/EVST 255b/PLSC 215b, Environmental Politics and Law.** John Wargo. For description see under Environmental Studies.

**F&ES 260a/G/EVST 260a/G, Structure, Function, and Development of Vascular Plants.** Graeme Berlyn. For description see under Environmental Studies.

**F&ES 262a/EVST 262a, Ecology and Conservation.** Oswald Schmitz. For description see under Environmental Studies.

**F&ES 270a/G/EP&E 370a/INTS 330a/G/PLSC 270a, Capitalism and Its Critics.** Douglas Rae. For description see under International Studies.

**F&ES 275a/G/EVST 275a, Ecosystems Patterns and Processes.** Oswald Schmitz. For description see under Environmental Studies.

**F&ES 276La/G/EVST 276La, Laboratory for Ecosystems Patterns and Processes.** Staff. For description see under Environmental Studies.
Shimon Anisfeld.  
For description see under Environmental Studies.

f&es 315a/eeb 115a, Conservation Biology.  
John Cooley,  
Jeffrey Powell.  
For description see under Biology.

*f&es 344b/evst 344b, Aquatic Chemistry.  
Helmut Ernstberger.  
For description see under Environmental Studies.

f&es 365a/eeb 365a/evst 365a, Landscape Ecology.  
David Skelly.  
For description see under Environmental Studies.

f&es 380a/enas 443a/envl 443a, Greening Business Operations.  
Thomas Graedel, Julie Zimmerman.  
For description see under Environmental Engineering.

*f&es 384a/anth 382a/evst 345a, Environmental Anthropology.  
Carol Carpenter.  
For description see under Environmental Studies.

*f&es 389a/anth 389a/evst 389a/plsc 405a, Agriculture, Farmers, Food: Foundational Matters.  
James Scott.  
For description see under Political Science.

f&es 440b/evst 440b, Environmental Hydrology.  
James Saiers.  
For description see under Environmental Studies.

COURSES IN THE SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES

For listings and detailed descriptions of professional school courses, consult the bulletin of the School of Forestry & Environmental Studies, or see http://environment.yale.edu.

FRENCH

Director of undergraduate studies: Edwin Duval [F]; Julia Prest [Sp],  
Rm. 324, 82–90 Wall St., 432-4902, dus.french@yale.edu

FACULTY OF THE DEPARTMENT OF FRENCH

Professors  
Ora Avni, R. Howard Bloch, Edwin Duval, Marie-Héléne Girard (Visiting), Thomas Kavanagh (Chair), Christopher L. Miller (Acting Chair [F]), Maurice Samuels

Associate Professors  
Farid Laroussi, Jean-Jacques Poucel

Assistant Professors  
Julia Prest, Yue Zhuo

Senior Lecturer  
Maryam Sanjabi

Lecturers  
Diane Charney, Alyson Waters
Students who major in French become proficient in spoken and written French, gain firsthand access to the works of influential writers, philosophers, filmmakers, artists, and scientists, and acquire extensive knowledge of French and francophone literatures, societies, and cultures.

French is spoken by nearly 200 million people in more than fifty countries. It is used as an official working language in dozens of international organizations—including the United Nations, the International Monetary Fund, NATO, and the Council of Europe—and in nongovernmental organizations such as Amnesty International and Médecins Sans Frontières (Doctors Without Borders). The French major is of particular relevance to students interested in careers in international law, business, or government, all of which require advanced training in a major world language, in-depth understanding of a foreign culture, and the critical skills a liberal arts major fosters. French majors also pursue careers in fields such as communications, journalism, secondary and higher education, scientific research, medicine, museology, the fine arts, publishing, translation, fashion, and the culinary arts.

Students are encouraged to create an individual program of study and to take courses in other departments and programs, including African American Studies, African Studies, Film Studies, History, History of Art, Humanities, International Studies, Literature, Music, Philosophy, Political Science, Renaissance Studies, Theater Studies, and Women’s, Gender, and Sexuality Studies. The department is also committed to working closely with students who wish to complete a second major and those who wish to earn certification as a teacher of French through the Teacher Preparation and Education Studies program.

Students who are contemplating a major in French should consult with the director of undergraduate studies as early as possible in order to plan a coherent program of study that reflects their personal interests and goals.

Study abroad. Students are encouraged to spend a year or a term abroad, for which appropriate course credit is granted. Summer study abroad may also, in some cases, receive course credit. Further information may be obtained from the Office of International Education and Fellowship Programs (www.yale.edu/iefp) and from Ruth Koizim, the study abroad adviser for the Department of French. The Kenneth Cornell Charitable Foundation provides limited financial support for majors and prospective majors who undertake research projects related to their work in the major in France or a francophone country. Contact the director of undergraduate studies for details.

Prerequisites. Candidates for the major should take two courses in the FREN 150–159 range during the freshman and sophomore years. Prospective majors are encouraged to take at least one literature course and at least one language course numbered 160 or above before the end of the sophomore year.

The standard major. The standard major consists of twelve term courses numbered 160 or above, including the senior essay. Two courses must be advanced seminars in the FREN 300–449 range (only one of which may be a Group C course). No more than three courses may be in the FREN 160–199 range. Two term courses in Group C may count toward the major. With
prior approval of the director of undergraduate studies, a third Group C course may count toward the major for a student with an exceptionally strong background in French. With prior approval of the director of undergraduate studies, up to four term courses taught outside the department but bearing directly on the student’s principal interest may be counted toward the major. Exceptions of up to two additional term courses may be made in the case of outstanding students for courses taught in French as part of a Year or Term Abroad program. Relevant freshman seminars may count toward the major, with permission of the director of undergraduate studies. The maximum number of term courses in English that may count toward the major is five.

**Senior requirement.** Seniors must submit a senior essay, in French or in English, to the department by November 14 (fall term) or April 20 (spring term). The student normally completes the essay while enrolled in FREN 491A or B and works under the direction of a faculty adviser. A preliminary statement indicating the general area to be addressed and the name of the adviser must be submitted to the director of undergraduate studies by September 19 (fall-term essay) or November 14 (spring-term essay). A one-page prospectus and bibliography are due September 26 (fall term) or January 23 (spring term). A rough draft must be submitted to the adviser by October 24 (fall term) or March 27 (spring term). The senior essay should give evidence of careful reading and research and substantial independent thought. Its length should be about thirty pages.

*The intensive major.* The intensive major is designed for students who wish to undertake a more extensive project of research and writing during their senior year. Requirements for the intensive major are the same as those for the standard major, except that two of the twelve upper-level term courses in French are devoted to the preparation of a senior essay (FREN 493) written in French or English under the direction of a faculty adviser and presented no later than April 20 of the senior year. Students must select their subject and adviser by the end of the junior year. The senior essay for the intensive major should be about sixty pages in length. Students planning to pursue advanced work in French after graduation are encouraged to write their senior essay in French.

*All majors.* It is strongly recommended that all majors take at least one term course in the FREN 170–179 sequence. Students who intend to pursue graduate study in French should take courses pertaining to all historical eras, from the Middle Ages to the present. Majors and other qualified undergraduates may enroll in a graduate-level seminar with the approval of the director of undergraduate studies, the director of graduate studies, and the instructor.

Candidates for the major should consult the director of undergraduate studies no later than the fall term of the junior year. Schedules must be approved and signed by the director of undergraduate studies. Students planning to study abroad or to petition for completion of two majors should contact the director of undergraduate studies during the sophomore year. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

*Special Divisional Major.* The department will support the application of qualified students who wish to pursue an interdisciplinary course in French studies. Under the provisions of the Special Divisional Major, students may combine courses offered by the French department with subjects elected from other departments. Close consultation with departmental advisers is
required; candidates for a Special Divisional Major should consult the director of undergraduate studies in French by the fall term of the junior year. For further information about the Special Divisional Major see under that heading in this chapter.

**Group A courses** (FREN 110–159) consist of language courses that lead directly to courses counting toward the major. For further details, students should consult the *Freshman Handbook* or see the director of undergraduate studies.

**Group B courses** (FREN 160–449, not including Group C courses) are more advanced courses that are taught in French and count toward the major. Courses in the FREN 170–179 range are gateway courses that introduce students to the study of French and francophone literatures, societies, and cultures. Courses in the FREN 180–199 range are advanced language courses. Courses in the FREN 200–299 range make the transition from gateway courses to advanced seminars and introduce time periods, genres, and other key areas of French and francophone studies. Courses in the FREN 300–449 range are typically advanced, limited-enrollment seminars.

**Group C courses** are taught in English; readings may be in French or English. Two term courses from this group may be counted for credit toward the major.

**Group D courses** are taught in other departments but may count toward the French major, with permission of the director of undergraduate studies.

**Placement.** Proper placement is essential for productive language study. All students who have not yet taken French at Yale are expected to take the departmental placement test, with the exception of students who have no previous knowledge of French whatsoever and those whose placement has already been established by other means (see chapter II).

Please note that the departmental placement test is given only once a year, in the fall. Students who wish to begin taking French in the spring must take the test in the fall. The placement test will be given on Sunday, August 31, at 9 a.m. (last names A–M) and at 1.30 p.m. (last names N–Z) in 101 and 102 LC. Students unable to attend may take a makeup test on Monday, September 1, at 9 a.m. in 102 LC.

**Requirements of the Major**

**Prerequisites:** 2 term courses numbered FREN 150–159 or equivalent

**Number of courses:** 12 term courses numbered 160 or above

**Distribution of courses:** No more than 3 term courses numbered FREN 160–199; at least 2 term courses numbered FREN 300–449 (one must be taught in French); up to 2 term courses in Group C; maximum of 5 term courses taught in English

**Substitution permitted:** With prior approval of DUS, up to 4 term courses outside French dept

**Senior requirement:** Senior essay in French or English (FREN 491a or b)

**Intensive major:** Two-term senior essay in French or English (FREN 493)

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**Group A Courses**

Preregistration, which is required for all fall-term courses numbered from 110 to 159, is held on Tuesday, September 2, from 2 to 4 p.m. See [www.yale.edu/french](http://www.yale.edu/french) for details. Preregistration is not required for spring-term courses.

**FREN 110a and 120b, Elementary and Intermediate French.**

Matuku Ngame and staff.

5 HTBA For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) L1–L2 3 C Credits Meets RP (61) Cr/Year only
Through extensive use of audio and video material, the course provides intensive training and practice in all the language skills, with an initial emphasis on listening and speaking. Emphasis on communicative proficiency, self-expression, and cultural insights. Mandatory weekly tests given on Monday at 30-minute intervals from 5 to 8:30 p.m. To be followed by FREN 130A or B. Conducted entirely in French. Daily classroom and laboratory attendance is required. For students with no previous study of French. Preregistration required for the fall term. Credit only on completion of both terms. (Formerly FREN 115)

**FREN 121A, Intermediate French.** Marie-Dominique Boyce.

*5 HTBA* For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo)  L2  1 1/2 C Credits

Meets RP  (61)

Designed for initiated beginners, this course develops all the language skills with an emphasis on listening and speaking. Activities include role playing, self-expression, and discussions of cultural and literary texts. Emphasis on grammar review and acquisition of vocabulary. Frequent audio and video exercises. Conducted entirely in French. Daily classroom attendance is required. Placement according to placement test score. Preregistration required. (Formerly FREN 118A)

**FREN 125A, Intensive Elementary French.** Constance Sherak and staff.

*Lect. MWF 9.25-10.15; practice MTWThF 10.30-11.20; weekly test T 11.35-12.25 L1–L2 2 C Credits Meets RP  (32)*

An accelerated course that covers in one term the material taught in FREN 110A and 120B. Practice in all language skills, with emphasis on communicative proficiency. Admits to FREN 145B. For students of superior linguistic ability. Conducted entirely in French. Preregistration required. (Formerly FREN 117A)

**FREN 130A or B, Intermediate and Advanced French I.**

Ruth Koizim, Soumia Koundi, and staff.

*5 HTBA* For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo)  L3  1 1/2 C Credits

Meets RP  (61)

The first half of a two-term sequence designed to develop students’ proficiency in the four language skill areas. Prepares students for further work in literary, language, and cultural studies, as well as for nonacademic use of French. Oral communication skills, writing practice, vocabulary expansion, and a comprehensive review of fundamental grammatical structures are integrated with the study of short stories, plays, novels, and films. Admits to FREN 140A or B. Conducted entirely in French. After FREN 120B, 121A, or a satisfactory placement test score. Preregistration required for the fall term.

**FREN 140A or B, Intermediate and Advanced French II.**

Ruth Koizim, Soumia Koundi, and staff.

*5 HTBA* For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo)  L4  1 1/2 C Credits

Meets RP  (61)

The second half of a two-term sequence designed to develop students’ proficiency in the four language skill areas. Introduction of more complex grammatical structures. Films and other authentic media accompany literary readings from throughout the francophone world, culminating with the reading of a longer novel and in-class presentation of student research projects. Admits to FREN 150A or 151B. Conducted entirely in French. After FREN 130A or B or a satisfactory placement test score. Preregistration required for the fall term. (Formerly FREN 131A or B)

**FREN 145B, Intensive Intermediate and Advanced French.**

Constance Sherak and staff.

*Lect. MWF 9.25-10.15; practice MTWThF 10.30-11.20; weekly test T 11.35-12.25 L3–L4 2 C Credits Meets RP  (32)*
An accelerated course that covers in one term the material taught in FREN 130a or b and 140a or b. Emphasis on speaking, writing, and the conversion of grammatical knowledge into reading competence. Admits to FREN 150a or 151b. For students of superior linguistic ability. Conducted entirely in French. After FREN 120b or 125a. (Formerly FREN 132b)

**FREN 150a, Advanced Language Practice I.** Françoise Schneider and staff.

3 HTBA  For sections see www.yale.edu/courseinfo  L5  (61)

An advanced language course intended to improve students’ comprehension of spoken and written French as well as their speaking and writing skills. Modern fiction and nonfiction texts familiarize students with idiomatic French. Special attention to grammar review and vocabulary acquisition. After FREN 140a or b, 145b, or a satisfactory placement test score. May be taken after FREN 151b. (Formerly FREN 138a)

**FREN 151b, Advanced Language Practice II.** Françoise Schneider and staff.

3 HTBA  For sections see www.yale.edu/courseinfo  L5  (61)

An advanced language course intended to improve students’ comprehension of spoken and written French as well as their speaking and writing skills. Modern fiction and nonfiction texts familiarize students with idiomatic French. Emphasis on oral practice through debates and presentations on current events. After FREN 140a or b, 145b, or a satisfactory placement test score. May be taken independently of 150a. (Formerly FREN 139b)

**GROUP B COURSES**

Courses numbered from 160 to 199, unless otherwise indicated, are open to students who have passed two courses in the FREN 150–159 range and to others with consent of the department. Courses numbered from 200 to 449 are open to students who have passed a course in the FREN 170–175 range, or with permission of the instructor. Students who have taken a course at the 200 level or higher may not ordinarily take a 100-level course for credit, with the exception of FREN 185b. Students may take 200-, 300-, and 400-level courses in any order. Unless otherwise indicated, Group B courses are conducted entirely in French.

**FREN 160a or b, Advanced Culture and Conversation.**

Françoise Schneider and staff.

3 HTBA  For sections see www.yale.edu/courseinfo  L5  Meets RP  (0)

Intensive oral practice designed to further skills in listening comprehension, speaking, and reading through the use of videos, films, fiction, and articles. Emphasis on contemporary French and francophone cultures. After FREN 150a, 151b, or a satisfactory placement test score. May not be taken for credit after courses numbered 170 or higher. (Formerly FREN 150a or b)

**Gateway Courses**

*FREN 170a or b, Introduction to the Study of Literature in French.*

170a–1: MW 9-10.15  L5, Hu  (61)  Marie-Hélène Girard
170a–2: TTh 11.35-12.50  L5, Hu  (61)  Farid Laroussi
170b–1: MW 9-10.15  L5, Hu  (61)  Lauren Pinzka
170b–2: MW 1-2.15  L5, Hu  (61)  Maryam Sanjabi

Introduction to close reading and analysis of literary texts written in French.
Works by authors such as Marie de France, Molière, Balzac, Hugo, Baudelaire, Césaire, and Duras. (Formerly FREN 160A or B)

**FREN 172B, FRENCH AND FRANCOPHONE CULTURAL HISTORY.**
Lauren Pinzka.

MW 11.35-12.50 L5, Hu (34)

An interdisciplinary introduction to French and francophone cultural history organized around a particular theme or topic. In 2009 the theme is Americans in Paris. (Formerly FREN 162B)

**FREN 174A, CONTEMPORARY FRENCH AND FRANCOPHONE SOCIETIES AND CULTURES.** Farid Laroussi.

Th 9-10.15 L5, Hu (0)

Introduction to contemporary French and francophone societies and cultures, with emphasis on political, social, and institutional issues. In 2008 the focus is on postcolonial France. (Formerly FREN 164A)

**FREN 175A, LITERARY ANALYSIS AND THEORY.** Yue Zhuo.

Th 11.35-12.50 L5, Hu (0)

Intensive practice in key techniques of writing about French literature, with a focus on acquiring and developing analytical tools and critical vocabulary through various hermeneutic approaches. Study of selected literary and critical texts, including works of poetry, fiction, and theater, culled from various eras. Designed to supplement FREN 170A or B. Recommended for prospective majors and students with a primary interest in literary studies. (Formerly FREN 165A)

**Advanced Language Courses**

**FREN 185B, TRANSLATION.** Alyson Waters.

W 3.30-5.20 L5, Hu (0)

An introduction to the practice and theory of literary translation, conducted in workshop format. Stress on close reading, with emphasis initially on grammatical structures and vocabulary, subsequently on stylistics and aesthetics. Texts selected by virtue of the stylistic, cultural, or theoretical problems they present. Translation as a means to understand and communicate cultural difference in the case of French, African, Caribbean, and Québécois authors. Texts by Benjamin, Beckett, Borges, Steiner, and others. Readings in French and in English. After FREN 150A and 151B or with permission of instructor. Preference given to juniors and seniors.

**FREN 195A, ADVANCED WRITING WORKSHOP.** Lauren Pinzka.

MW 11.35-12.50 L5 (0)

An advanced writing course for students who wish to work intensively on perfecting their written French. Frequent compositions of varying lengths, including creative writing, rédactions (compositions on concrete topics), and dissertations (critical essays). After FREN 150A, 151B, or a satisfactory placement test score. Recommended for prospective majors.

**Introductory Topics**

**FREN 215B, INTRODUCTION TO MAGHREB LITERATURE AND CULTURE.** Farid Laroussi.

Th 2.30-3.45 Hu (0)

An introduction to contemporary culture and literature written in French in the Maghreb (Algeria, Morocco, and Tunisia). Focus on the relation between the Islamic world and the French colonial experience, on postindependence discourses, and on ethnic and gender issues. Authors and filmmakers include Allouache, Ben Jelloun, Ben Lyzaid, Chraibi, Djebar, Feraoun, Mellah, and Mimouni.
**FREN 221b, Introduction to the French Enlightenment.**
Thomas Kavanagh.
M 9.25-11.15  L5, Hu (o)
The French Enlightenment as a crucial transition from ancien régime absolutism to modernity. Topics include the heritage of absolutism, libertinage and the rococo, new relations between the public and private spheres, changing constructions of identity and gender, and the role of the philosophes in the coming of the Revolution. Authors include La Bruyère, Montesquieu, Prévost, Marivaux, Voltaire, Rousseau, Laclos, Beaumarchais, Mercier, Mirabeau, Olympe de Gouges, and Sade. Examination of paintings by Watteau, Chardin, Boucher, Fragonard, and Greuze, as well as cinematic representations of the period by Leconte, Fcears, and Renoir.

**FREN 245a/THST 245a, Twentieth-Century French Theater.**
Julia Prest.
MW 2.30-3.45  L5, Hu (37)
An introduction to the works of major twentieth-century playwrights, including Anouilh, Ionesco, Beckett, Sartre, and Genet. Special emphasis on theater of the absurd. The social, cultural, and political contexts of the plays; questions relating to theater in performance.

**FREN 250a, French Existential Literature.**
Maryam Sanjabi.
MW 1-2.15  L5, Hu (36)
Introduction to French existential literature of the postwar period, focusing on the work of Sartre, Camus, and Beauvoir. Ways that these authors expressed their many preoccupations (literary, philosophical, and political) in the face of a seemingly indifferent world.

**FREN 275b, Art and Literature in the Nineteenth Century.**
Marie-Hélène Girard.
MW 9-10.15  L5, Hu (o)
The significance and the impact on literature of selected paintings of nineteenth-century France. How and why these paintings became cultural icons.

**Advanced Topics**

**FREN 346b, The Symbolist Movement.** Jean-Jacques Poucel.
W 9.25-11.15  L5, Hu (32)
The Symbolist movement in France approached from an interdisciplinary perspective. Focus on poetry, with some attention to music, painting, and literature. Aesthetic concerns of Baudelaire, Verlaine, Rimbaud, Mallarmé, and Valéry. Analysis of the formal elements of verse and prose poetry; close readings informed by the period’s cultural context. **Recommended preparation:** some knowledge of French poetry.

**FREN 354a, France and the Far East.** Yue Zhuo.
TTh 2.30-3.45  L5, Hu (o)
The portrayal of East Asia by French authors of the late-nineteenth and twentieth centuries. Focus on different modes of “exoticism” and the changing definition of the “other.” Authors include Claudel, Segalen, Malraux, Valéry, Michaud, Artaud, Robbe-Grillet, Kristeva, Sollers, and Barthes.

**FREN 372b, Experiments in Twentieth-Century Fiction.**
Ora Avni.
TTh 11.35-12.50  L5, Hu (24)
Modern and contemporary attempts to break free of the realist tradition regarding character, plot, event, coherence, and sequence. Postwar efforts to reshape literary categories to render the breakdown of ethical and historical frameworks. Readings from the works of Robbe-Grillet, Gide, Sarraute, Modiano, Des-Forêts, Duras, Perec, Nothomb, and Schmidt.

**FREN 3813, PARIS, CAPITAL OF THE NINETEENTH CENTURY.**
Maurice Samuels.
TTh 1-2.15  L5, Hu  (26)
The myth of Paris as it took shape in nineteenth-century art and literature. Works by writers such as Hugo, Balzac, Baudelaire, and Rimbaud and by artists such as Delacroix, Gavarni, and Manet, as well as major impressionists such as Monet, Sisley, and Caillebotte. Other topics include nineteenth-century French history, Haussmann's urbanism, architecture, and the birth of photography.

**FREN 3903/LITR 230A, MODERNISM AND THE AVANT-GARDE.**
Jean-Jacques Poucel.
TTh 2.30-3.45  L5, Hu  (0)
The praxis, politics, and aesthetics of successive avant-gardes from a historical perspective. Focus on shifting modes of representation, stylistic analysis, and contextualizing artistic experiment. Principal works considered are literary, but painting and film are also included. Consideration of cubism, Dada, surrealism, situationalists, the Oulipo, and the Extreme Contemporary. Writers include Apollinaire, Artaud, Baudelaire, Breton, Buñuel, Duchamp, Gleize, and Perec.

**FREN 402B, PROUST.** Yue Zhuo.
TTh 2.30-3.45  L5, Hu  (0)
An introduction to Proust's *A la recherche du temps perdu*. Readings include *Du côté de chez Swann*, *Le Temps retrouvé*, and selected passages from other volumes of the *Recherche*. Focus on Proust's conceptions of love, art, and time and their intertwining relationship with the practice of writing. Some attention to critical works by Benjamin, Beckett, and Deleuze.

**FREN 407B/AFST 407B, WORLD LITERATURE IN FRENCH.**
Christopher L. Miller.
T 1.30-3.20  L5, Hu  (0)
Relations between France and the world beyond Europe, as evident in French-language literary texts from around the globe. Paradigms of interpretation include colonialism, exoticism, exile, and globalization. Texts by Montaigne, Montesquieu, Voltaire, Graffigny, Mérimée, Baudelaire, Senghor, Césaire, Marguerite Duras, Henri Lopes, Maryse Condé, and Eric Orsenna.

**FREN 420A, HEROES AND QUESTS.** Edwin Duval.
TTh 11.35-12.50  L5, Hu  (24)
Five major works of premodern French literature that narrate the adventures of a solitary hero in a hostile or indifferent world. The hero's identity, desires, and success or failure in works from the twelfth century to the eighteenth. Consideration of period, genre, narrative, and the development of the novel in France. Readings include *Le Conte du graal*, *Le Roman de la Rose*, *Le Tiers Livre de Pantagruel*, *L'Histoire comique de Francion*, *Gil Blas de Santillane*.

**SPECIAL TUTORIAL AND SENIOR COURSES**
**FREN 470A AND 471B, SPECIAL TUTORIAL FOR JUNIORS AND SENIORS.**
Consult the director of undergraduate studies.
HTBA  (0)
Special projects set up by the student in an area of individual interest with the help of a faculty adviser and the director of undergraduate studies. Intended to enable the student to cover material not offered by the department. The project must terminate with at least a term paper or its equivalent and must have the approval of the director of undergraduate studies. Only one term may be offered toward the major, but two terms may be offered toward the bachelor’s degree.

**fren 491a or b, The Senior Essay in the Standard Major.**
Consult the director of undergraduate studies.

HTBA (0)
A one-term research project completed under faculty supervision and resulting in a substantial paper in French or English.

**fren 493, The Senior Essay in the Intensive Major.** Consult the director of undergraduate studies.

HTBA (0) Cr/Year only
A yearlong research project completed under faculty supervision and resulting in a paper of considerable length, in French or English.

**GROUP C COURSES**

Courses in this group are conducted in English; readings may be in French or English. Group C courses are open to all students in Yale College.

**fren 014a/hums 084a, The Court of Louis XIV.** Julia Prest.
MW 11.35-12.50 Hu (0) Fr sem
An interdisciplinary study of the court of the Sun King. Topics include the promotion of Louis XIV’s official image, the king’s mistresses, his participation in court ballets, the chateau of Versailles, satire of life at court, and the Affair of the Poisons. Sources include memoirs, ballet programs, plays, essays, pictures, secondary literature, and films. Some readings in French. Counts toward the major in French. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**fren 210a/hums 241a/litr 190a, Renaissance of the Middle Ages.** R. Howard Bloch.
For description see under Humanities.

**fren 239a/film 264a/wgss 262a, French Women Filmmakers.** Jean-Jacques Poucel.
TTh 11.35-12.50; screenings M 6.30 P.M. Hu (0)
A study of contemporary French women directors, with particular focus on the gendered gaze and film form. Theories of a feminine aesthetic in editing, camera work, and narrative art; applications to representations of female experiences (childhood, coming of age, professional life, parenting, dying).

**fren 376a/afam 383a/afst 476a, The Two Congos: Literature and Culture in the Heart of Africa.** Christopher L. Miller.
T 1.30-3.20 Hu (0) Tr
An interdisciplinary approach to two nations that share a name, a river, and elements of culture but that are divided by colonial heritage (one Belgian, one French). Focus on literature, with references to history, anthropology, art, politics, music, and sports. Views from outside the two countries (Heart of Darkness; Tintin; The Poisonwood Bible) and inside (E. Dongala, Sony Labou Tansi, H. Lopes, V. Y. Mudimbe, A. Mabanckou). The 1974 Ali-Foreman “Rumble in the Jungle” boxing match. Prerequisite: reading knowledge of French.
Representing the Holocaust. Maurice Samuels, Millicent Marcus.

The Holocaust as it has been depicted in books and films, and as written and recorded by survivors in different languages and national contexts. Questions of aesthetics and authority, language and its limits, ethical engagement, metaphors and memory, and narrative adequacy to record historical truth. Interactive discussions about films (*Life Is Beautiful*, *Schindler’s List*, *Shoah*), novels, memoirs (Primo Levi, Charlotte Delbo, Art Spiegelman), commentaries, theoretical writings, and testimonies from Yale’s Fortunoff Video Archive.

GROUP D COURSES

Group D courses are taught in other departments but may count toward the French major, with permission of the director of undergraduate studies.

*FILM 462aG/*LITR 375a, Realist French Film: Renoir, Bazin, Rohmer. Dudley Andrew.
For description see under Film Studies.

*HIST 262Ja, Terror in France. Charles Walton.


HSAR 315a, Nineteenth-Century French Art. Carol Armstrong.

*HSAR 497a/*FILM 472a, Bresson. Noa Steimatsky.
For description see under History of Art.

*LITR 416a/*ENGL 242a/*HUMS 305a, The Enlightenment Today: Literature and Secularization. Ala Alryyes.
For description see under Literature.

READING COURSE

*FREN 109a or b, French for Reading. Maryam Sanjabi.

109a–1: T 9.25-11.15 (O)
109a–2: T 3.30-5.20 (O)
109b–1: T 9.25-11.15 (O)
109b–2: T 3.30-5.20 (O)

Fundamental grammar structures and basic vocabulary through the reading of texts in various fields (primarily humanities and social sciences, and others as determined by student interest). Intended for students who either need a reading knowledge of French for research purposes or are preparing for French reading examinations and who have had no (or minimal) prior study of French. Pre-registration is not required. Conducted in English. Does not satisfy the language requirement. (Formerly FREN 120a or b)

FRESHMAN SEMINAR PROGRAM

The Freshman Seminar program offers a diverse array of courses open only to freshmen and designed with freshmen in mind. Enrollment in seminars is limited to fifteen or eighteen students, depending on the nature of the course. Most seminars meet twice each week and do not, unless otherwise noted, presume any prior experience in the field. Students must apply and
preregister for freshman seminars before the beginning of each term. To ensure that all applicants share an equal chance at enrolling in a seminar, students are admitted by lottery from among those who apply. Students who do not preregister may be considered for placement at the instructor’s discretion if space is available. Application procedures and a complete list of courses may be found on line at www.yale.edu/yalecollege/frsm.

For a full description of each seminar, see the course listings of the originating department.

*AMST 002a, American Consumer Culture in the Twentieth Century. Jean-Christophe Agnew.

*AMST 004b, Narrations of Native America. Alyssa Mt. Pleasant.


*ANTH 010a, Urban Culture, Space, and Power. Erik Harms.


*ASTR 030b, Search for Extraterrestrial Life. Hector Arce.

*ENAS 060b/APHY 060b/PHYS 060b, Energy Technology and Society. Paul Fleury.
For description see under Engineering & Applied Science.


*FREN 014a/HUMS 084a, The Court of Louis XIV. Julia Prest.
For description see under French.

*GMST 088a/HUMS 083a/LITR 088a, The Concept of Knowledge in the German Tradition. Carol Jacobs.
For description see under German Studies.

For description see under History.

*HIST 006a/HSHM 005a, Medicine and Society in American History. Rebecca Tannenbaum.
For description see under History.

*HIST 008a/HUMS 080a/RLST 001a, Essential Heresies. Carlos Eire.
For description see under History.

*HIST 009a/HUMS 079a, The Viking Age. Anders Winroth.
For description see under History.


*HIST 014b, History of Higher Education in America. George Levesque.
Gay and Lesbian Studies

Gay and lesbian studies courses are offered through the Women’s, Gender, and Sexuality Studies program. For a listing of Yale College courses in gay and lesbian studies and a description of the track in lesbian, gay, bisexual, transgender, and queer studies (LGBTQ), see under Women’s, Gender, and Sexuality Studies.
GENDER STUDIES
(See under Women’s, Gender, and Sexuality Studies.)

GEOLOGY AND GEOPHYSICS

Director of undergraduate studies: Brian Skinner, 320 KGL, 432-3175, brian.skinner@yale.edu, www.yale.edu/geology

FACULTY OF THE DEPARTMENT OF GEOLOGY AND GEOPHYSICS

Professors
Jay Ague, David Bercovici (Chair), Mark Brandon, Derek Briggs, Leo Buss, Michael Donoghue, Jacques Gauthier, Thomas Graedel, Leo Hickey, Shun-ichiro Karato, Jeffrey Park, Danny Rye, Adolf Seilacher (Visiting), Steven Sherwood, Brian Skinner, Ronald Smith, Karl Turekian, George Veronis, Elisabeth Vrba, John Wettlaufer

Associate Professors
Ruth Blake, David Evans, Alexey Fedorov, Jun Korenaga, Mark Pagani

Assistant Professors
Hagit Affek, Kanani Lee, Maureen Long, Zhengrong Wang

Lecturer
Catherine Skinner

The Geology and Geophysics program prepares students for the application of scientific principles and methods to the understanding of Earth and life as a system on a regional and a planetary scale. Subjects range from the history of Earth and life upon it to present-day environmental processes, integrating the study of Earth’s deep interior, tectonic plates, oceans, atmosphere, climate, land surface, natural resources, and biota. The emphasis of the curriculum is on developing and employing basic principles from the core sciences (physics, chemistry, biology) to further an understanding of Earth’s past and present, and to address issues relating to its future. Students gain a broad background in the natural sciences, while also selecting a specific track to focus their work on planetary or environmental phenomena of particular interest. The B.S. tracks emphasize hands-on research experience in fieldwork, in laboratories, or in computer modeling. While some graduates continue on to research, consulting, or industrial careers in earth and planetary sciences, the major’s broad scientific training prepares students for a wide variety of other paths, including medicine, law, public policy, and teaching.

B.S. degree program. Majors in the B.S. program choose from four tracks: the atmosphere and ocean track, the environmental geosciences track, the paleontology and geobiology track, and the solid Earth sciences track. The tracks are suggested pathways to professional careers and to major areas of research in geology and geophysics. Students may change tracks during their course of study with guidance from the director of undergraduate studies.

1. The atmosphere and ocean track provides a comprehensive understanding of the theory, observation, and prediction of the atmosphere-ocean-climate system. Topics range from past changes, including the ice ages, to present-day storms and weather, to forecasting climate change and global warming. The prerequisites are college-level chemistry (CHEM 112a, 113b; 114a, 115b; or 118a), physics (PHYS 180a, 181b and PHYS 165La, 166Lb), computing (ENAS 130b or equivalent), and mathematics through differential equations (MATH 120a or b and ENAS 194a or b). The major requirements consist of ten and
one-half course credits beyond the prerequisites, including either the senior essay or the senior thesis. Students take one 100-level course or freshman seminar as an introduction to Earth processes (G&G 100a, 110a, 120b, 125b); a higher-level course in G&G can be substituted with the permission of the director of undergraduate studies. Core courses totaling five and one-half credits introduce students to Earth’s climate system (G&G 140a and 141La), meteorology (G&G 322a), physical oceanography (G&G 335a), fluid mechanics (MENG 361a), and statistics or linear algebra (STAT 230b or 238a or MATH 222a or b). Three electives are chosen from topics in the environment; processes that govern the atmosphere, ocean, and land surface; physics; and statistics. A list of suggested electives is available from the office of the director of undergraduate studies or on the Web at www.yale.edu/geology. At least one elective must be from G&G.

2. The environmental geosciences track provides a scientific understanding of the natural and anthropogenic processes that shape the Earth-atmosphere-biosphere system. It emphasizes comparative studies of past and current Earth processes to inform models of the environment’s future. The prerequisites are broad and flexible and include college-level chemistry (CHEM 112a, 113b; 114a, 115b; or 118a) and mathematics through multivariate calculus (MATH 120a or b). Depending on their area of focus, students may choose a prerequisite in physics (PHYS 150a, 151b; 180a, 181b; or 200a, 201b), or they may choose cellular biology (MCDB 120a) and evolutionary biology (E&EB 122b or G&G 125b). The major requirements consist of eleven courses beyond the prerequisites, including either the senior essay or the senior thesis. Students take two courses in G&G numbered 090–160 as an introduction to the Earth system (G&G 100a, 110a, 120b; G&G 125b may be used if the physics prerequisites are selected). Four core courses are chosen from topics in resource use and sustainability (G&G 205b), the microbiology of surface and near-surface environments (G&G 255b), geochemical principles (G&G 301a), environmental chemistry and pollution (G&G 457a), climate (G&G 322a), and satellite-based image analysis (G&G 362b). Four electives selected from Geology and Geophysics, Environmental Studies, Ecology and Evolutionary Biology, and related fields provide a broad approach to scientific study of the environment. A list of suggested electives is available from the office of the director of undergraduate studies or on the Web at www.yale.edu/geology. Electives may be chosen from the core courses, and at least two must be from G&G.

3. The paleontology and geobiology track focuses on the fossil record of life and evolution, geochemical imprints of life, and interactions between life and Earth. Topics range from morphology, function, relationships, and biogeography of the fossils themselves, through the contexts of fossil finds in terms of stratigraphy, sediment geochemistry, paleoecology, paleoclimate, and geomorphology, to analysis of the larger causes of paleontological, geological, and evolutionary patterns. Integrative approaches are emphasized that link fossil evidence with the physical and chemical evolution of Earth. The prerequisites are college-level biology (MCDB 120a and E&EB 122b) and chemistry (CHEM 112a, 113b; 114a, 115b; or 118a), and mathematics through multivariate calculus (MATH 120a or b). The major requirements consist of eleven courses beyond the prerequisites, including either the senior essay or the senior thesis. Students take G&G 110a to gain geological and environmental context, and they are introduced to the fossil record and evolution in G&G 125b. Four core courses give majors a comprehensive background in
sedi\-men\-tar\-y rocks and rock correlation (G&G 230a), the study of evolution (G&G 250a), microbiology in past and present environments (G&G 255b), and statistical data analysis as applied to the life sciences (STAT 101a). Four electives selected from Geology and Geophysics, Ecology and Evolutionary Biology, Molecular, Cellular, and Developmental Biology, and related fields offer students maximum flexibility in pursuing their specific interests. A list of suggested electives is available from the office of the director of undergraduate studies or on the Web at www.yale.edu/geology. At least one elective must be from G&G.

4. The solid Earth sciences track emphasizes an integrated geological, geochemical, and geophysical approach to the study of processes operating within Earth and their manifestation on the surface. It includes the structure, dynamics, and kinetics of Earth’s interior and their impacts on our environment both in the long term (e.g., the evolution of the land surface) and in the short term (e.g., the causes for natural disasters such as earthquakes and volcanic eruption). Students acquire a fundamental understanding of the solid Earth system, both as it exists today and as it has evolved over geologic time scales. The prerequisites are college-level chemistry (CHEM 112a, 113b; 114a, 115b; or 118a) and physics (PHYS 150a, 151b; 180a, 181b; or 200a, 201b), and mathematics through multivariate calculus (MATH 120a or b). The major requirements consist of eleven courses beyond the prerequisites, including either the senior essay or the senior thesis. Students take two courses in G&G numbered 090–160 as an introduction to the Earth system (G&G 100a, 110a, 120b, 125b, 140a). The core of the track consists of four courses chosen from topics in mantle dynamics, earthquakes, and volcanoes (G&G 201a), mountain building and global tectonics (G&G 212b), rocks and minerals (G&G 220b), sedimentary rocks and processes (G&G 230a), and geochemical principles (G&G 301a). Students also select four electives in geology, geochemistry, geophysics, or related topics. A list of suggested electives is available from the office of the director of undergraduate studies or on the Web at www.yale.edu/geology. Electives may be chosen from core courses, and at least two must be from G&G.

B.A. degree program. The B.A. degree in Geology and Natural Resources requires fewer upper-level courses than the B.S. degree. It may be more appropriate for students who wish to major in two separate Yale programs, who study geoscience in preparation for a career in law, business, government, or environmental fields, or who resolve on a science major only after the freshman year. The prerequisites include mathematics (MATH 115a or b), biology (MCDB 120a or G&G 255b), and chemistry (CHEM 103b; 112a, 113b; 114a, 115b; 118a; or G&G 160a, 161b). The major requirements consist of nine courses beyond the prerequisites. These nine include two courses in G&G numbered 090–160; courses in natural resources (G&G 205b) and geochemistry (G&G 301a); and five additional courses at the 200 level or higher in Geology and Geophysics or Environmental Engineering, including either the senior essay or the senior thesis. Course selections can be guided by any of the B.S. tracks described above.

Senior requirement. Seniors in both degree programs must prepare either a senior essay based on one term of library, laboratory, or field research (G&G 492a or b) or, with the consent of the faculty, a two-term senior thesis (G&G 490), which involves innovative field, laboratory, or theoretical research. Students electing to do a senior thesis must first select a topic and obtain the consent of a faculty member to act as an adviser. They must then
petition the faculty through the director of undergraduate studies for approval of the thesis proposal. The petition should be submitted by the end of the junior year. If the two-term senior thesis is elected, the second term of G&G 490 may count as an elective toward the major. A copy of each senior thesis or senior essay is deposited in the archives of the Geology and Geophysics Library.

Geology and Geophysics majors may not employ the Credit/D/Fail option for their prerequisites or for courses in the major. Higher-level courses may, with the permission of the director of undergraduate studies, be substituted for prerequisites and for specific required courses. Qualified seniors are encouraged to enroll in graduate courses, with the permission of the directors of graduate and undergraduate studies.

Practical experience. In addition to prerequisites and required courses in Geology and Geophysics, candidates for the B.A. and B.S. degrees are strongly encouraged to gain practical experience in the Earth sciences. This can be done in two ways: (1) by attending a summer field course at another academic institution, or (2) by participating in summer research opportunities offered by the Department of Geology and Geophysics, by other academic institutions, or by certain government agencies and private industries. Consult the director of undergraduate studies for further information.

REQUIREMENTS OF THE MAJOR

Prerequisites:  
B.A. — MATH 115A or B; MCDB 120A or G&G 255B; CHEM 103B, or 112A, 113B, or 114A, 115B, or 118A, or G&G 160A, 161B; B.S.: All tracks — CHEM 112A, 113B, or 114A, 115B, or 118A; MATH 120A or B; Atmosphere and ocean track — ENAS 194B or equivalent; ENAS 194A or B; PHYS 180A, 181B, 165LA, 166LB; Environmental geosciences track — physics (PHYS 150A, 151B, or 180A, 181B, or 200A, 201B) or biology (MCDB 120A and either E&EB 122B or G&G 125B); Paleontology and geobiology track — MCDB 120A; E&EB 122B; Solid Earth sciences track — PHYS 150A, 151B, or 180A, 181B, or 200A, 201B

Number of courses:  
B.A. — 9 term courses beyond prereqs for letter grades (incl senior req); B.S.: Atmosphere and ocean track — 10½ course credits beyond prereqs for letter grades (incl senior req); Environmental geosciences, paleontology and geobiology, and solid Earth sciences tracks — 11 courses beyond prereqs for letter grades (incl senior req)

Distribution of courses:  
B.A. — 2 courses in G&G numbered 090–160; 5 addtl courses at 200 level or higher in G&G or Environmental Engineering; B.S.: Atmosphere and ocean track — 1 freshman sem or 100-level course in G&G; 3 electives as specified; Environmental geosciences and solid Earth sciences tracks — 2 courses in G&G numbered 090–160; 4 electives as specified; Paleontology and geobiology track — 4 electives as specified

Specific courses required:  

Substitution permitted: All programs — with DUS permission, higher-level courses for prereqs or required courses

Senior requirement: All programs — senior essay (G&G 492A or B) or, with permission of faculty, two-term senior thesis (G&G 490)

[G&G 100A, Natural Disasters]

MW 11.35-12.50; lab F 11.35-12.50  Sc (34)
An introduction to the processes that shape Earth’s environment through the interactions of rocks, soils, the atmosphere, and the hydrosphere. Field trips and practical sessions in the properties of natural materials. Topics include evolution of landscapes; hydrologic and tectonic cycles; extreme geologic events such as earthquakes, floods, volcanism, and landslides; society’s economic dependence on natural materials such as soils, minerals, and fossil fuels; and human influences on the natural environment.

G&G 120b/EVST 125b, Earth’s Changing Climate.  
Steven Sherwood.  
MWF 9.25-10.15 QR, Sc (32)
Investigation of the science of contemporary climate change or “global warming.” Historical and contemporary methods used by scientists to draw conclusions concerning Earth’s complex climate system and human influences on it, and to predict future climates. Risk assessment, response options.

G&G 125b/E&EB 125b, History of Life. Derek Briggs, Jacques Gauthier, Leo Hickey.  
TTTh 11.35-12.50 Sc (24)
Examination of fossil and geologic evidence pertaining to the origin, evolution, and history of life on Earth. Emphasis on major events in the history of life, on what the fossil record reveals about the evolutionary process, on the diversity of ancient and living organisms, and on the evolutionary impact of Earth’s changing environment.

G&G 140a/EVST 201a, Atmosphere, Ocean, and Environmental Change. Ronald Smith.  
For description see under Environmental Studies.

G&G 141La/E&EB 202La, Laboratory for Atmosphere, Ocean, and Environmental Change. Ronald Smith.  
For description see under Environmental Studies.

G&G 160a and 161b/EVST 160a and 161b, Chemical Applications for Earth and Environmental Sciences]

G&G 201a, Mantle Dynamics, Earthquakes, and Volcanoes]  
G&G 205b, Natural Resources and Their Sustainability. Brian Skinner.  
TTTh 1-2.15 Sc (0)
The formation and distribution of renewable and nonrenewable energy, mineral, and water resources. Topics include the consequences of extraction and use; depletion and the availability of substitutes; and economic and geopolitical issues. Recommended preparation: introductory chemistry and geology.

G&G 212b, Global Tectonics. Mark Brandon.  
TTTh 1-2.15 Sc (26)
The architecture of continents and oceans; detailed geology of lithospheric plate margins and mountain chains. Examples of plate-interaction histories from the ancient geological record emphasize the interdisciplinary approaches used to determine interlinked Earth-system processes involving the mantle, crust, hydrosphere, atmosphere, and biosphere. The course features a field trip during spring break. Prerequisite: one course in G&G or permission of instructor. Enrollment limited to 15.
G&G 220b, Petrology and Mineralogy. Jay Ague.

TTh 9-10.15; lab 2 HTBA Sc (22)
Comprehensive study of the structures, chemistry, and physical properties of minerals. Interpretation of mineral associations and textures in terms of processes acting in the formation of igneous and metamorphic rocks. Study of the interplay between plate tectonics and the genesis of igneous and metamorphic rocks. After one year of college-level chemistry; G&G 110a recommended.

G&G 230a/ARC 230a, Stratigraphy. Leo Hickey.

TTh 9-10.15; lab Th 1.30-3.30 Sc (22)
The nature and classification of sedimentary rock bodies; principles in determining their ages by fossils and other means; interpretation of depositional environments; the historical record of the dynamic response of sediments to mountain building, to changes in sea level and climate, and to the evolution of Earth’s biota. Laboratory sessions include one overnight weekend field trip and one Saturday field trip. Prerequisite: chem 113b or higher or permission of instructor.

G&G 250aG, Paleontology and Evolutionary Theory.
Elisabeth Vrba.

TTh 11.35-12.50 Sc (24)
Current concepts in evolutionary and systematic theory with particular reference to how they apply to the fossil record. Emphasis on use of paleontological data to study evolutionary processes. After G&G 125b or a 100-level course in biological sciences.

[G&G 255b/EVST 265b, Environmental Geomicrobiology]


3 HTBA Sc (0)
Introduction to formation and distribution of mineral deposits. After G&G 220b.

G&G 301aG, Introduction to Geochemistry. Mark Pagani.

MW 11.35-12.50 QR, Sc (34)
Basic principles of geochemistry and their use in geological science. Thermodynamics of aqueous and igneous systems. Element fractionation and isotope geochemistry. Biogeochemical cycles, geochronology, cosmochemistry. After chem 115b or 118a, and math 115a or b; G&G 220b recommended.

★G&G 304aG/EVST 404a, Minerals and Human Health.
Catherine Skinner.

TTh 11.35-12.50 Sc (0)
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G 110a and 160a recommended.


TTh 10.30-11.20, 1 HTBA Sc (0)
The isotopic composition of atmospheric gases. Focus on carbon dioxide and the use of its isotopes to balance the atmospheric carbon budget. Discussion of other gases associated with the global carbon cycle. Prerequisite: chem 115b, 115b, 118a, or permission of instructor.


MWF 9.25-10.15 QR, Sc Meets RP (32)
Fundamental principles of stable and radiogenic isotope geochemistry. Emphasis on applications to specific geologic problems, including petrogenesis, geochronology, geothermometry, surface processes, hydrology, and biogeochemistry. Prerequisites: CHEM 11b, MATH 120a or b, and PHYS 151b or equivalents, or with permission of instructor.

G&G 312G, Structure and Deformation of the Lithosphere.
Mark Brandon.
MW 10.30-11.20; lab HTBA QR, Sc (33)
An introduction to the origin and structure of the lithosphere and continental and oceanic crust. Topics include what controls the solid versus fluid behavior of rocks during deformation, and what controls the character and motion of tectonic plates. Laboratory exercises and field trips. After G&G 110a or with permission of instructor.

G&G 313G, Invertebrate Paleontology: Evolving Form and Function

G&G 315G, Paleobotany. Leo Hickey.
TTh 9-10.15; lab HTBA Sc (22)
The evolutionary history of plants through geological time, the origin and diversification of their major lineages and of plant communities, and the interaction of plants and their physical environment. Laboratory exercises involve the study of fossil and modern plants. Prerequisite: one course from E&EB 122b, 160a, 246b, G&G 125b, or 230a, or permission of instructor.

G&G 318G, Trace Fossil Analysis. Adolf Seilacher.
MW 11.35-12.50 Sc (0)
A study of trace fossils, which provide a rich record of animal activities spanning almost a billion years of Earth’s history. Analysis in terms of biomechanics, behavioral programs, and substrate properties. How trace fossils are used in evolutionary biology, paleoenvironmental interpretation, and biostratigraphy. After G&G 125b or with permission of instructor.

TTh 11.35-12.50 QR, Sc (24)
Basic principles that control the physical and chemical properties of Earth materials. Equation of state, phase transformations, chemical reactions, elastic properties, diffusion, kinetics of reaction and mass/energy transport. After MATH 120a or b, PHYS 181b, and CHEM 113b.

G&G 322G, Physics of Weather and Climate.
Steven Sherwood.
TTh 2.30-3.45 QR, Sc (27)
The climatic system; survey of atmospheric behavior and climatic change; meteorological measurements and analysis; formulation of physical principles governing weather and climate with selected applications to small- and large-scale phenomena. After PHYS 181b and MATH 120a or b or equivalents.

MW 11.35-12.50 QR, Sc (0)
An introduction to climate dynamics. Special emphasis on phenomena controlled by large-scale interactions between the ocean and atmosphere, from El Niño to decadal climate variability. Topics include conceptual models of climate, general
circulation of the atmosphere, ocean wind-driven and thermohaline circulation, abrupt climate changes, climate models by means of GCMs, and climate predictability. After PHYS 181b, MATH 120a or b or equivalent, and one course in meteorology or physical oceanography, or with permission of instructor.

[G&G 326bG, INTRODUCTION TO EARTH AND PLANETARY PHYSICS]

[G&G 333aG, PALEOGEOGRAPHY]

G&G 335aG, PHYSICAL OCEANOGRAPHY. Alexey Fedorov.

MW 11.35-12.30 QR, SC (34)

An introduction to ocean dynamics and physical processes controlling large-scale ocean circulation, the Gulf Stream, wind-driven waves, tsunamis, tides, coastal upwelling, and other phenomena. Modern observational, theoretical, and numerical techniques used to study the ocean. The ocean’s role in climate and global climate change. After PHYS 181b and MATH 120a or b or equivalent, or with permission of instructor.

G&G 342a/PHYS 342a, INTRODUCTION TO EARTH AND ENVIRONMENTAL PHYSICS. Steven Lamoreaux.

For description see under Physics.

*G&G 362bG/*ARGC 362b/*EVST 362b, OBSERVING EARTH FROM SPACE.

Ronald Smith and staff.

TTH 9-10.15; LAB TH OF F 1.30-3.20 OR 3.30-5.20 QR, SC (0)

A practical introduction to satellite image analysis of Earth’s surface. Topics include the spectrum of electromagnetic radiation, satellite-borne radiometers, data transmission and storage, computer image analysis, the merging of satellite imagery with GIS and applications to weather and climate, oceanography, surficial geology, ecology and epidemiology, forestry, agriculture, archaeology, and watershed management. Preference to undergraduates in G&G, Anthropology, and Environmental Studies. Prerequisites: college-level physics or chemistry, two courses in geology and natural science of the environment or equivalents, and computer literacy.

[G&G 370b, REGIONAL PERSPECTIVES ON GLOBAL GEOSCIENCE]

G&G 421bG, GEOPHYSICAL FLUID DYNAMICS. George Veronis.

TTH 1-2.15 QR, SC (26)

Derivation of the equations of a geophysical fluid. Analysis of the most important dynamical phenomena common to all planetary atmospheres, oceans, and interiors, with emphasis on the roles of planetary rotation, gravitation, and thermal gradients. After or concurrently with MENG 361a or equivalent and one course in meteorology or oceanography, or with permission of instructor.


TTH 1-2.15 SC (26)

A laboratory-based course providing interdisciplinary practical training in geomicrobiological methods including microbial enrichment and cultivation techniques; light, epifluorescence, and electron microscopy; and molecular methods (DNA extraction, PCR, T-RFLP, FISH). Prerequisite: college-level chemistry.

G&G 450bG, DEFORMATION OF EARTH MATERIALS.

Shun-ichiro Karato.

TTH 9-10.15 QR, SC (22)
Basic physics and chemistry of Earth materials, with emphasis on kinetic and transport properties. Geochemical and geophysical processes in Earth's crust and mantle and their influence on the dynamics and evolution of this planet. Topics include plastic flow, diffusion, thermal conductivity, electrical conductivity, and chemical reaction. After MATH 120a or b, PHYS 181b, and CHEM 113b, or equivalents.

G&G 456b, **INTRODUCTION TO SEISMOLOGY.** Jeffrey Park.

MWF 9.25-10.15 QR, Sc (32)
Earthquakes and seismic waves, P and S waves, surface waves and free oscillations. Remote sensing of Earth’s deep interior and faulting mechanisms. After MATH 120a or b, 222a or b, and PHYS 180a, 181b, or equivalents.

G&G 457a, **MARINE, ATMOSPHERIC, AND SURFICIAL GEOCHEMISTRY.**

Karl Turekian.

MWF 9.25-10.15 Sc (32)
Examination of the processes at Earth’s surface, including the atmosphere, oceans, ice caps, and upper layers of crust, using insights gained from radioactive, radiogenic, and light stable isotopes. Prerequisites: a 100-level course in G&G and CHEM 112a, 113b, or 114a, 115b, or 118a; or permission of instructor.

G&G 457b/ARCG 467b, **GEOCHEMICAL APPROACHES TO ARCHAEOLOGY**

G&G 485b/ENAS 485b, **WIND ENERGY.** Ronald Smith, Alessandro Gomez, Peter Kindlmann.

T 2.30-4.20 Sc ½ C Credit (0)
Theory and practical experience in site selection, turbine selection, and power output estimation for wind turbines. Discussion of environmental, social, and economic factors. Field trips and wind power projects. Prerequisites: MATH 120a or b, PHYS 180a, 181b and 165La, 166Lb, and one course in meteorology, fluid dynamics, or electrical engineering.

G&G 487a or b, **INDIVIDUAL STUDY IN GEOLOGY AND GEOPHYSICS.**

Consult the director of undergraduate studies.

HTBA ½ C Credit (0)
Individual study for qualified undergraduates under faculty supervision. To register for this course, each student must submit a written plan of study approved by the adviser to the director of undergraduate studies.

G&G 488a and 489b, **RESEARCH IN GEOLOGY AND GEOPHYSICS.**

Consult the director of undergraduate studies.

HTBA (0)
Individual study for qualified juniors and seniors under faculty supervision. To register for this course, each student must submit a written plan of study approved by the adviser to the director of undergraduate studies.

G&G 490, **RESEARCH AND SENIOR THESIS.** Consult the director of undergraduate studies.

HTBA (0)
Two terms of independent library, laboratory, field, or modeling-based research under faculty supervision. To register for this course, students must submit a written plan of study approved by a faculty adviser to the director of undergraduate studies by the end of the junior year. The plan requires approval of the full G&G faculty.

G&G 492a or b, **THE SENIOR ESSAY.** Consult the director of undergraduate studies.

HTBA (0)
One term of independent library, laboratory, field, or modeling-based research under faculty supervision. To register for this course, students must submit a written plan of study approved by a faculty adviser to the director of undergraduate studies at the beginning of the term in which the essay is to be written.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Courses in the Graduate School are open to undergraduates with permission of the instructor and the director of graduate studies. Descriptions of graduate courses are available at the office of the director of undergraduate studies.

GERMANIC LANGUAGES AND LITERATURES

Director of undergraduate studies: Kirk Wetters, 305 WHL, 432-0782, kirk.wetters@yale.edu

FACULTY OF THE DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURES

Professors
  - Rüdiger Campe, Carol Jacobs (Chair), Rainer Nägele, Brigitte Peucker, Henry Sussman (Visiting)

Assistant Professor
  - Kirk Wetters

Lecturers
  - Anthony Niesz, William Whobrey

Senior Lectors
  - Marion Gehlker (Language Coordinator)

Senior Lectors
  - Howard Stern

The major in German is a liberal arts major whose aim is to provide competence in the German language and an understanding of German literature and culture in the context of European civilization. Although by no means restricted to prospective teachers or graduate students in German, the major provides background for professional work in these pursuits.

Prerequisite. Students choosing the major should have completed GMAN 110a or b and 120a or b or have received equivalent credit through advanced placement or study abroad.

The major. The major consists of eleven term courses, for a total of twelve course credits, including GMAN 130a or b and 140a or b; 150a or b or 151b; GMST 180a; the introductory sequence in German literature, GMAN 171a and 172b; and the senior essay. All courses in the major must be taken for a letter grade. The remaining courses to fulfill the major are chosen from Group B (conducted in German), up to two courses from Group C (conducted in English), one additional language course from Group A numbered 160 or above, and, with prior approval of the director of undergraduate studies, up to two term courses taken outside the department but bearing directly on the German cultural context.

Senior requirement for the standard major (one-term senior essay). Seniors in the standard German major enroll in GMAN 492a, a guided senior essay tutorial course. Students meet on a biweekly basis with the director of undergraduate studies and staff, and work under the direction of a faculty adviser.
The culmination of the tutorial is an essay of approximately thirty pages that gives evidence of careful reading and substantial independent thought. The essay may be written in either English or German, although only native speakers are encouraged to write an essay in German. A preliminary statement indicating the general area to be dealt with and the choice of adviser should be submitted to the director of undergraduate studies by September 12; a three-page prospectus and bibliography are due by October 3. A rough draft must be submitted to the adviser by November 7. The completed essay, due on December 5, is graded jointly by the adviser and a designated faculty reader.

**The intensive major (two-term senior essay).** The intensive major is designed for students who wish to undertake a more extensive project of research and writing during their senior year. Requirements for the intensive major are the same as for the standard major, except that the intensive major requires twelve term courses (totaling thirteen course credits) beyond the prerequisite, of which two are devoted to the preparation of the senior essay (GMAN 492a and 493b). This essay, written under the direction of a faculty adviser, should be between sixty and seventy-five pages in length and should be presented no later than April 24 of the senior year. The second term of essay preparation is undertaken independently, without tutorial support. As with the standard senior essay, the essay is graded jointly by the adviser and a designated faculty reader.

**Group A courses (GMAN 110–169)** include elementary, intermediate, and advanced language courses. Only one advanced language course at the level of 160 and above may count toward the major.

**Group B courses (GMAN 171 and above)** are advanced courses and count toward the major. Readings are in German, and the language of instruction is usually German.

**Group C courses** are conducted in English with texts in translation. Only two term courses from this group may count toward the major.

Candidates for the major in German should consult the director of undergraduate studies.

**Summer study and study abroad.** Students may take Intermediate German or German for Reading Knowledge during the summer in New Haven and/or Berlin. For information, contact the director of undergraduate studies or the language coordinator. Students are urged to consider the Year or Term Abroad program, for which appropriate course credit toward the major is granted. Such study is valuable not only for achieving comfortable fluency in German, but also for gaining firsthand knowledge of the German cultural context. The department offers diverse opportunities for study abroad and a scholarship program for summer courses at German universities. Members of the faculty advise and consult with all students wishing to plan study in Germany. Students who have been approved to study abroad and who receive financial aid from Yale are eligible for aid while abroad. For information about the Year or Term Abroad program, see chapter III of this bulletin.

**German Studies.** In addition to the major in German literature, there is also a major in German Studies, an interdisciplinary study of the cultural, historical, and political life of the German-speaking peoples. See German Studies in the text below.

**Placement.** A departmental placement examination, including both a written and a spoken part, will be administered on Sunday, August 31, from 2 to 3:15 p.m. in 207 WLE. A makeup examination will be administered on Monday,
September 1, from 9 to 10:15 A.M. in 207 WLH. Students wishing to enroll in GMAN 110a, 120a, 125a, 130a, or 140a must register for sections on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH during the Academic Fair. Students wishing to take the placement exam in January should sign up with the language coordinator by December 12, 2008. Students may also consult the director of undergraduate studies or the language coordinator for advice about placement and about language study.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** GMAN 110a or b and 120a or b, or equivalent  
**Number of courses:** 11 term courses, totaling 12 course credits, beyond prereq (incl senior essay tutorial) for letter grades  
**Specific courses required:** GMAN 130a or b, 140a or b; 150a or b or 151b; 171a and 172b; GMST 180a  
**Distribution of courses:** No more than 1 advanced lang course; no more than 2 Group C courses; with DUS approval, 2 term courses outside dept  
**Substitution permitted:** With DUS approval, courses taken on Year or Term Abroad for other courses in major  
**Senior requirement:** Senior essay tutorial (GMAN 492a)  
**Intensive major:** 12 term courses, totaling 13 course credits, beyond prereq for letter grades, incl two-term senior essay (GMAN 492a and 493b)

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**GROUP A COURSES**

**GMAN 110a or b, Elementary German I.** Marion Gehlker and staff.  
**MTWTH 1 HTBA** For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo)  
L1 1 ½ C Credits Meets RP (61)  
A beginning course in spoken and written German that combines oral practice and cultural awareness with a solid foundation in grammar and vocabulary. Listening comprehension through online audio exercises and in-class video clips. Topics include family and school life, German-speaking countries, short literary readings by Hesse, Goethe, and Wondratschek, popular music, and the feature film *Lola rennt*. Tutors are available for extra help or for advanced practice. To be followed by GMAN 120a or b. Fall preregistration, which is required, is held on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH; for spring preregistration consult the language coordinator. Enrollment limited to 14 per section. Credit only on completion of GMAN 120a or b. (Formerly GMAN 115a or b)

**GMAN 120a or b, Elementary German II.** Marion Gehlker and staff.  
**MTWTHF 1 HTBA** For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo)  
L2 1 ½ C Credits Meets RP (61)  
Continuation of GMAN 110a or b. Topics include German history, the environment, multicultural Germany, Austria, and Switzerland, popular music, a soap opera, and the feature film *Das schreckliche Mädchen*. Listening comprehension through online audio exercises and in-class video clips. Students read poems by Goethe and Jandl and short stories by Bichsel, Brecht, and Kafka. Tutors are available for extra help or for advanced practice. To be followed by GMAN 130a or b. Fall preregistration, which is required, is held on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH; for spring preregistration consult the language coordinator. Enrollment limited to 14 per section. (Formerly GMAN 116a or b)

**GMAN 125a, Intensive German I.** Howard Stern.  
**MTWTHF 9:25-10:15, MTWTH 10:30-11:20** L1–L2 2 C Credits Meets RP (0)
Intensive training in speaking, reading, writing, and comprehending the language. Focus on the mastery of formal grammar. For beginning students of superior linguistic ability. Preregistration, which is required, is held on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH.

**GMAN 130a or b, Intermediate German I.** Marion Gehlker and staff.

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<th>MTWTHF 1 HTBA</th>
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<tr>
<td>L3</td>
<td>1 1/2 C Credits</td>
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<td>Meets RP (61)</td>
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Builds on and expands knowledge acquired in GMAN 120a or b. A content-based class that helps students improve their oral and written linguistic skills and their cultural awareness through texts and audiovisual materials relating to German literature, culture, history, and politics. Topics include German universities, Berlin or Frankfurt, Germany before and after the Berlin Wall, and interpersonal relationships. Course materials include online listening comprehension exercises, poems and short stories by Kafka, Brecht, Kästner, Schneider, and Kaschmitz, popular and classical music, and feature films. Tutors are available for extra help or for advanced practice. After GMAN 120a or b or according to placement examination. Followed by GMAN 140a or b. Fall preregistration, which is required, is on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH; for spring preregistration consult the language coordinator. Enrollment limited to 14 per section.

**GMAN 140a or b, Intermediate German II.** Marion Gehlker and staff.

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<th>MTWTHF 1 HTBA</th>
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<tr>
<td>L4</td>
<td>1 1/2 C Credits</td>
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Continuation of GMAN 130a or b. Topics include multicultural German, globalization, pacifism, and music and politics. Readings include fiction and nonfiction texts by Celan, Kaminer, and Einstein and a full-length novel. Tutors are available for extra help or for advanced practice. After GMAN 130a or b or according to placement examination. Normally followed by GMAN 150a or b or 151b or, with permission of the director of undergraduate studies, by GMAN 171a. Fall preregistration, which is required, is on Tuesday, September 2, from 2 to 4 P.M. in 309 WLH; for spring preregistration consult the language coordinator. Enrollment limited to 14 per section.

(Formerly GMAN 131a or b)

**GMAN 145b, Intensive German II.** Howard Stern.

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<th>MTWTHF 9.25-10.15, MTWTH 10.30-11.20</th>
<th>L3–L4  2 C Credits</th>
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<td>Meets RP (0)</td>
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Continuation of GMAN 125a. Focus on speaking, writing, and the conversion of grammatical knowledge into reading competence for literary and scholarly purposes. Prerequisite: GMAN 125a. (Formerly the second term of GMAN 125)

**GMAN 150a or b, Advanced German I.** Howard Stern and staff.

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<th>MWF 1 HTBA</th>
<th>For sections see <a href="http://www.yale.edu/courseinfo">www.yale.edu/courseinfo</a></th>
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<td>L5</td>
<td>1 (61)</td>
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An advanced language course intended to improve students’ proficiency in aural and reading comprehension, as well as in speaking and writing. Discussion of literary texts by major German authors. Emphasis on vocabulary expansion with specialized grammatical review and a focus on stylistic development in students’ writing.

Recommended for students planning to use the language practically and as preparation for higher-level courses in both language and literature. After GMAN 140a or b or 145b. For entering students with a score of 4 or 5 on the German Advanced Placement test, or according to results of the placement examination. (Formerly GMAN 138a)

**GMAN 151b, Advanced German II.** Staff.

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<th>MW 11.35-12.50</th>
<th>L5 (34)</th>
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Continuation of gman 150a or b. A foundation and overview of the German literary tradition. Development of the analytic vocabulary and historical background necessary for the interpretation of complex literary texts, especially of the eighteenth and nineteenth centuries.

Recommended for students planning to use the language practically and as preparation for higher-level courses in both language and literature. After gman 140a or b or 145b. For entering students with a score of 4 or 5 on the German Advanced Placement test, or according to results of the placement examination. GMAN 150a or b is not a prerequisite. (Formerly GMAN 139b)

GMAN 160b, German Culture, History, and Politics in Text and Film. Marion Gehlker.

TH 11:35-12:50 L5 (24)
An advanced language course focusing on improving upper-level language skills through the discussion of selected aspects of German culture, politics, and history in literary and nonliterary texts and film. Topics include the Weimar Republic, youth movements, social democracy, Vergangenheitsbewältigung, and postwar developments. Frequent oral and written assignments; emphasis on vocabulary building. After GMAN 140a or b, 145b, 150a or b, or 151b. (Formerly GMAN 140b)

GMAN 168a, Current Events in Germany. Anthony Niesz.

MW 11:35-12:50 L5 (34)
Analysis and discussion of news stories and articles from online German periodicals. Composition and revision of essays on current events of interest to students, with a focus on improving both style and grammar. After GMAN 150a or b or with permission of instructor. (Formerly GMAN 148a)

GROUP B COURSES

Courses in this group are open to students who have successfully completed GMAN 150a or b or 151b or the equivalent. Conducted in German with readings in German, unless otherwise indicated.

GMAN 171a, Introduction to German Literature: Lessing to Heine. Kirk Wetters.

TH 11:35-12:50 L5, Hu (24)
A historical and thematic study of representative works of German literature in the age of Goethe, focusing on drama but also considering lyric poetry and prose narratives. Authors include Lessing, Goethe, Schiller, Kleist, Hölderlin, Eichendorff, Tieck, Hoffmann, and Heine. After GMAN 150a or b or 151b or, with permission of the instructor, GMAN 140a or b or 145b. Required for German majors. (Formerly GMAN 161a)

GMAN 172b, Introduction to German Literature: Büchner to the Present. Howard Stern.

TH 11:35-12:50 L5, Hu (24)
An investigation of the mainstreams of German literature since the death of Goethe. Dramas, lyric poetry, Novellen, and short novels. Authors include Büchner, Schnitzler, Bernhard, Jelinek, Mann, Kafka, Brecht, Grass, Bachmann, and Handke. After GMAN 150a or b or 151b. GMAN 171a is not a prerequisite. Open to qualified freshmen. Required for German majors. (Formerly GMAN 162b)

*GMAN 336aG, Introduction to Middle High German Literature.

William Whobrey.

TH 11:35-12:50 Hu (0)
A survey of the major works of German vernacular literature from 1150 to 1250, including courtly love poetry, heroic epic, Arthurian romance, crusader songs, and religious narratives. Examination of the development of the German language, the development of vernacular literature, the broader context of Latin culture, and the problems of manuscript transmission. Readings in the original Middle High German. Hartmann von Aue's *Der arme Heinrich* is read in its entirety.

**GROUP C COURSES**

Unless otherwise indicated, courses in this group are conducted in English with both readings and discussion in English. The courses are open to all students in Yale College.

*GMAN 177a/GMAN 334a, PROBLEMS OF LYRIC.* Howard Stern.
For description see under Literature.

For description see under German Studies.

*GMAN 220b/GMST 220b, COMPARATIVE LIFE-SYSTEMS.* Henry Sussman.
For description see under German Studies.

*GMAN 230a/GMST 230a/HUMS 100a/GMAN 305a, RESEARCH AND CRITICAL ANALYSIS PRACTICUM.* Kirk Wettters.
For description see under German Studies.

W 1.30-3.20 Hu (o)
Close reading of the Sophoclean *Oedipus* and Goethe’s *Faust*, Part I, with particular attention to the two heroes and their desire for knowledge. Conducted in English. Reading knowledge of German required.

W 1.30-3.20 Hu (o)
Close reading of the second part of Goethe’s *Faust*. Attention to theatrical elements and to symbolic and allegorical modes. Conducted in English. Reading knowledge of German required.

For description see under German Studies.

*GMAN 412b/GMST 412b/HUMS 304b/GMAN 405b, LACAN: REREADING FREUD.* Rainer Nägele.
TTh 1.30-3.20 Hu (o)
Close reading of the major essays of Jacques Lacan’s *Ecrits* with some excerpts from his seminars. Consideration of Lacan’s claim that his was a faithful re-reading of Freud’s work.

*GMAN 415a, BÜCHNER: BETWEEN ROMANTIC COMEDY AND MODERN SCIENCE.* Rüdiger Campe.
T 1.30-3.20 Hu (o)
Close reading of works by Georg Büchner, romantic poet and founder of the anti-classical tradition in German literature. The range of Büchner’s writings in terms of discourse and performative style, including comedy, tragedy, psychological case study, political pamphlet, philosophical lecture, and scientific paper. Attention to the interrelation between literary and nonliterary semantics. Readings in English and German. Discussion in English.

T 1:30-3:20 Hu (0)
Introduction to German novels of the early twentieth century. Focus on works that narrate the experiences of the protagonist in a particular institution, such as a school, court, administration, or hospital. The novel of the institution as a reversal of the classic Bildungsroman genre. The problem of form in contemporary aesthetic and social theory; the idea of institutionality in German thought; the theory of the modern novel. Works by R. Walser, Kafka, Musil, and Thomas Mann. Readings in English and German. Discussion in English.

Gmst 180a, Introduction to German Culture and Thought.
Rainer Nägele.

Reading Course

Gman 100a and 101b, German for Reading. Staff.
MWF 1 HTBA For sections see www.yale.edu/courseinfo (61)
Students learn the skills with which to read German-language texts of any difficulty with some fluency. Study of syntax and grammar; practice in close reading and translation of fiction and expository prose in the humanities and sciences. Conducted in English. Does not satisfy the language distributional requirement. Credit for GMAN 100a only on completion of 101b. (Formerly GMAN 119a and 120b)

*Gman 478a or b, Directed Readings or Individual Research in Germanic Languages and Literatures. Consult the director of undergraduate studies.
HTBA (0)
Individual study under faculty supervision. Applicants must submit a prospectus and bibliography approved by the faculty adviser to the director of undergraduate studies. The student meets with the adviser at least one hour each week and takes a final examination or writes a term paper. No credit granted without prior approval of the director of undergraduate studies.

Gman 492a and 493b, The Senior Essay Tutorial. Director of undergraduate studies.
HTBA (0)
Preparation of an original essay under the direction of a faculty adviser.

Graduate Courses of Interest to Undergraduates

Courses in the Graduate School are open to undergraduates with permission of the instructor and of the directors of undergraduate and graduate studies. Course descriptions may be obtained from the office of the director of undergraduate studies.
GERMAN STUDIES

Director of undergraduate studies: Kirk Wetters, 305 WLH, 432-0782, kirk.wetters@yale.edu

FACULTY ASSOCIATED WITH THE MAJOR

Professors
*Walter Cahn (History of Art), David Cameron (Political Science), Rüdiger Campe (German), Mark Gelber (Judaic Studies) (Visiting), Timothy Guinnane (Economics, History), *Karsten Harries (Philosophy), Carol Jacobs (German), Rainer Nägèle (German), *Brigitte Peucker (German, Film Studies), Steven Smith (Political Science), Henry Sussman (German) (Visiting), Katie Trumpener (Comparative Literature, English), Frank Turner (History), Christopher Wood (History of Art)

Associate Professor
Michael Friedmann (Adjunct) (Music)

Assistant Professor
Kirk Wetters (German)

Lecturer
Kevin Repp (History)

*Member of the Advisory Committee for the program.

The major in German Studies offers an interdisciplinary approach to the study of the German cultural tradition in history, philosophy, the visual arts, music, film studies, politics, and culture, with a German-language requirement. The major draws on several departments and programs along with core courses in German Studies. It is particularly suited to students wishing to combine interests in German language and culture with intensive work in another discipline.

In German Studies, students have the freedom to develop a program of courses to meet their particular needs and interests. Through consultation with the director of undergraduate studies, each student is expected to define a focus of concentration within the major. Interested students should contact the director of undergraduate studies to begin planning their course of study.

Two majors. The German Studies major is particularly well suited for students who wish to fulfill the requirements of two majors. For such students, the focus of concentration within the German Studies major often reflects or augments the other elected major.

Prerequisite. Students choosing the German Studies major should have completed GMAN 110a or b and 120a or b or have received equivalent credit through advanced placement or study abroad.

The major. The major consists of twelve term courses, for a total of thirteen course credits, including GMAN 130a or b and 140a or b or equivalent; either GMAN 150a or b or 151b; GMST 180a; either GMAN 171a or 172b; and the senior essay. The remaining courses include four term courses that together constitute a focus of concentration, one of which is designated as the junior seminar, taken in the spring of the junior year. Students in the standard major choose two additional advanced seminars in German literature or culture. Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Focus of concentration and junior seminar. The junior seminar and three other term courses are chosen from inside or outside the department after consultation with the director of undergraduate studies. This cluster of
courses constitutes a focus of concentration in an area of study related to the major; examples of areas of concentration are history, philosophy, Germanic languages and literatures, psychology, sociology, political and social theory, film studies, history of art, and music. During the spring term of the junior year, each student selects one seminar in the focus of concentration as the designated junior seminar. This seminar provides the student with bibliographic and research skills that lay a foundation for work on the senior essay, and it culminates in the submission of a substantial term paper, ordinarily twenty-five pages.

**Senior requirement for the standard major (one-term senior essay).** Seniors in the standard German Studies major enroll in GMST 490a or b, a guided senior essay tutorial course. Students meet on a biweekly basis with the director of undergraduate studies and staff, and work under the direction of a faculty adviser. The culmination of the tutorial is an essay of approximately thirty pages that gives evidence of careful reading and substantial independent thought. The essay may be written in either English or German, although only native speakers are encouraged to write an essay in German. Seniors typically write the essay during the fall term. A preliminary statement indicating the general area to be addressed and the choice of adviser should be submitted to the director of undergraduate studies by September 12, 2008; a three-page prospectus and a bibliography are due by October 10. A rough draft must be submitted to the adviser by November 14. The completed essay, due on December 5, is judged by the faculty adviser and a second reader.

**Intensive major (two-term senior essay).** Requirements for the intensive major are the same as for the standard major, except that the intensive major requires only one elective advanced seminar in German literature or culture and culminates in a two-term senior essay under the direction of a faculty adviser. In the fall term seniors in the intensive major enroll in GMST 491 and begin work on their project under the guidance and supervision of the faculty adviser. A significant portion of the research for the essay should involve materials in German. The essay may be written in either English or German, although only native speakers are encouraged to write an essay in German. A detailed prospectus, no longer than three pages, and a bibliography must be submitted to the director of undergraduate studies by October 24, 2008. The student must submit a draft of at least fifteen pages of the essay by December 5 to receive credit for the first term of the course. The second term is devoted to completing the essay, which should be substantial (between fifty and sixty pages); the completed essay must be submitted by April 24, 2009. The senior essay is judged by the faculty adviser and a second reader.

**Study abroad.** Students are strongly encouraged to study in Germany for a summer, or for one or two terms on the Year or Term Abroad program. Appropriate course credit toward the major is granted for work in approved programs in Germany. Study abroad is valuable not only for achieving comfortable fluency in German, but also for gaining firsthand knowledge of the German cultural context. The department offers diverse opportunities for study abroad and a scholarship program for summer courses at German universities. Members of the faculty advise and consult with any students wishing to plan study in Germany. Students who have been approved to study abroad and who receive financial aid from Yale are eligible for aid while abroad. For information about the Year or Term Abroad program, see chapter III of this bulletin.
REQUIREMENTS OF THE MAJOR

Prerequisite: GMAN 110a or b and 120a or b or equivalent

Number of courses: 12 term courses, totaling 13 course credits, beyond prereq (incl senior essay) for letter grades

Specific courses required: GMAN 130a or b and 140a or b; GMAN 150a or b or 151b; GMST 180a; GMAN 171a or 172b

Distribution of courses: 4 term courses constituting a focus of concentration, 1 of them the junior sem; 2 addtl advanced sems in German lit or culture

Substitution permitted: With DUS approval, courses taken on Year or Term Abroad for other courses in major

Senior requirement: Senior essay (GMST 490a or b)

Intensive major: 1 addtl advanced sem (rather than 2); two-term senior essay (GMST 491)

*GMST 088a/*HUMS 083a/*LITR 088a, The Concept of Knowledge in the German Tradition. Carol Jacobs.

TTh 1-2.15  Hu  (o)  Tr  Fr  sem

Readings in German literature and letters from the eighteenth century to the present that address the concept of knowledge. Exploration of the relationship among art, language, truth, and knowledge. Works by Lessing, Kant, Goethe, Kleist, Friedrich Schlegel, Tieck, Hoffmann, Freud, Nietzsche, Kafka, Rilke, and Sebald; screenings of selected films. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

GMST 180a, Introduction to German Culture and Thought.

Rainer Nägele.

MW 11.35-12.30  Hu  (o)

An interdisciplinary inquiry into the seminal literary, artistic, social, political, and intellectual movements that constitute German culture and thought. Topics include Germans and their cultural and national identity; the Enlightenment; melancholy and the German psyche; the German family; German industrialization; the impact of Marx, Nietzsche, and Freud; the Weimar Republic; and Nazism and the Holocaust. No prerequisites. Readings and discussion in English. (Formerly GMST 150b)


W 3.30-5.20  Hu  (o)

Works of art and literature that reflect on themselves; artists who are doubled within their creations. Self-representation and self-thematization as indispensable to modern representation. Works include Shakespeare’s Richard II, Diderot’s Paradox of the Actor; Goethe’s Werther and Tasso, poetry by Hölderlin, and Rilke’s Notebooks of Malte Laurids Brigge. Relevant theoretical work by Schlegel, Foucault, Heidegger, and Louis Marin. The myth of Orpheus in three operatic works, Monteverdi’s Orfeo, Mozart’s Magic Flute, and Schoenberg’s Moses and Aaron.

*GMST 212a/*LITR 328a/*MGRK 212a, Folktales and Fairy Tales.

Maria Kaliambou.

For description see under Hellenic Studies.

*GMST 220b/*GMAN 220b, Comparative Life-Systems. Henry Sussman.

MW 11.35-12.30  Hu  (o)

Exploration of connections among diverse cultures through close reading of canonical sacred and literary works from Muslim, Buddhist, Hindu, indigenous,
and other cultures. Attention to theoretical works that bring non-Western texts into critical engagement with Western metaphysics and Judeo-Christianity.

W 3:30-5:20 Hu (0)
An advanced foundational course in literary and critical theory, designed primarily for juniors preparing for their senior projects. Canonical texts by Nietzsche, Freud, Lukács, Benjamin, Adorno, Szondi, and de Man. Selected critical texts paired with literary works (e.g., E. T. A. Hoffmann with Freud, Beckett with Adorno). Pragmatics of research, with emphasis on primary vs. secondary sources. Additional readings determined by student projects. Prerequisite for German majors: reading knowledge of German.

M 1:30-3:20 Hu (0)
Study of early twentieth-century works by scientists and medical doctors, focusing on the interplay between the concerns of scientific and literary writing. Experiments in writing occasioned by scientific experimentation and its notation, and vice versa. Works by Schnitzler, Döblin, Benn, Musil, and others, read in conjunction with Freud, the physicist and philosopher Ernst Mach, and theoreticians of science from the Vienna Circle. Readings and discussion in English.

Th 3:30-5:20 Hu (0)
Concepts for reproducing the human voice and their implementation, from musical automata and speaking machines of the late eighteenth century to the telephone, the gramophone, and twentieth-century sound film. The competition and complementary relations between language and music and between acoustic media and literature. Readings from a variety of fields, including literature, physiology and technology, theories of language, and contemporary film and media theory. Readings and discussion in English.

*GMST 305A/GMAN 305AG/HUMS 238A/LITR 216A, OEDIPUS AND FAUST: TRAGEDIES OF KNOWLEDGE. Rainer Nägele.
For description see under Germanic Languages & Literatures.

For description see under Germanic Languages & Literatures.

*GMST 315B/GMAN 315BG/HUMS 368B/LITR 431B, SYSTEMS AND THEIR THEORY. Henry Sussman.
M 3:30-5:20 Hu (0)
Conceptual systems that have, since the outset of modernity, furnished a format and platform for rigorous thinking at the same time that they have imposed on language the attributes of self-reflexivity, consistency, repetition, purity, and dependability. Texts by Kant, Hegel, Bergson, Kafka, Proust, and Borges.

For description see under Film Studies.
Yale College Programs of Study 2008–2009

For description see under Germanic Languages & Literatures.

*GMST 456b/G/HUMS 340b/LITR 456b, Interpretation and Authority.* Carol Jacobs.
For description see under Literature.

*GMST 479a or b, Directed Readings or Individual Research in German Studies.* Consult the director of undergraduate studies.

**HTBA (0)**
Individual study under faculty supervision. Applicants must submit a prospectus and bibliography approved by the faculty adviser to the director of undergraduate studies. The student meets with the adviser at least one hour each week and takes a final examination or writes a term paper. **No credit granted without prior approval of the director of undergraduate studies.**

*GMST 490a or b, The Senior Essay for the Standard Major.* Consult the director of undergraduate studies.

**HTBA (0)**
Preparation of a one-term senior essay, typically during the fall term, under the supervision of a member of the faculty.

*GMST 491, The Senior Essay for the Intensive Major.* Consult the director of undergraduate studies.

**HTBA (0)**
Preparation of a two-term senior essay under the supervision of a member of the faculty.

GREEK

*(See under Classics and under Hellenic Studies.)*

**HEALTH STUDIES**

Program adviser: William Segraves, 20 888, 432-1037, healthstudies@yale.edu

**HEALTH STUDIES ADVISORY COMMITTEE**

Elizabeth Bradley (Public Health), Michael Cappello (School of Medicine), Cynthia Connolly (School of Nursing), Robert Dubrow (Public Health), Howard Forman (School of Medicine), Kaveh Khoshnood (Public Health), Alondra Nelson (African American Studies), Dieter Söll (Molecular Biophysics & Biochemistry), Christopher Udry (Economics), John Warner (History of Medicine), Robert Wyman (Molecular, Cellular & Developmental Biology)

Issues related to health are among the most important challenges facing societies, both domestically and globally. Finding solutions to health-related problems requires multidisciplinary comprehension of all dimensions of health, including biological and social determinants, economics and politics of health care systems and health care delivery, and ways in which health is understood by individuals, societies, and cultures. Yale College offers a number of courses through an interdisciplinary health studies framework, bringing together the natural sciences, the social sciences, and the humanities. Although there is no major in health studies, the courses listed below
Courses relevant to the study of health are offered by many Yale College departments and programs, including African American Studies; Anthropology; Biomedical Engineering; Ecology and Evolutionary Biology; Economics; Geology and Geophysics; History; History of Science, History of Medicine; Humanities; International Studies; Molecular Biophysics and Biochemistry; Molecular, Cellular, and Developmental Biology; Philosophy; Political Science; Psychology; Sociology; Statistics; and Women’s, Gender, and Sexuality Studies. Health-related courses from some of these departments appear in the list below. In addition, the Health Studies program offers an interdisciplinary course on global health, HLTH 230a.

For information about the five-year B.A.-B.S./M.P.H. degree program offered jointly with the School of Public Health, see under Public Health.

*HLTH 230a, Global Health: Challenges and Promises.
  Kaveh Khoshnood.
  Th 4-5:15, 1 HTBA  So (o)
  Overview of pertinent issues in global health challenges of our time, with a focus on resource-limited countries and the health of the poor. Introduction to key concepts of global health and the critical links between health and social and economic development. Emphasis on the importance of a multidisciplinary approach to global health challenges. Enrollment limited to 30 juniors and seniors.

AFAM 229b/AMST 229b/ER&M 231b/SOCY 198b/WGSS 229b, Health Social Movements. Alondra Nelson.
For description see under African American Studies.


ANTH 114a, Introduction to Medical Anthropology.
  Sean Brotherton.

*ANTH 234b, Disability and Culture. Karen Nakamura.

*ANTH 357aG, Anthropology of the Body. Sean Brotherton.

*CHLD 350a or b/PSYC 350a or b, Autism and Related Disorders I.
  Ami Klin, Fred Volkmar.
  For description see under Child Study Center.

E&EB 118a/ER&M 180a, Human Genetic Variation and Evolution.
  Kenneth Kidd.
  For description see under Biology.

ECON 170a, Health Economics and Public Policy. Howard Forman.

*ECON 464b, Information and Incentives in Health Care.
  Andrew Epstein.

*ECON 467a/E&EB 319a, Issues in Health Economics.
  Howard Forman.
  For description see under Economics.
*EP&E 380b/PLSC 313b, Bioethics, Politics, and Economics.
Stephen Latham.
For description see under Ethics, Politics, & Economics.

EVST 255b/E&ES 255b/PLSC 215b, Environmental Politics and Law.
John Wargo.
For description see under Environmental Studies.

Catherine Skinner.
For description see under Geology & Geophysics.

*HIST 006A/HSHM 005A, Medicine and Society in American History.
Rebecca Tannenbaum.
For description see under History.

HIST 234b/HSHM 235b, Epidemics and Society in the West since 1600.
Frank Snowden.
For description see under History.

HSHM 201b/HIST 233b, The Cultures of Western Medicine: A Historical Introduction.
John Warner.
For description see under History of Science, History of Medicine.

Naomi Rogers.
For description see under History of Science, History of Medicine.

HSHM 242a/HIST 194a, Molecules, Life, and Disease: Twentieth Century.
Bruno Strasser.
For description see under History of Science, History of Medicine.

*HSHM 413b/HIST 145Jb, X-Ray Visions: Medical Imaging since 1895.
Bettyann Kevles.
For description see under History of Science, History of Medicine.

Cynthia Connolly.
For description see under History of Science, History of Medicine.

*HUMS 076A, Epidemics in Global Perspective.
William Summers.

MB&B 449A/G, Medical Impact of Basic Science.
Joan Steitz,
Mark Hochstrasser, I. George Miller, Lynne Regan, Thomas Steitz,
Patrick Sung.

*MCDB 107A, Human Biology.
William Segraves, Mitchell Kundel.
For description see under Biology.

*MCDB 109B, Immunology and Microorganisms.
Paula Kavathas.
For description see under Biology.

Robert Wyman.
For description see under Biology.

Hugh Taylor, Mary Klein.
For description see under Biology.
**MMES 330a, Health, Conflict, and Society in the Arab World.** Marwan Khawaja.

**MMES 331b, Health in Conflict: The Case of the Palestinian Population.** Tarik Ramahi.


**PLSC 248b, The Politics of Health Care.** William Kissick.


**PLSC 446b/INTS 354b/SOCY 369b, Welfare States across Nations.** Sigrun Kahl. For description see under Political Science.


**PSYC 355, Clinical Psychology in the Community.** Kristi Lockhart.

**PSYC 411b, What We Eat and Why.** Kelly Brownell.

**SOCY 023b, Reproduction in Global Contexts.** Averil Clarke.

WGSS 120a, Women, Food, and Culture. Maria Trumpler.

WGSS 253b, Women’s Health: Global Issues. Naomi Rogers, Janet Henrich.

**WGSS 323b/AFST 323b/ANTH 356b, HIV and AIDS in Africa.** Graeme Reid. For description see under Women’s, Gender, & Sexuality Studies.

**Graduate Courses of Interest to Undergraduates**

Qualified students may take graduate courses at the School of Public Health, subject to the restrictions on graduate and professional school enrollment described in chapter III, section K. A list of graduate and professional school offerings and other resources to support learning in areas related to health can be found on the Health Studies Web site at [www.yale.edu/yalecollege/healthstudies/courses.html](http://www.yale.edu/yalecollege/healthstudies/courses.html). Further information about these courses and other graduate offerings can be found in the School of Public Health bulletin.

**HEBREW**

(See under Near Eastern Languages and Civilizations.)
HELENIC STUDIES

Directors: Stathis Kalyvas, 8 Prospect Pl., 432-5386, stathis.kalyvas@yale.edu; John Geanakoplos, 30 Hillhouse Ave., 432-3397, john.geanakoplos@yale.edu; associate program chair: George Syrimis, 34 Hillhouse Ave., 432-9342, george.syrimis@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF HELLENIC STUDIES

Professors
John Geanakoplos (Economics), Stathis Kalyvas (Political Science)

Lecturers
Konstantina Maragkou (History), George Syrimis (Comparative Literature)

Lector
Maria Kaliambou

Hellenic Studies is a program of the Council on European Studies. The core of the program is the teaching of modern Greek, supplemented with other courses and events related to the study of postantiquity Greece, as well as the society and culture of modern Greece and its interaction with the rest of Europe and the world. Related courses can be found in the listings of Anthropology, History, History of Art, Literature, Political Science, Religious Studies, and Russian and East European Studies. A major in Ancient and Modern Greek is described under Classics. Students who have an interest in postantiquity Greek language, society, or culture are advised to consult with the associate program chair of the Hellenic Studies program or to contact the Council on European Studies, 242 Luce, 432-3423.

mgrk 110aG, ELEMENTARY MODERN GREEK I. Maria Kaliambou.
MTWTh 9.25-10.15, 1 HTBA L1 1½ C Credits (32)
An introduction to modern Greek, with emphasis on spontaneous oral expression. Use of communicative activities, graded texts, written assignments, grammar drills, audiovisual material, and contemporary documents. In-depth cultural study. Credit only on completion of mgrk 120b. (Formerly the first term of mgrk 115)

mgrk 120bG, ELEMENTARY MODERN GREEK II. Maria Kaliambou.
MTWTh 9.25-10.15, 1 HTBA L2 1½ C Credits (32)
Continuation of mgrk 110a. Prerequisite: mgrk 110a. (Formerly the second term of mgrk 115)

mgrk 130aG, INTERMEDIATE MODERN GREEK I. Maria Kaliambou.
MTWTh 10.30-11.20, 1 HTBA L3 1½ C Credits (33)
Development of proficiency in understanding, speaking, reading, and writing modern Greek. Extensive use of authentic contemporary resources. Continued familiarization with contemporary Greek culture. Prerequisite: mgrk 120b or satisfactory placement test.

mgrk 140bG, INTERMEDIATE MODERN GREEK II. Maria Kaliambou.
MTWTh 10.30-11.20, 1 HTBA L4 1½ C Credits (33)
Continuation of mgrk 130a. Prerequisite: mgrk 130a or permission of instructor. (Formerly mgrk 131b)

F 1.30-3.20 WR, Hu (0) Tr
The complex relationship between religion and literature from the nineteenth century to the present. Focus on the Greco-Roman and Judeo-Christian traditions. Modernity and tradition, the legitimacy of ritual, the relationship between church and state, and the reception of antiquity. The emergence of modern discourses of gender and sexuality in light of religious practice and dogma.

F 1.30-3.20 WR, Hu (O) Tr
The emergence of literary genres influenced by the experience of war. Readings from both ancient and modern texts, with a focus on the Greek tradition. War as inhuman violence, honorific endeavor, necessary evil, sacred cause, and gendered conflict. The ways in which the literature of war explores what it means to be human.

*MGKR 212A/*GMST 212A/*LITR 328A, FOLKTALES AND FAIRY TALES. Maria Kaliambou.
M 1.30-3.20 Hu (O) Tr
History of the folktale from the late eighteenth through the late nineteenth centuries. Basic concepts, terminology, and interpretations of folktales, with some attention to twentieth-century theoretical approaches. Performance and audience, storytellers, and gender-related distinctions. Interconnections between oral and written traditions examined in narratives from western Europe and Greece.

MGKR 225B/HIST 243B/INTS 374B, OCCUPIED EUROPE DURING WORLD WAR II. Konstantina Maragkou.
THH 1-2.15 Hu (26)
The immediate causes, experience, and consequences of the conquest and occupation of European countries during World War II. Comparison of occupation experiences under different conquerors, with an emphasis on Nazi and Soviet rule. Occupational patterns, resistance and genocide, and the impact of military and diplomatic events on the internal social and political developments of individual European nations. Greece used as a case study.

T 1.30-3.20 Hu (O)
The influence of the Marshall Plan and the Cold War in the making of postwar Europe, with a focus on how these developments affected the European integration process. The antecedents and evolution of European integration from its origins to the Treaty of Maastricht. Greece used as a case study.

*MGKR 450A and 451B, SENIOR SEMINAR IN MODERN GREEK LITERATURE. George Syrimis.
3 HTBA L5 (O)
A senior seminar in modern Greek literature for students with advanced proficiency in modern Greek. May be offered toward the major in Ancient and Modern Greek.

*MGKR 481A, INDEPENDENT TUTORIAL. Staff.
HTBA (O)
For students with advanced language skills in modern Greek who wish to engage in individual study or concentrated reading and research on material not otherwise offered in courses. Applicants submit a detailed project proposal to the language studies coordinator. The student must meet with the instructor for at least one hour each week, and the work must terminate in a term paper or its equivalent.
HINDI

(See under South Asian Studies.)

HISTORY

Director of undergraduate studies: Jennifer Klein, 237 HGS, 432-1355, jennifer.klein@yale.edu

FACULTY OF THE DEPARTMENT OF HISTORY

Professors

Associate Professors
Bruno Cabanes, Mary Lui, Michael R. Mahoney, Mridu Rai, Naomi Rogers, Stuart Semmel (Visiting)

Assistant Professors
Paola Bertucci, Patrick Cohrs, Fabian Drixler, Seth Fein, Beverly Gage, Michael Gasper, Lillian Guerra, Alyssa Mt. Pleasant, Youval Rotman, Edward Rugemer, Paul Sabin, Celia Schultz, Marci Shore, Bruno Strasser, Charles Walton, Kariann Yokota

Senior Lecturers
Annping Chin, Bettyann Kevles

Lecturers

Unless designated by a star, courses in History are open to all students in Yale College. Unstarred courses, however, are liable to be limited in their enrollment (“capped”) at the beginning of the term, depending on the number of teaching assistants available.

A student who declares a History major is assigned an adviser from among the departmental faculty. The adviser is available throughout the year for consultation about courses and the major. At the beginning of each term, students majoring in History must have their departmental adviser approve and sign their schedules. It is possible for students to change advisers provided they obtain the written consent of the new adviser.

The major. The prerequisite for entering the History major is two term courses in history. Courses completed in fulfillment of the prerequisite may be applied to the requirements of the major.

Selection of courses. The Department of History strongly urges each student to devise a program of study that, while meeting individual interests and needs, also achieves a balance between diversification and specialization. Exposure to a variety of areas of history is desirable first because only wide-ranging
experience can give students confidence in having discovered their own true interests and aptitudes. Equally important, studying various times and societies, including preindustrial ones, prevents provincialism and provides the comparative knowledge essential to a clearer understanding of the area chosen for specialization. Finally, the department assumes that all students understand the vital importance of studying the historical traditions from which their society has developed. One cannot expect to understand another culture without a firm historical grasp of one’s own.

Requirements of the major. Twelve terms of history are required, which may include the two terms taken as prerequisites. Included in these twelve terms must be:

(a) two terms of United States or Canadian history (courses in the colonial period may fulfill this requirement);
(b) two terms of European or British history (courses in Greek and Roman, Byzantine, and Russian history may fulfill this requirement);
(c) three terms of African, Asian, Latin American, or Middle Eastern history.

Two of these seven terms must be courses in preindustrial history, and they must be chosen from two of the geographical categories listed above. Preindustrial history courses are so marked in their data lines. Students may use the same courses to count toward both geographical and preindustrial requirements. Only in rare cases will the director of undergraduate studies consider petitions from History majors seeking geographical or chronological credit outside of a History course’s primary designation.

Two junior seminars (identified by the suffix J on the course number) are required and are normally taken during the junior year, although students are encouraged to take more than two junior seminars. (See below under Junior Seminars for information about pre-enrollment.) Students must choose junior seminars from two different geographical categories. Sophomores contemplating a junior term abroad are urged to consider taking at least one junior seminar in the sophomore year. Residential college seminars that count toward the History major do not fulfill the junior seminar requirement. During senior year, each student must complete a senior departmental essay written under the guidance of a member of the faculty. Juniors may choose their senior essay advisers on line beginning in March 2009.

Credit toward the major will be given only for courses included in the History listing below and in the History course listings included in the online Yale College Course Supplement. All courses in History of Science, History of Medicine count automatically toward the History major. No substitutions from other departments are allowed.

Library orientation. The History department requires all majors to complete a ninety-minute introductory research session for historians by the end of the third week of the junior year. Several library orientation sessions are offered at the beginning of each term. Students are strongly encouraged to take this class during their sophomore year; indeed, sophomores who have not taken the library orientation before the end of February will not be permitted to preregister for the following year’s junior seminars. Students may offer no substitutions for this orientation. Students should register on the Web at www.library.yale.edu/instruction/hist. For questions students should contact the director of undergraduate studies.

History of Science, History of Medicine. A major in History of Science, History of Medicine is available to students through the auspices of the History department. See under History of Science, History of Medicine.
Placement in advanced courses. With a few exceptions, chiefly junior seminars (identified by the suffix J on the course number), history courses are automatically open to freshmen. Courses for the major must be taken at Yale, except with prior permission of the director of undergraduate studies.

Senior departmental essay. History is more than past events; it is also the discipline of historical inquiry. As a discipline, it uses many techniques, but its basic method is the collection and careful evaluation of evidence and the written presentation of reasonable conclusions derived from that evidence. To experience history as a discipline, a student must grapple at first hand with the problems and rigors involved in this kind of systematic investigation and exposition. The Department of History therefore requires each student majoring in History to present a historical essay on a subject of the student’s choice to the department in the senior year. The range of acceptable topics is wide, but most essays fall into two categories. The first involves the study of a limited problem through research in accessible source materials. The second is a critical assessment of a significant historical controversy or historiographical issue. Whatever topic the student elects, the essay must be interpretive and analytical, not only narrative and descriptive.

In choosing the subject of the senior essay, students should be aware that lack of foreign language expertise is not necessarily a bar to researching a topic in the history of a non-English-speaking area. Many translated materials exist, and for some areas of the world (chiefly Africa, Asia, and Latin America) diaries, letters, and newspapers composed by missionaries, businessmen, and diplomats writing in English are available. Many of these sources are held in Yale’s extensive archival collections; others are available on microfilm.

Seniors receive course credit for satisfactory completion of their departmental essays by enrolling in hist 495a or b and 496a or b. They must also complete a library research colloquium for the senior essay. Students should register for the colloquium on the Web at www.library.yale.edu/instruction/hist.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** 2 term courses in hist

**Number of courses:** 12 term courses (incl prereqs and senior essay)

**Substitution permitted:** None outside Hist dept listing

**Distribution of courses:** 2 courses in hist of U.S. or Canada, 2 in hist of Europe or Britain, 3 in hist of Africa, Asia, Latin America, or Middle East; 2 of preceding must be preindustrial in different geographical areas; at least 2 junior sems, normally in junior year, in 2 different geographical areas (defined above)

**Senior requirement:** Senior essay (hist 495a and 496b, or 495b and 496a)

History courses numbered 001 to 090 are freshman seminars, with enrollment limited to 18. Courses numbered 100 to 199 are in the history of the United States or Canada; those in the 200s, Europe and Britain; and those in the 300s, the rest of the world. Lecture courses are subject to capping at the beginning of each term.

**DRST 003, Directed Studies: Historical and Political Thought.** David Bromwich, Charles Hill, Emily Levine, Annabel Patterson, Stuart Semmel, Kathryn Slanski, Steven Smith, Daniel Stein Kokin, Norma Thompson, Justin Zaremby. PreInd [F]

MW 1-2.15 WR, Hu (o) Fr sem

The survival and prosperity of religion in America from the 1870s to 2000. Topics include the relationship of religion to urbanization, industrialization, and American corporate life; efforts to realign religion to meet conditions of modernity; and ways that pluralism, gender equality, race, class, and expanding debates about values and culture challenged religion even as they expanded its influence in unexpected ways. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

Medicine and Society in American History. Rebecca Tannenbaum.

TTH 11.35-12.50 WR, Hu (0) Fr sem

Disease and healing in American history from colonial times to the present. Topics include the changing role of the physician, alternative healers and therapies, and the social impact of epidemics from smallpox to AIDS. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

Essential Heresies. Carlos Eire.

MWF 9-10.15 Hu (o) Fr sem

Introduction to individuals and movements that have challenged the intellectual and spiritual status quo in Western civilization. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

The Viking Age. Anders Winroth.

MWF 1-2.15 WR, Hu (o) Fr sem

Exploration of the ambiguous role of the Vikings in the history of the early Middle Ages. Focus both on the Vikings’ impact in Europe (raids, trade, and settlement) and on developments in their Scandinavian homelands (Christianization and the creation of kingdoms). Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.


TTH 2.30-3.45 WR, Hu (0) Fr sem

An examination of the ways in which American culture took shape in the years after World War II. Focus on domestic culture and society during the years when unprecedented prosperity vied with fears of Armageddon. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

History of Higher Education in America. George Levesque.

WF 2.30-3.45 Hu (o) Fr sem

A survey of the history of American higher education from the colonial era to the Cold War. Emphasis on changes in the profile of students, the role of faculty, and the scope of the curriculum. Particular attention to how these changes reflected larger developments in American intellectual, cultural, and social history. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.


TTH 1-2.15 WR, Hu (o) Fr sem

An introduction to the discipline of history. History viewed as an art, a science, and something in between; differences between fact, interpretation, and consensus; history as a predictor of future events. Focus on issues such as the interdependence of variables, causation and verification, the role of individuals, and to what extent historical inquiry can or should be a moral enterprise. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
Patrick Cohrs.

TH 1-2.15 WR, Hu (0) Fr sem
Perspectives on the global role of the United States in the twentieth century. Focus on U.S. aspirations to recast global order and to globalize the “American model,” particularly after the two world wars. Special attention to U.S. relations with Europe, East Asia, and Latin America. Enrollment limited to freshmen. Pre-registration required; see under Freshman Seminar Program.

HIST 102b, BENJAMIN FRANKLIN AND THE BIRTH OF A NEW NATION.
Michael Sletcher.

MW 4.30-5.20, 1 HTBA Hu (37) PreInd
A transatlantic history of eighteenth-century America, with a focus on the life of Benjamin Franklin. Social, cultural, and political events that shaped the identity of America from the colonial period to the founding of the United States.

HIST 103a/AMST 189a, THE FORMATION OF MODERN AMERICAN CULTURE, 1750–1876.
Kariann Yokota.
For description see under American Studies.

HIST 106b/AMST 191b, THE FORMATION OF MODERN AMERICAN CULTURE, 1920 TO THE PRESENT.
Matthew Jacobson.
For description see under American Studies.

HIST 115a/AMST 188a, THE COLONIAL PERIOD OF AMERICAN HISTORY.
John Demos.

TH 1-2.15, 1 HTBA Hu (26) PreInd
Significant themes in American life, 1607–1750: politics and imperial governance, social structure, religion, ecology, race relations, gender, popular culture, the rhythms of everyday life. Freshman enrollment limited to students with scores of 4 or 5 on the Advanced Placement test in U.S. history.

David Blight.

TH 10.30-11.20, 1 HTBA Hu (23)
The causes, course, and consequences of the American Civil War. A search for the multiple meanings of a transformative event, including national, sectional, racial, constitutional, social, gender, intellectual, and individual dimensions.

HIST 120a/EVST 120a, INTRODUCTION TO ENVIRONMENTAL HISTORY.
Paul Sabin.
For description see under Environmental Studies.

HIST 121b/HSHM 240b, CURIOSITY AND NATURAL INQUIRY.
Paola Bertucci.
For description see under History of Science, History of Medicine.

HIST 123a/HSHM 239a, CULTURES AND HISTORIES OF MIND.
Jamie Cohen-Cole.
For description see under History of Science, History of Medicine.

HIST 127a/AMST 135a/WGSS 200a, U.S. LESBIAN AND GAY HISTORY.
George Chauncey.

TH 10.30-11.20, 1 HTBA Hu (23)
Introduction to the social, cultural, and political history of lesbians, gay men, and other socially constituted sexual minorities. Focus on understanding categories of sexuality in relation to shifting normative regimes, primarily in the twentieth
century. Topics include the emergence of homosexuality and heterosexuality as categories of experience and identity; the changing relationship between homosexuality and transgenderism; the development of diverse lesbian and gay subcultures and their representation in popular culture; religion and sexual science; generational change and everyday life; AIDS; and gay, antigay, feminist, and queer movements.

MW 10.30-11.20, 1 HTBA  Hu (33)
Mexicans and Mexican Americans in the United States since the Mexican War. Particular attention to communities and conflicts in the U.S.—Mexico border region. Topics include the rise of Latino immigration since the mid-nineteenth century, the influence of the Mexican Revolution on the United States, patterns of ethnic and racial conflict in the Southwest, and struggles by immigrant and native-born residents to create new labor and civil rights movements.

HIST 131a/AMST 131a, U.S. POLITICAL AND SOCIAL HISTORY, 1900–1945.
Glenda Gilmore.
TTh 11.35-12.25, 1 HTBA  Hu (24)
The social, political, and economic changes that transformed American society from the turn of the twentieth century through World War II.

For description see under International Studies.

HIST 135b/ECON 182b, AMERICAN ECONOMIC HISTORY. Benjamin Chabot.
For description see under Economics.

HIST 137b/AMST 230b/ER&M 223b, INTERNATIONAL HISTORY OF THE UNITED STATES IN THE TWENTIETH CENTURY. Seth Fein.
MW 4-5.15, 1 HTBA  Hu (37)
The political, economic, and sociocultural interactions of the United States with other states and societies since 1900. Topics include domestic and international dimensions of U.S. foreign policy, the global context of U.S. political economy and identities, and the transnational presence of and response to the United States within other nations. Emphasis on culture and ideology.

HIST 140a/HSHM 215a, PUBLIC HEALTH IN AMERICA, 1793–2000.
Naomi Rogers.
For description see under History of Science, History of Medicine.

For description see under Political Science.

HIST 169b, EARLY NATIONAL AMERICA. Joanne Freeman.
TTh 2.30-3.20, 1 HTBA  Hu (27) PreInd
An introduction to America’s first decades as a nation. Topics include the creation of a national politics, the clash between Federalists and Republicans in the states and in the nation’s capital, and changes in American society and culture. (Formerly HIST 173b)

HIST 183a/AMST 272a/ER&M 282a, ASIAN AMERICAN HISTORY, 1800 TO THE PRESENT. Mary Lui.
For description see under American Studies.
HIST 184a/AFAM 160a, African American History: 1500–1888.
Edward Rugemer.

Th 10.30–11.20, 1 HTBA  Hu (23)
The history of peoples of African descent throughout the Americas, from the first African American societies of the sixteenth century through the century-long process of emancipation.

For description see under African American Studies.

Patrick Cohrs.

Th 2.30–3.20, 1 HTBA  Hu (27)
The transformation of the modern international system and the role of the United States in the world, from the American Revolution to the aftermath of World War I. Causes of international conflicts from the eighteenth century’s revolutionary wars to the Great War, the peace settlements of Vienna (1814–15) and Versailles (1919), the international politics of imperialism, America’s emergence as a world power, and Wilson’s pursuit of a “peace to end all wars.” Focus on the influence of ideas and learning processes on international history.

HIST 193a/HSHM 242a, Molecules, Life, and Disease: Twentieth Century. Bruno Strasser.
For description see under History of Science, History of Medicine. (Formerly HIST 173a)


Th 1.30–2.20, 1 HTBA  Hu (26)
A survey of the history and theory of terrorism in the United States since the Civil War. Topics include the Ku Klux Klan, anarchist and labor violence, the Weather Underground, antiabortion violence, the Oklahoma City bombing, and 9/11. Examination of the ideological roots of violence as well as legal, cultural, and political responses.


MW 10.30–11.20, 1 HTBA  Hu (33)
An overview of the economic, social, political, and intellectual history of modern Europe. Topics include the rise of absolute states, the scientific revolution, the Enlightenment, the French Revolution and Napoleon, the industrial revolution, the revolutions of 1848, nationalism and national unifications, Victorian Britain, the colonization of Africa and Asia, fin-de-siècle culture and society, the Great War, the Russian Revolution, the Europe of political extremes, and World War II.

HIST 205a/CLCV 205a, Introduction to Ancient Greek History.
Donald Kagan.
For description see under Classics. PreInd

HIST 208a/CLCV 232a/HUMS 233a, Food and Diet in Greco-Roman Antiquity. Veronika Grimm.
For description see under Classics. PreInd

HIST 210a/HUMS 380a, The Early Middle Ages, 284–1000.
Paul Freedman.

MW 10.30–11.20, 1 HTBA  Hu (33) PreInd
Major developments in the political, social, and religious history of western Europe from the accession of Diocletian to the feudal transformation. Topics include the conversion of Europe to Christianity, the fall of the Roman Empire, the rise of Islam and the Arabs, the “Dark Ages,” Charlemagne and the Carolingian renaissance, and the Viking and Hungarian invasions.

**HIST 211b/HUMS 381b, The Birth of Europe, 1000–1500.**

Anders Winroth.

MW 10.30-11.20, 1 HTBA Hu (33) PreInd

Europe during the central and late Middle Ages, from the feudal revolution to the age of discoveries. Europe as it came to be defined in terms of national states and international empires. The rise and decline of papal power, church reform movements, the Crusades, contacts with Asia, the commercial revolution, and the culture of chivalry.

**HIST 215b, Reformation Europe, 1450–1650.**

Bruce Gordon.

MW 1.30-2.20, 1 HTBA Hu (36) PreInd

Examination of a series of religious revolutions in Europe between 1400 and 1650 that altered the lives of its inhabitants in profound ways. The causes and nature of the reformations that changed the religious, political, social, and economic landscapes of early modern Europe and shaped the course of Western civilization as a whole.

**HIST 216b, Evolution of the Byzantine Empire.**

Youval Rotman.

WF 1-2.15 Hu (36) PreInd

The history of the Byzantine Empire from its reorganization by Justinian in the sixth century to its final destruction by the Turks in the mid-fifteenth century. Focus on the role Byzantium played as a political, economic, and cultural power.

**HIST 217a/CLCV 206a, Introduction to Roman History: The Republic.**

William Metcalf.

For description see under Classics. PreInd

**HIST 218b/CLCV 207b, Introduction to Roman History: The Empire.**

John Matthews.

For description see under Classics. PreInd

**HIST 219aG/JDST 200aG/RLST 148aG, History of Jewish Culture to the Reformation.**

Ivan Marcus.

For description see under Religious Studies. PreInd

**HIST 220bG/JDST 201bG/RLST 149bG, History of Jewish Culture, 1500 to the Present.**

Paula Hyman.

For description see under Religious Studies. (Formerly HIST 293b)

**HIST 223b/HUMS 244b/RNST 223b, Renaissance Italy.**

Francesca Trivellato.

TH 1.30-2.20, 1 HTBA Hu (26) PreInd

An overview of the social, economic, political, and cultural dimensions of the Italian Renaissance. Topics include life in the city and the countryside; family and gender roles; marginal groups; religion; war and state-building; arts and sciences; and the Mediterranean and the New World.

**HIST 224a/FILM 366a/HUMS 251a/ITAL 323a, Modern Italy: History and Film.**

Millicent Marcus, Frank Snowden.

TH 11.35-12.50; screenings W 7 P.M. Hu (24)
An examination of modern Italy from 1900 to the present, fusing the techniques of historians with the insights of modern film studies. History as it is represented and transformed in the cinema. Topics include regionalism and the Italian South; organized crime and the Mafia; emigration; fascism; the First and Second World Wars; Christian Democracy, communism, and the Italian Republic; the consumer society; terrorism; and contemporary politics. No knowledge of Italian required.

HIST 228b/ENGL 154b, Vikings. Roberta Frank, Anders Winroth. For description see under English Language & Literature. PreInd

HIST 229a, Nineteenth-Century Britain. Stuart Semmel. TTh 1-2.15 Hu (26) British politics, society, and culture in a period of constitutional reform, industrial development, social dislocation, imperial expansion, and cultural criticism.

HIST 232b, British History since 1900. Jay Winter. MW 10.30-11.20, 1 HTBA Hu (33) A survey of twentieth-century British history. Topics include imperialism, liberal reform, World Wars I and II, the rise of labor, family life, popular culture, the European question, Thatcher and Blair, national identity, and the debate over national decline.


HIST 234b/Hshm 235b, Epidemics and Society in the West since 1600. Frank Snowden. TTh 9.25-10.15, 1 HTBA Hu (22) The impact of epidemic diseases such as bubonic plague, cholera, malaria, and AIDS on society, public health, and the medical profession in comparative and international perspective. Topics include popular culture and mass hysteria, the mortality revolution, urban renewal and rebuilding, sanitation, the germ theory of disease, the emergence of scientific medicine, and debates over the biomedical model of disease.

HIST 243b/INTS 374b/Mgrk 225b, Occupied Europe during World War II. Konstantina Maragkou. For description see under Hellenic Studies.

HIST 251a/Rnst 251a, Early Modern England: Politics, Religion, and Society under the Tudors and Stuarts. Keith Wrightson. TTh 10.30-11.20, 1 HTBA Hu (23) PreInd An introduction to the development of English society between the late fifteenth century and the early eighteenth—a period of social, political, economic, and cultural transition, and one that provided the immediate context of early British settlement in North America and the literature of the English Renaissance.

HIST 261a/Plsc 176a, The Cold War. John Gaddis. MW 1-2.15, 1 HTBA Hu, So (36) The Cold War from beginning to end, viewed from the perspective of all its major participants, with particular emphasis on recently released Soviet, East European, and Chinese sources. Not open to freshmen. Counts toward either European or U.S. distributional credit within the major.

HIST 263a, Eastern Europe to 1914. Ivo Banac, Timothy Snyder. MW 10.30-11.20, 1 HTBA Hu (33)
Eastern Europe from the medieval state to the rise of modern nationalism. The Ottoman Empire, the Polish-Lithuanian Commonwealth, the Hapsburg monarchy, and various native currents. Themes include religious diversity, the constitution of empire, and the emergence of secular political ideologies.

**HIST 264b, Eastern Europe since 1914.** Ivo Banac, Timothy Snyder.
MW 10.30-11.20, 1 HTBA Hu (33)
Eastern Europe from the collapse of the old imperial order to the enlargement of the European Union. Main themes include world war, nationalism, fascism, and communism. Special attention to the structural weaknesses of interwar nation-states and postwar communist regimes. Nazi and Soviet occupation as an age of extremes; the collapse of communism; communism after 1989 and the dissolution of Yugoslavia in the 1990s as parallel European trajectories.

**HIST 269a/G/DIST 286a/G/RLST 230a/G, Holocaust in Historical Perspective.** Paula Hyman.
MW 10.30-11.20, 1 HTBA Hu (33)
A survey of the major historical issues raised by the Holocaust, including the roots of Nazism; different theoretical perspectives and ways of accounting for genocide; the behavior of perpetrators, victims, and bystanders; and problems of representation.

**HIST 271a/HUMS 330a, European Intellectual History since Nietzsche.** Marci Shore.
MW 11.35-12.25, 1 HTBA Hu (34)
Major currents in European intellectual history from the late nineteenth century through the twentieth. Topics include Marxism-Leninism, psychoanalysis, expressionism, structuralism, phenomenology, existentialism, antipolitics, and deconstruction.

**HIST 273a, Europe in the Age of Total War, 1914–1945.** Jay Winter.
MW 11.35-12.25, 1 HTBA Hu (34)
A survey of European history that addresses the two world wars and the transformation of European society and culture between 1914 and 1945.

**HIST 290a, Russia from the Ninth Century to 1801.** Paul Bushkovitch.
Th 1-2.15 Hu (26) PreInd
The mainstream of Russian history from the origins of the Kievan state to 1801. Political, social, and economic institutions as they made the transition from orthodoxy to the Enlightenment.

**HIST 306b, East Asia, 500 to the Present.** Fabian Drixler, Peter Perdue.
Th 1.30-2.20, 1 HTBA Hu (26)
Introduction to the history of societies in East Asia, including China, Inner Asia, Japan, Korea, and Vietnam, focusing on interactions over the past 1500 years.

**HIST 308a, Beijing and China, 900–2006.** Valerie Hansen.
HTBA Hu Meets RP (30)
The history of middle-period and modern China, focusing on Beijing. The city as capital or as one of five capital cities for the Liao, Jin, Yuan, Ming, and Qing dynasties and the People's Republic. Emphasis on the legacy of the past still visible in today's Beijing. **Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.**
**hist 310a, History of Modern South Asia.** Mridu Rai.

**TTh 11.35-12.50 Hu (24)**

Survey of the Indian subcontinent's history from colonial rule, through nationalist resistance, to postcolonial history. Topics include the establishment of British dominion; colonial transformation of Indian politics, society, economy, and culture; nationalism before and after Gandhi; the partition of India; and recent developments in South Asia.

**hist 314a, Early Sources in Chinese Intellectual Traditions.** Annping Chin.

**MW 1-2.15, 1 HTBA Hu (36) PreInd**

Readings in translation of the basic texts of Confucianism, Taoism, and legalism. Examination of what the early Chinese thought about the world and themselves, how they articulated what they thought and organized what they knew, and how they explored the irrational and issues such as fairness and moral appropriateness.

**hist 323b, Southeast Asia since 1900.** Benedict Kiernan.

**TTh 11.35-12.50 Hu (0)**

Comparative colonialism, nationalism, revolution, and independence in modern Southeast Asia. Topics include Indonesia and the Dutch, Indochina under French rule, the United States in the Philippines and Vietnam, Buddhism in Burma and Thailand, communist and peasant movements, and the Cambodian revolution and its regional repercussions.

**hist 325a, Race, Spirituality, and Revolution in the Caribbean.** Lillian Guerra.

**TTh 2.30-3.20, 1 HTBA Hu Meets RP (27)**

The Caribbean as a complex and diverse region shaped by imperial rivalries, patterns of colonial exploitation, cultural diversity, and varied forms of resistance to foreign domination. Focus on Jamaica, Trinidad and Tobago, Haiti, the Dominican Republic, and Nicaragua from the eighteenth century to the present. Topics include the age of piracy, slavery, Garveyism, the Trujillo dictatorship, Haitian popular religion, the Sandinista revolution, and U.S. foreign policy toward the region.

**hist 336b/AFST 336b, Africa since 1800.** Michael R. Mahoney.

**MW 10.30-11.20, 1 HTBA Hu (33)**

The forces that have shaped the development of Africa since the colonial takeover analyzed in order to understand and interpret current events.

**hist 339a/AFST 339a, History of Southern Africa.** Michael R. Mahoney.

**MW 10.30-11.20, 1 HTBA Hu (33)**

The history of southern Africa from c. 700 to the 1990s. Principal focus on South Africa in the nineteenth and twentieth centuries. Readings in primary sources.

**hist 343bG/JDST 265bG/RLST 202bG, Jews in Muslim Lands from the Seventh to the Sixteenth Centuries.** Ivan Marcus.

**TTh 11.35-12.50 Hu (0) PreInd**

Jewish culture and society in Muslim lands from the Prophet Muhammad to Suleiman the Magnificent. Topics include Islam and Judaism; Jerusalem as a holy site; rabbinic leadership and literature in Baghdad; Jewish courtiers, poets, and philosophers in Muslim Spain; and the Jews in the Ottoman Empire.

**hist 358a/ER&M 341a, Mexico in the Nineteenth and Twentieth Centuries.** Gilbert Joseph.

**TTh 2.30-3.45 Hu (27)**
Modern Mexico from the wars of independence in the early nineteenth century to the present. Social, cultural, and economic trends and their relationship to political movements; particular emphasis on the Revolution of 1910 and the long shadow it has cast, and on patterns of relations with the United States.

**HIST 3603/NELC 4023, The Islamic Near East from Muhammad to the Mongol Invasion.** Adel Allouche.
For description see under Near Eastern Languages & Civilizations. PreInd

**JUNIOR SEMINARS**

Juniors majoring in History must take at least two junior seminars. Seminars on the history of the United States or Canada are numbered 100J to 199J; seminars on Britain and Europe are 200J to 299J; and seminars numbered 300J to 399J cover the rest of the world. The seminars must be from two of the three different geographic categories defined in the text above. Each seminar aims to acquaint students in a substantial and professional way with the literature of a period in history; to train them as far as possible in the use of primary source materials; to introduce them to problems of bibliography, historiography, and historical method; and to give them training in the writing of history. The relative importance of these objectives in any particular seminar depends on its subject matter, the previous preparation of its students, and the availability of materials.

Each term prospective junior History majors should apply for seminars for the following term using the online junior seminar preregistration site. Pre-registration begins after midterm in the fall for seminars offered in the spring term, and after spring recess for seminars offered in the subsequent fall term. Accelerated students holding junior status must notify the undergraduate History administrator in 237 HGS, 432-1359, by October 17 in the fall and by March 23 in the spring in order to be eligible to preregister for the following term’s seminars. All students who wish to preregister must declare their major and take the mandatory History library orientation prior to preregistration.

In September and in January, application for admission should be made directly to the instructors of the seminars, who will admit students to remaining vacancies in their seminars. Priority is given to applications from juniors, then seniors, majoring in History, but applications are also accepted from qualified sophomores and from students majoring in other disciplines or programs. The department seeks wherever possible to accommodate students’ preferences; for their part, students should recognize that limitations imposed by the size of seminars (normally fifteen students) make accommodation impossible in some instances. **HIST 494a or b and residential college seminars that count toward the History major do not fulfill the junior seminar requirement.**


*TH 3.30-5.30 WR, Hu (o)*
History of the American South from postbellum southern society to contemporary neoconservatism. Disjuncture between the antebellum and postbellum South; the ideology and institutionalization of white supremacy, and resistance by black southerners before the 1950s; the civil rights movement; the flow of factories and capital to the South; effects of the region’s politics on national domestic and foreign policy.

*HIST 119Jb, Immigration and Xenophobia in American History.* Kyle Farley.

*TH 1.30-3.20 WR, Hu (o)*
U.S. history viewed through the lenses of immigration and nativism. The influence of religion, economics, and politics. Shifting racial identities during the nineteenth and twentieth centuries.

**HIST 120Jb/WGSS 428b, Labor and Democracy in the Twentieth-Century United States.** Jennifer Klein.
M 3.30-5.20 WR, Hu (o)
A history of work, labor relations, social movements, and labor policy in the United States since 1890; the history of class politics and economic development in modern America. Racial and gender hierarchies from farms to factories to sweatshops; labor rights as part of broader struggles over citizenship rights and democracy. Topics include various forms of labor organizing and protest, limits and possibilities of solidarity, braceros and migrant workers, civil rights, the Cold War, politics and policy, and Wal-Mart.

**HIST 121Jb, North American Slaveries: Southwest to Southeast.** Bonnie Martin.
T 1.30-3.20 WR, Hu (o)
A study of eighteenth-century slave systems in the South among the Navajos, Comanches, Spaniards, Choctaws, French, Creeks, and British. Contrasts in legal, economic, and cultural traditions and strategies. Historical stereotypes such as chattel slavery in the East and the adoption of slaves in the West. Exploration of differences, similarities, and shared opportunities.

**HIST 125Jb/AMST 456b, Making America Modern, 1880–1930.** Jean-Christophe Agnew.
For description see under American Studies.

**HIST 127Jb/WGSS 427b, Witchcraft in Colonial America.** Rebecca Tannenbaum.
W 1.30-3.20 WR, Hu (o) PreInd
The social, religious, economic, and gender history of British North America as manifested through witchcraft beliefs and trials.

**HIST 130Ja/INTS 144a, Techno-Science and the Making of the Modern Atlantic World.** John Varty.
For description see under International Studies.

**HIST 133Jb, The Creation of the American Politician, 1789–1820.** Joanne Freeman.
T 7-8.50 p.m. WR, Hu (o) PreInd
The creation of an American style of politics: ideas, political practices, and self-perceptions of America’s first national politicians. Topics include national identity, the birth of national political parties, methods of political combat, early American journalism, changing conceptions of leadership and citizenship, and the evolving culture of the early republic.

**HIST 135Ja, The Age of Hamilton and Jefferson.** Joanne Freeman.
W 1.30-3.20 WR, Hu (o) PreInd
The culture and politics of the revolutionary and early national periods of American history. The lives, ideas, and writings of Thomas Jefferson and Alexander Hamilton used as a starting point. Topics include partisan conflict, political culture, constitution making and nation building, and domestic life.

W 2.30-4.20 WR, Hu (o)
American domestic politics and political thought since the New Deal. Emphasis on the decline of midcentury liberalism and the rise of modern American conservatism. Topics include McCarthyism, the civil rights movement, the New Left, labor, business activism, the conservative intellectual movement, the Christian Right, and the Reagan Revolution.

*HIST 140Ja or Jb/•Hshm 328a or b, Methods and Literature in the History of Science and Medicine.
For description see under History of Science, History of Medicine.

Jamie Cohen-Cole.
For description see under History of Science, History of Medicine.

*HIST 143Ja/•Amst 325a/•Er&M 322a, Indian-Colonial Relations in Comparative Perspective.
Alyssa Mt. Pleasant.
For description see under American Studies.

*HIST 144Jb/•Hshm 316b, Scientific Personae.
Jamie Cohen-Cole.
For description see under History of Science, History of Medicine.

*HIST 145Jb/•Hshm 413b, X-Ray Visions: Medical Imaging since 1895.
Bettyann Kevles.
For description see under History of Science, History of Medicine.

*HIST 146Ja/•Hshm 431a, Science and Spectacle in the Enlightenment.
Paola Bertucci.
For description see under History of Science, History of Medicine. PreInd

*HIST 148Ja/•Hshm 325a, History of Astronomy.
Ivano Dal Prete.
For description see under History of Science, History of Medicine.

Cynthia Connolly.
For description see under History of Science, History of Medicine.

*HIST 154Jb/•Amst 304b, American Culture in the Revolutionary Era.
Kariann Yokota.
For description see under American Studies. PreInd

*HIST 156Ja/•Amst 424a, An Introduction to the Cultural History of Things.
Kariann Yokota.
For description see under American Studies.

*HIST 157Jb/•Amst 459b, Topics in Southern California History.
John Mack Faragher.
W 2.30–4.20 WR, Hu (0)
For more than a century, boosters have promoted southern California as an exemplar of the American future. In contrast, its history is underdeveloped. Study of the history of a place with little public memory.

*HIST 160Jb/•Amst 353b, Selected Topics in Lesbian and Gay History.
George Chauncey.
T 1.30–3.20 WR, Hu (0)
Close examination of major problems in U.S. lesbian and gay history since the Second World War, including the development of collective life and communications networks, the sources and effects of gay and antigay politics, and the cultivation of subcultural norms and changes in moral reasoning.

Thu 2:30-4:20 WR, Hu (0)
The intertwined histories of domestic communism and anticommunism in the twentieth-century United States. Topics include McCarthyism, the communist relationship with the Soviet Union, civil liberties, Cold War culture, and communist activism. Focus on connections between foreign policy and domestic political culture, the effect of anticommunism on political and social reform movements, and questions of American exceptionalism.


For description see under American Studies.

**HIST 164Jb/AMST 412b/ER&M 410b/FILM 405b**, Film and History. Seth Fein.

T 7-8:30 p.m. WR, Hu (0)
An exploration of relationships between cinema and the past that focuses on two discrete but related themes: how film constructs history and how history can be approached through the study of film.

**HIST 165Ja/AMST 411a/ER&M 390a**, The Idea of the Western Hemisphere. Seth Fein.

M 2:30-4:30 WR, Hu (0)
Conceptualizations of the Americas from the era of Monroe and Bolívar to that of Bush and Chávez. Consideration of connections between international relations and culture through the study of diplomacy, ideology, geography, art, literature, and film. Counts toward either U.S. or non-Western distributional credit within the major, upon application to the director of undergraduate studies.

**HIST 166Ja/AMST 410a**, Asian American Women and Gender, 1830 to the Present. Mary Lui.

W 1:30-3:20 WR, Hu (0)
Focus on Asian American women as key historical actors. Gender analysis used to reexamine major themes in Asian American history: immigration, labor, community, cultural representations, political organizing, sexuality, and marriage and family life.


W 3:30-5:20 WR, Hu (0)
A history of the landscape of ordinary life in the twentieth century. Topics include values and their mediation; social boundaries; and Americans’ changing relationship to the material world. Discussion of advertising, supermarkets and shopping malls, car culture, climate control, machines in the home, and the organization of domestic space.

**HIST 168Jb**, Quebec and Canada from 1791 to the Present. Jay Gitlin.

T 3:30-5:20 WR, Hu (0)
The history of Quebec and its place within Canada from the Constitutional Act of 1791 to the present. Topics include the Rebellion of 1837, confederation, the Riel Affair, industrialization and emigration to New England, French-Canadian nationalism and culture from Abbé Groulx to the Parti Québécois and Céline Dion, and the politics of language. Readings include plays by Michel Tremblay and Antonine Maillet (in translation). Counts toward only U.S. and Canadian distributional credit within the major.
**HIST 170Ja/**HSAR 462a, ShOPS AND SHOPPING.  Jay Gitlin, Sandy Isenstadt.
W 3.30-5.20 WR, Hu Meets RP  (0)
Historical overview of the spaces and practices of shopping. Topics include the consumer revolutions of the eighteenth century in Europe and North America, development of distinct building types for shopping, industrialization of consumer goods and the evolution of packaging and branding, women and consumer culture, the role of advertising, identity politics of shopping, the suburbanization of shopping from malls to Internet shopping, and the absorption of public space within the sphere of commerce.

**HIST 171Jb/**AFAM 247b, INTERRACIAL IDENTITY.  Laurie Woodard
For description see under African American Studies.

**HIST 172Jb/**AFAM 257b, PERFORMING BLACK WOMANHOOD: AFRICAN AMERICAN WOMEN’S IDENTITY IN TWENTIETH-CENTURY POLITICS AND CULTURE.  Laurie Woodard
For description see under African American Studies.

**HIST 180Ja/**EVST 443a, ENERGY IN AMERICAN HISTORY.  Paul Sabin.
T 2.30-4.20  (0)
An exploration of the history of energy in U.S. history since the late nineteenth century. Topics include the global quest for resources; changing national energy policies; relations between energy producers and communities; political resistance to energy projects; and social, cultural, and environmental transformations associated with energy production and consumption.

**HIST 200Ja/**CLCV 406a, ATHENIAN IMPERIAL DEMOCRACY.
Donald Kagan.
For description see under Classics.  PreInd

**HIST 204Ja/**HUMS 330a, SLAVERY IN THE MEDIEVAL MEDITERRANEAN.
Youval Rotman.
Th 3.30-5.20 Hu  (0)  PreInd
The role of slavery in the Middle Ages as a social institution. An outline of the changes in this institution during the Roman, Late Roman, and Byzantine periods; a challenge to the idea that the shift between antiquity and the Middle Ages brought a decline in the use of slaves.

For description see under Classics.  PreInd

**HIST 209Ja/**LATN 447aG, ROMAN SOCIAL HISTORY IN LATIN TEXTS.
John Matthews.
For description see under Classics.  PreInd

**HIST 211Ja/**NELC 380aG/**RLST 420aG, THE MAKING OF MONASTICISM.
Bentley Layton.
For description see under Religious Studies.  PreInd.

**HIST 213Ja/**CLCV 414aG, RELIGIONS OF THE ROMAN EMPIRE.
Veronika Grimm.
For description see under Classics.  PreInd

T 1.30-3.20 WR, Hu  (0)
A comparative examination of successful as well as unsuccessful biographies, intended to identify both principles and pitfalls.

**hist 219Jb, THE MONARCHY AND MODERN BRITISH SOCIETY.**  
Frank Prochaska.  
W 3:30-5:20 (o)  
An exploration of the monarchy's place in British politics and society. Focus on the institution in its constitutional, ceremonial, welfare, and imperial roles in an era of democratic reform. Other topics include the varieties of republicanism, crown administration, and the honors system.

**hist 220Ja, GRAND STRATEGY AND THE ORIGINS OF THE SECOND WORLD WAR.**  
Paul Kennedy.  
T 1:30-3:20 WR, Hu Meets RP (o)  
A survey of the most important literature and debates concerning the coming of the Second World War in both Europe and the Pacific. Emphasis on the comparative approach to international history and on the interplay of domestic politics, economics, and strategy. *Counts toward only European distributional credit within the major.*

**hist 221Ja, THE RUSSIAN REVOLUTION.**  
Laura Engelstein.  
M 1:30-3:20 WR, Hu (o)  
Social, political, and cultural forces that brought about the collapse of the Russian Empire in 1917 and led to the establishment of the Soviet regime. Themes include the impact of World War I, the problem of the monarchy, the role of radical movements, and the nationality question.

**hist 222Ja, RUSSIA AND THE EURASIAN STEPPE.**  
Paul Bushkovitch.  
W 1:30-3:20 WR, Hu (o) PreInd  
A study of Russia's interaction with the nomads of the Eurasian steppe. Topics include the Mongol invasion, the Mongol Empire in Asia and the Golden Horde, Islam, nomadic society, and the Russian state. Focus on conquest and settlement.

**hist 224Jb, DIARIES AND MEMOIRS OF TWENTIETH-CENTURY EUROPE.**  
Laura Engelstein.  
M 1:30-3:20 WR, Hu (o)  
Exploration of how men and women of twentieth-century Europe (including Russia) made sense of their lives in the context of war, revolution, and cultural conflict. Focus on first-person narratives, some by professional writers, others by ordinary people searching for personal and cultural identity.

**hist 228Ja/ hums 393a, VENICE AND THE MEDITERRANEAN, 1400–1700.**  
Francesca Trivellato.  
M 1:30-3:20 WR, Hu (o) PreInd  
Major issues in the history of Venice and the Mediterranean in the early modern period. Topics include the organization of trade, relations between East and West, slavery, Venetian politics and society, women and gender roles, ethnic and religious minorities, foreign travelers, and the seeds of Orientalism.

**hist 229Jb, LONDON, 1560–1760.**  
Keith Wrightson.  
T 3:30-5:20 WR, Hu (o) PreInd  
A study of London's growth between 1560 and 1760 from a modest city of perhaps 50,000 people to a metropolis with over 700,000 inhabitants. Themes include the dynamics of growth; birth and death, with particular reference to the plague; migration; household life; villages within the city; London as the center of print
culture; the royal court; polite society in the late seventeenth and early eighteenth centuries; the “middle sort of people” and consumerism; the world of the poor; and vice and criminality.

M 2.30-4.20 WR, Hu (o)
Exploration of how memoir writers from the seventeenth century to the twentieth understand their own experience against the backdrop of Jewish history. Focus on the construction of identity and the relation of personal and collective memory, with special attention to the interaction of minority status, gender, and class in a variety of historical contexts. Counts toward only European distributional credit within the major.

*HIST 231Ja/JHUMS 310a, Responses to Totalitarianism.
Marci Shore.
M 3.30-5.20 WR, Hu (o)
Responses to the experiences of Nazism, Stalinism, and other forms of fascist and communist totalitarianism in twentieth-century Europe.

*HIST 232Ja/JHUMS 392a/JDST 270a/RLST 201a, Medieval Jews, Christians, and Muslims Imagining Each Other. Ivan Marcus.
For description see under Humanities. PreInd

*HIST 233Jb/JHUMS 311b, Phenomenology, Structuralism, Existentialism.
Marci Shore.
W 2.30-4.20 WR, Hu (o)
The intellectual history of modern Europe. Notions of the self and subjectivity in European modernity. Some attention to philosophy, linguistics, and literary theory.

Daniel Stein Kokin.
For description see under Judaic Studies.

*HIST 242Ja/RLST 264a, The German Reformation, 1517–1555.
Bruce Gordon.
For description see under Religious Studies. PreInd

*HIST 244Jb/JDST 383b/RLST 225bG/WGSS 383b, Women and Judaism.
Paula Hyman.
For description see under Religious Studies.

*HIST 251Ja/INTS 372a/GRK 226a, History of European Integration.
Konstantina Maragkou.
For description see under Hellenic Studies.

W 1.30-3.20 WR, Hu (o)
The history of human rights in France, from their conceptual origins to their emergence in the French Revolution of 1789 and their subsequent evolution in the nineteenth and twentieth centuries. Intellectual, legal, political, social, and cultural dimensions of human rights, with attention to historical tensions over definition and implementation. Emphasis on the period of the French Revolution.
**HIST 262Ja, Terror in France.** Charles Walton.

W 2.30-4.20 WR, Hu (o)

Collective violence in France from the sixteenth century to the twentieth, focusing on religious and revolutionary violence. Emphasis on the interaction between group violence and authorities. Topics include the Wars of Religion (1562–98), urban revolts of the seventeenth and eighteenth centuries, the Revolution of 1789 and the concurrent revolution in the French colony of Saint-Domingue (Haiti), and the Algerian war for independence (1954–62). Emphasis on the French Revolution, from the storming of the Bastille in 1789 to the Reign of Terror (1793–94).

**HIST 265Jb, The Communist Movement.** Ivo Banac.

T 1.30-3.20 WR, Hu (o)

History of Leninist communism from the October Revolution to the systemic collapse in 1989. The rise and the Stalinization of the Communist International (Comintern); the popular front; civil war in Spain; revolutions in Yugoslavia, China, Vietnam, and Cuba; people’s democracies in Eastern Europe; the interaction of communism and fascism.

**HIST 266Ja/HUMS 315a, Greek and Arabic Medieval Historiography.** Youval Rotman.

M 1.30-3.20 WR, Hu (o) PreInd

An examination of how history was written from Greco-Roman times to the Middle Ages, with a focus on Byzantium and the Arab world. Comparisons of different historiographical approaches. Introduction to the techniques, philosophies, and ideologies of medieval historiography.

**HIST 280Jb, Britain under George III.** Stuart Semmel.

W 2.30-4.30 WR, Hu (o) PreInd

British society, culture, and politics in the age of the American and French revolutions. Topics include crime, riots, radicalism, popular culture, the press, gender, sexuality, race, and nation.

**HIST 310Ja, History of Chinese Religions.** Valerie Hansen.

HTBA WR, Hu Meets RP (o)

An introduction to Chinese religions as seen in contemporary Beijing. Close readings of selected religious texts combined with field trips to Buddhist, Daoist, and Confucian sites as well as Christian and Islamic centers. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

**HIST 313Ja/EVST 420a, Asian Environments and Frontiers.**

Peter Perdue.

Th 2.30-4.30 WR, Hu (o)

The impact of Asian farmers, merchants, and states on the natural world. Focus on imperial China, with discussion of Japan, Southeast Asia, and Inner Asia in the early modern and modern periods. Themes include frontier conquest, land clearance, water conservancy, urban footprints, and relations between agrarian and nonagrarian peoples. Attention to environmental movements in Asia today.

**HIST 317Ja, The Qing Dynasty.** Jonathan Spence.

M 3.30-5.20 WR, Hu (o) PreInd

China’s last dynasty, the Qing (1644–1912), from its founding by the Manchu conquerors to its disintegration in the face of domestic turbulence and foreign incursions. Topics include the structure of the central government, the nature of peasant society, the roles of women, the growth of towns, the main intellectual
trends, the nature of dissent, and the ways foreign incursions forced China to adjust to the wider world.

*HIST 325Jb, **INFANTICIDE AND FOUNDLINGS IN ASIA AND EUROPE BEFORE 1900.** Fabian Drixler.

W 2.30-4.20 WR, Hu (0)

A comparative and transnational history of infanticide, child abandonment, and foundling care in Europe and Asia before 1900, with emphasis on parental motives and social reactions.

*HIST 327Ja, **NAVIGATING LIFE IN NINETEENTH-CENTURY JAPAN.** Fabian Drixler.

T 1.30-3.20 WR, Hu (0)

A study of the joys and sorrows of life in nineteenth-century Japan. Topics include finding a mate, becoming a parent, making and keeping friends, seeing the world, and coping with bereavement.

*HIST 370Jb/**WGSS 470b, GENDER, NATION, AND SEXUALITY IN MODERN LATIN AMERICA.** Lillian Guerra.

W 9.25-11.15 WR, Hu (32)

Ideologies of modernity, criminality, and progress as they intersect with gendered struggles to define sexual freedom and the nation in nineteenth- and twentieth-century Latin America. Topics include antiprostitution campaigns, debates over homosexuality, efforts to revise traditional gender roles in revolutionary societies, and the relationship between gender and race honor.

*HIST 372Jb/**ER&M 342b, REVOLUTIONARY CHANGE IN TWENTIETH-CENTURY LATIN AMERICA.** Gilbert Joseph.

T 1.30-3.20 WR, Hu (0)

Analysis of revolutionary movements in Latin America, including discussion of common North American misconceptions about the movements. Critical examination of popular images and orthodox interpretations, using a variety of propositions about these revolutionary processes. An interdisciplinary study of the process of revolutionary change at the grassroots level.

*HIST 377Jb, **TRANSNATIONALISM IN THE CARIBBEAN.** Lillian Guerra.

W 1.30-3.20 Hu (0)


*HIST 379Jb/**HSHM 447bG, HISTORY OF CHINESE SCIENCE.**

William Summers.

Th 1.30-3.20 WR, Hu Meets RP (0)

A study of the major themes in Chinese scientific thinking from antiquity to the twentieth century. Emphasis on non-Western concepts of nature and the development of science in China, East-West scientific exchanges, and China’s role in modern science.

*HIST 381Ja, **ISLAM IN THE INDIAN SUBCONTINENT.** Mridu Rai.

W 3.30-5.20 WR, Hu (0)
An exploration of Muslim identity in Indian history that challenges teleological accounts of an inevitable drift by Muslims toward separate statehood in 1947. Themes include conquest and conversion; cultural and social accommodations under Muslim rule; Muslim self-perceptions under colonial challenge; Muslim politics and the partition of India; being Muslim in postcolonial South Asia.

*hist 382Jb, VIETNAMESE HISTORY FROM EARLIEST TIMES TO 1920.
Benedict Kiernan.

Evolution of a Vietnamese national identity, from Chinese colonization to medieval statehood, to French conquest and capitalist development. The roles of Confucianism, Buddhism, gender, and ethnicity in the Southeast Asian context.

*hist 384Jb/*nelc 403b, THE MIDDLE EAST BETWEEN CRUSADERS AND MONGOLS.
Adel Allouche.

The impact of the Crusades and the Mongol conquests on the Islamic Middle East. Political, social, and economic changes in the region from the eleventh century to the middle of the fourteenth. Emphasis on the rise of new dynasties as a result of changes in the ethnic mosaic of the Middle East.

*hist 385Ja, THE MIDDLE EAST AND THE WEST: A CULTURAL ENCOUNTER.
Abbas Amanat.

An examination of the Orient and the Occident as cultural constructs; encounters with Islam and the Middle East since the sixteenth century; evolving Muslim attitudes toward the West; Orientalism and images of the Middle East in the Western press; the United States as the Great Satan; clash or dialogue of civilizations.

*hist 386Ja/*afst 387a, WOMEN AND GENDER IN AFRICAN HISTORY.
Michael R. Mahoney.

Examination of both the particularities of the historical experiences of African women, and the ways that gender has been defined in an African context. Attention to precolonial, colonial, and postcolonial periods. Topics include masculinity, sexuality, and the representation of African women.

*hist 387Ja/*afst 487a, WEST AFRICAN ISLAM: JIHAD TRADITION AND ITS PACIFIST OPPONENTS.
Lamin Sanneh.

The impact of Islam on state and society, and the encounters of Muslim Africans first with non-Muslim societies in Africa and then with the modern West in the colonial and postcolonial periods. Focus on Muslim religious attitudes and responses to the secular national state and to the Western tradition of the separation of church and state.

*hist 388Ja/*afst 486a, SLAVERY AND THE SLAVE TRADE IN AFRICA.
Robert Harms.

The slave trade from the African perspective. Analysis of why slavery developed in Africa and how it operated. The long-term social, political, and economic effects of the Atlantic slave trade.

*hist 390Jb, POSTCOLONIAL SOUTH ASIA, 1947 TO THE PRESENT.
Mridu Rai.
Examination of the modern nation-states of India, Pakistan, and Bangladesh in the aftermath of British decolonization. Topics include the imprint of colonialism; democracy and authoritarianism; constructing or contesting nations; regional, linguistic, and caste conflict; gender and politics; political economy of development; war and peace.

*HIST 393Jb*/AFST 488b, INTERNATIONAL DEVELOPMENT IN HISTORICAL PERSPECTIVE.  Michael R. Mahoney.
T 1:30-3:20 WR, Hu (o)
The history of economic development, mainly since 1945, with a focus on Latin America, Asia, and especially Africa. Survey of this history from the colonial civilizing mission to current state–market–civil society debates. Evaluation of conflicts over economic globalization.

INDIVIDUAL RESEARCH AND SENIOR ESSAY COURSES

*HIST 494a or b, INDIVIDUAL WRITING TUTORIAL.  Jennifer Klein.
HTBA (o)
For students who wish, under the supervision of a member of the faculty, to investigate an area of history not covered by regular departmental offerings. The course may be used for research or for directed reading. It is normally taken only once. The emphasis of the tutorial is on writing a long essay or several short ones. To apply for admission, a student should present a prospectus of the work proposed, a bibliography, and a letter of support from the member of the faculty who will direct the tutorial to the director of undergraduate studies on the Friday before schedules are due. A form to simplify this process is available from the office of the director of undergraduate studies.

*HIST 495a or b and 496a or b, THE SENIOR ESSAY.  Gilbert Joseph.
HTBA (o)
There will be a mandatory senior essay meeting on Monday, September 8, 2008, in 114 SSS at 4 P.M.
Preparation of the required senior departmental essay under the supervision of a member of the faculty. To assist in selection of source materials and of a topic, special library resource and method colloquia are held during the fall term. Students must attend one colloquium; those planning to start their senior essay work in January should attend in September.

Students expecting to graduate in May enroll in 495a during the fall term and complete their essays in 496b in the spring term. December graduates enroll in 495b in the spring term and complete their essays in 496a during the following fall term. Students planning to begin their essay in the second term should notify the senior essay director by December 1, 2008. Each student majoring in History must present a completed Statement of Intention, signed by a departmental member who has agreed to serve as adviser, to the undergraduate History administrator in 237 HGS no later than September 15, 2008 (for HIST 495a), or January 23, 2009 (for HIST 495b). Blank statement forms are available in 237 HGS before the end of a student’s junior year, and thereafter in the Senior Essay handbook.

In addition to attending at least one library resource and method colloquium and preparing the Statement of Intention, students enrolled in HIST 495a or 495b submit to their advisers a prospectus of the essay and an annotated bibliography during the course of the term, and at least ten pages of the essay or a detailed outline of the entire project by December 8, 2008 (495a), or May 4, 2009 (495b). Those who meet these requirements receive a temporary grade of SAT, which will be changed to the grade received by the essay upon its completion. Failure to meet any requirement may result in the student’s being asked to withdraw from HIST 495a or b.
Students enrolled in HIST 496a or b must submit a completed essay to 211 HGS no later than 5 P.M. on April 6, 2009, in the spring term, or no later than 5 P.M. on December 8, 2008, in the fall term. Essays submitted after 5 P.M. will be considered as having been turned in on the following day. If the essay is submitted late without an excuse from the student's residential college dean, the penalty is one letter grade for the first day and one-half letter grade for each of the next two days past the deadline. No essay that would otherwise pass will be failed because it is late, but late essays will not be considered for departmental or Yale College prizes. All senior departmental essays will be judged by members of the faculty other than the adviser. In order to graduate from Yale College, a student majoring in History must achieve a passing grade on the departmental essay.

The essays should take the form of substantial articles, not longer than 12,500 words (approximately forty double-spaced typewritten pages), with the total word count given at the end of the essay. This is a maximum limit; there is no minimum requirement. Length will vary according to the topic and the historical techniques employed. Essays generally run between 10,000 and 12,500 words. The limitation on length is regarded as important because precision, clarity, and conciseness are essential to good historical writing. A brief evaluation of major sources is required. Consult the director of the senior essay course for details.

GRADUATE AND PROFESSIONAL SCHOOL COURSES OF INTEREST TO UNDERGRADUATES

Some graduate and professional school courses are open to qualified undergraduates with permission of the instructor and the director of graduate studies. (See chapter III, section K, for the number of such courses that students may offer toward the degree.) Course descriptions may be obtained from the office of the director of graduate studies.

HISTORY OF ART

Director of undergraduate studies: Lillian Tseng, 501 OAG, 432-3671, lillian.tseng@yale.edu

FACULTY OF THE DEPARTMENT OF HISTORY OF ART

Professors
- Brian Allen (Adjunct), Carol Armstrong, Tim Barringer, Judith Colton (Emeritus), Edward Cooke, Jr., David Joselit (Chair), Diana Kleiner, Amy Meyers (Adjunct), Mary Miller, Robert Nelson, Alexander Nemerov, Jock Reynolds (Adjunct), Vincent Scully (Emeritus), Robert Thompson, Christopher Wood, Mimi Yiengpruksawan

Associate Professors
- Anne Dunlop, Noa Steimatsky

Assistant Professors
- Milette Gaifman, Sandy Iserstatt, Jacqueline Jung, Kishwar Rizvi, Tamara Sears, Lillian Tseng, Sebastian Zeidler

Lecturers
- Jo Briggs, Lisa Brody, Theresa Fairbanks, Karen Foster, Patricia Kane, Laurence Kanter, David Sensabaugh, Scott Wilcox

Art history is the study of all forms of art, architecture, and visual culture in their social and historical contexts. The History of Art major can serve either as a general program in the humanities or as the groundwork for
more specialized training. Unless otherwise indicated, all courses in History of Art are open to all students in Yale College.

Requirements of the major. All majors are encouraged to take two 100-level courses, and are required to take at least one. These courses are broad introductory surveys of the European, American, pre-Columbian, African, and Asian traditions. Prospective majors are encouraged to take these two surveys as early in their course of study as possible. Students who have taken the Advanced Placement test in art history may be able to receive acceleration credit and should consult with the director of undergraduate studies. Students are also required to take two seminars in History of Art. These are advanced courses with limited enrollment and are numbered 402–497 (HSAR 498a or b and 499a or b are not considered seminars). All majors must take HSAR 401a or b, Critical Approaches to Art History, during either the fall or the spring term of the junior year.

Intermediate courses, usually lecture courses, are numbered 200–399. Majors must take at least one 200-, 300-, or 400-level course in each of the following four areas: (1) African, African American, Native American, pre-Columbian, Islamic, and Asian; (2) ancient and medieval; (3) Renaissance, baroque, and eighteenth century; (4) nineteenth- and twentieth-century European and American. Students may propose an alternative distribution in the African, Asian, or pre-Columbian traditions. History of Art majors are encouraged to take a course in studio art, which may count toward the major.

On graduation, the student must have no fewer than twelve course credits in History of Art. Under certain circumstances, and only with the permission of the director of undergraduate studies, two of the twelve courses may be taken in other departments. Normally, these substituted courses address subjects closely linked to art history, for instance, archaeology, history of religion, aesthetics, or visual culture. For the Class of 2010 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

History of Art majors are urged to study foreign languages. Students considering graduate work should take German and another modern language (usually French or Italian). Those planning to do graduate work on the art of non-European cultures should make special arrangements about language courses with their advisers.

Senior essay. The senior essay is a research paper written usually in one term (HSAR 409a or b). Students choose their own topics, which may derive from research done in an earlier course. The essay is planned during the previous term in consultation with a qualified instructor or with the director of undergraduate studies. In certain cases, a student may be given permission to write a two-term senior essay.

Procedures. The schedules of all majors must be approved and signed by the director of undergraduate studies. Students may consult the following members of the faculty about the major:

BR, A. Dunlop  MC, A. Nemerov
BR, M. Gaifman  PC, D. Kleiner
CC, C. Wood  SY, M. Miller
DC, E. Cooke  SM, S. Isenstadt
TD, R. Thompson  ES, N. Steimatsky
JE, S. Isenstadt  TC, T. Barringer
**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:** 12 course credits

**Distribution of courses:** 1 course at 100 level; 2 sems at 400 level; at least 1 course at 200, 300, or 400 level in each of 4 areas; 1 studio art course recommended

**Specific course required:** Hsar 401a or b

**Substitution permitted:** With DUS permission, 2 related courses from other depts

**Senior requirement:** Senior essay (Hsar 499a or b)

**HSAR 002a/AMST 007a, Furniture and American Life.**
Edward Cooke, Jr.
TTh 9-10.15 Hu Meets RP (o) Fr sem
In-depth study and interpretation of American furniture from the past four centuries. Hands-on experience with furniture in the collection of the Yale University Art Gallery to explore such topics as materials, techniques, styles, use, and meaning. Meets in the Furniture Study. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**HSAR 112a, Introduction to the History of Art: Prehistory to the Renaissance.**
Vincent Scully.
MW 11.35-12.25, 1 HTBA Hu (34)
Form as meaning in architecture, sculpture, and painting. Selected studies in these arts from prehistory to the Renaissance. Source readings in translation.

**HSAR 115b, History of Western Art from the Renaissance to the Present.**
Alexander Nemerov.
TTh 11.35-12.25, 1 HTBA Hu (24)
Painting, sculpture, and graphic arts, with some reference to architecture. Major works and artists treated in terms of form, function, and historical context.

**HSAR 200a/ARCg 120a, Art and Architecture of Mesoamerica.**
Mary Miller.
MW 9-10.15 Hu (32)
Art and architecture in Mexico and Central America from the beginnings of urban settlement to the Spanish invasion. Examination of the Olmec, Maya, Teotihuacan, Zapotec, Mixtec, and Aztec cultures, with particular attention to meaning and cultural identity as expressed in monumental sculpture, hand-held objects, and the built environment.

**HSAR 211a/AMST 216a, American Art: Colonies to Cold War.**
Alexander Nemerov.
MW 11.35-12.15, 1 HTBA Hu (34)
Examination of major American artists and historical moments from John Singleton Copley and the American Revolution to Jackson Pollock and the Cold War.

**HSAR 214b/AMST 214b/ARCg 214b, Anglicization of America: Architecture and Decorative Arts.**
Edward Cooke, Jr.
TTh 9-10.15 Hu (22)
A survey of American domestic architecture and decorative arts from 1600 to the Revolution. Examination of houses, furniture, metals, ceramics, and glass in the various cultures of North America: English, Dutch, French, Spanish, German, and Native American. Topics include the rise of an Anglo polite society, negotiations between different cultures, and regional contexts of production and consumption.
The Art of Ancient Palaces.
Karen Foster.

MW 2.30-3.45 Hu (37)
Introduction to the art and architecture of palaces in ancient Egypt, Mesopotamia, and the Bronze Age Aegean. Special attention to palatial workshops (painting, sculpture, pottery, faience, glass, ivory, metal) in cultural context. Emphasis on the iconography of power, including the establishment within palatial complexes of the world’s oldest botanical and zoological gardens.

Art of the Ancient Near East and Aegean.
Karen Foster.

TH 2.30-3.45 Hu (27)
Introduction to the art and architecture of Mesopotamia, Egypt, and the Aegean, with attention to cultural and historical contexts.

Roman Art: Empire, Identity, and Society.
Diana Kleiner.

TH 9-10.15 Hu (0)
Masterpieces of Roman art from the Republic to Constantine studied in their historical and social contexts. The great Romans and the monuments they commissioned—portraits, triumphal arches, columns, and historical reliefs. Topics include the concept of empire and imperial identity, politics and portraiture, the making and unmaking of history through art, and the art of women, children, freedmen, and slaves.

Roman Architecture.
Diana Kleiner.

TH 9-10.15 Hu (0)
The great buildings and engineering marvels of Rome and its empire. Study of city planning and individual monuments and their decoration, including mural painting. Emphasis on developments in Rome, Pompeii, and central Italy; survey of architecture in the provinces.

The Art of Christian Empires from Constantine to Charlemagne.
Robert Nelson.

MW 2.30-3.45 Hu (37)
Late Antique art from the first beginnings of Christian art in the third century to Eastern and Western successors of the Roman Empire in the ninth century.

Italian Renaissance Art.
Anne Dunlop.

MW 10.30-11.20, 1 HTBA Hu (0)
A thematic survey of Italian art between c. 1300 and 1550. Topics might include art and eros, art and devotion, picturing the scientific revolution, and Renaissance art in New Spain. Class meetings are held in Yale campus collections.

Nineteenth-Century French Art.
Carol Armstrong.

MW 10.30-11.20, 1 HTBA Hu (33)
European art produced between the French Revolution and the beginning of the twentieth century. Focus on French painting, with additional discussion of Spanish, English, and German art. Some attention to developments in photography, printmaking, and sculpture.

Global Modernism.
Sandy Isenstadt.

TH 11.35-12.25, 1 HTBA Hu (0)
The development of modern architecture in both Western and non-Western countries during the twentieth century. Emphasis on the encounter of new materials and methods of construction with more traditional techniques, and the symbolic use of architecture to articulate cultural identities.
hsar 323a, Early Twentieth-Century Art.  Sebastian Zeidler.
MW 2.30-3.45  Hu (37)
The major movements of modern art in Europe and America, c. 1880–1945. Topics include individual artists (Rodin, Brancusi), historical avant-gardes (Dadaism, surrealism), the transformation of traditional media such as painting and sculpture, and the invention of collage and photomontage.

hsar 337b, Theory and Method in Art History.
Sebastian Zeidler.
TTTh 1-2.15  Hu (26)
Methods that have shaped the discipline of art history since the late nineteenth century. Topics include formalism, connoisseurship, iconography, the social history of art, phenomenology, structuralism, feminism, and visual culture.

MW 11.35-12.25, 1 HTBA  Hu (34)
Overview of the history of still photography from its invention in 1839 to the present. Focus on significant developments in England, France, Germany, Russia, and the United States.

hsar 344a/FILM 353a, The Musical Film.  Noa Steimatsky.
TTTh 11.35-12.50  Hu Meets RP (0)
The effecting of spontaneity through highly controlled production, and the departure from narrative to spectacle and fantasy. The film musical, both American and international, from the coming of sound to the present. Transformations in sound and image stylistics, narrative form, and audience address; representations of racial and gender roles.

hsar 350b, Chinese Art and the Modern World.  Lillian Tseng.
MW 1-2.15  Hu (36)
A thematic introduction to Chinese art from the fifteenth century to the present, with special attention to its interaction with the rest of the world. Media include architecture, painting, porcelain, print, and installations. Topics include Chinese gardens in the West, Chinese watercolors for international trade, realism and socialist realism, and ink play and abstract expressionism.

hsar 363a, Survey of Japanese Art I.  Mimi Yiengpruksawan.
TTTh 1-2.15  Hu (26)
Survey of painting, sculpture, and architecture in Japan from the eighth century through the thirteenth. Emphasis on social, historical, and ideological concerns in Japanese visual cultures.

hsar 364b, Survey of Japanese Art II.  Mimi Yiengpruksawan.
TTTh 1-2.15  Hu (26)
Continuation of hsar 363a, covering the fourteenth through the twentieth centuries.

Robert Thompson.
TTTh 11.35-12.50  Hu (24)
Art, music, and dance in the history of key classical civilizations south of the Sahara—Mali, Asante, Dahomey, Yoruba, Ejgham, Kongo—and their impact on New World art and music, especially rock, blues, North American black painting of the past ten years, and black artists of Cuba, Haiti, and Brazil.
hsar 379a, AEAM 112a, New York Mambo: Microcosm of Black Creativity. Robert Thompson.

TH 11:35-12:30 Hu (24)

*hsar 401a or b, Critical Approaches to Art History.
  401a: M 3:30-5:20 Hu (o) Jacqueline Jung
  401b: Th 1:30-3:20 Hu (o) Lillian Tseng
A wide-ranging introduction to the methods of the art historian and the history of the discipline. Themes include connoisseurship, iconography, formalism, and selected methodologies informed by contemporary theory.

*hsar 403b, Aspects of Connoisseurship and Conservation.
  Theresa Fairbanks.
  T 2:30-4:30 Hu Meets RP (o)
A survey of the techniques and materials employed in Western painting, sculpture, and graphic arts from antiquity to the present. Modern examination techniques analyzed as tools for connoisseurship, dating, and authentication, including study of age, damage, and restoration as they change works of art. General concepts of preservation and conservation.

  T 1:30-3:20 Hu (o)
A study of films shown on the home front during World War II, including both propaganda and other genres (musicals, noir, horror, cartoon). Consideration of key artists such as Norman Rockwell. Readings in cultural theory help define the visual culture of the war.

*hsar 422b, Hellenistic Sculpture. Lisa Brody.
  F 9:25-11:15 Hu (o)
Advances in the development of bronze and marble sculpture during the Hellenistic period in ancient Greece (ca. 323–31 B.C.). Use of literary texts, coins, and other works of art, including objects in the collection of the Yale University Art Gallery, to explore the primary trends in Hellenistic sculpture. Influences from other cultural areas such as literature, theater, philosophy, and religion.

  T 1:30-3:20 Hu Meets RP (o)
The contributions of Roman women to one of the greatest cities—and one of the greatest empires—in world history. Lost stories of real-life Roman women recovered from public and residential buildings, portraits, paintings, and other works of Roman art and architecture.

*hsar 433b, Albrecht Dürer and His Time. Christopher Wood.
  W 1:30-3:20 Hu (o)
Study of northern European Renaissance art. Focus on Albrecht Dürer, the preeminent German artist of the period, with some attention to his contemporaries. The printed image; emergence of a public for art; the crisis of the religious image; miraculous images; the study of nature; wider European and global horizons;
images of labor and everyday life; figurations of gender and sexuality; the Protestant Reformation and iconoclasm. Examination of works in the Yale University Art Gallery and other collections.

**hsar 434a, Big Renaissance Prints.** Suzanne Boorsch.

F 1.30-3.20 Hu (o)

Examination of European Renaissance prints, with particular attention to those in the exhibition Grand Scale: Monumental Prints in the Age of Dürer and Titian at the Yale University Art Gallery. The history of printmaking in Europe through the sixteenth century.

**hsar 435b, The Golden Age of Painting in Siena: 1250–1400.**

Laurence Kanter.

Th 3.30-5.20 Hu (o)

The pictorial naturalism introduced to Western painting by the artist Duccio di Buoninsegna and translated into a distinctively Sienese idiom by his followers Simone Martini and the brothers Pietro and Ambrogio Lorenzetti. The style's influence throughout Italy and central Europe in the later fourteenth century.

**hsar 438a/*hums 379a/*rnst 421a, Silk Road Renaissance.**

Anne Dunlop.

W 9.25-11.15 Hu (o)

The European Renaissance placed in a global context, focusing especially on artistic exchange along the Silk Road. Topics include the use and reception of Eastern and New World objects and materials in European art; the response to European artists and artworks at Muslim and Chinese courts; and the development of art theory and criticism in China and Europe.

**hsar 462a/*hist 170Ja, Shops and Shopping.** Jay Gitlin, Sandy Isenstadt.

For description see under History.

**hsar 463a, Electric Modernism.** Sandy Isenstadt.

Th 2.30-4.20 Hu (o)

Exploration of the ways in which electricity has affected architecture, including changes to floor plans, the use of indoor and outdoor lighting, the installation of automatic equipment, and do-it-yourself projects executed with inexpensive power tools.

**hsar 474a, Arts of the Silk Road in Classical Japan.**

Mimi Yiengpruksawan.

W 3.30-5.20 (o)

Examination of the collection of eighth-century objects in the Shosoin storehouse in Nara as a receptacle of the art forms and traditions along the ancient trade routes of Eurasia and South Asia.

**hsar 482b, Art and Aesthetics of the Japanese Tea Ceremony.**

Mimi Yiengpruksawan.

W 3.30-5.20 Hu Meets RP (o)

The visual and material culture of the “way of tea,” or sado, in Japan from its emergence in the late thirteenth century through modern forms. Emphasis on the aesthetics of tea and the role of connoisseurship.

**hsar 490b/*film 320b, Close Analysis of Film.** Noa Steimatsky.

For description see under Film Studies.
The films of Robert Bresson, one of the most enigmatic auteurs in postwar European cinema. Questions of cinema as a mode of knowledge and belief, exploring themes of social being, singularity, and authenticity. The sources of Bresson’s films and their relations to literature and theater; modes of narration, visual style and sound practices, and the aesthetic and moral attention that the films command.


*HSAR 497a/FILM 472a, BRESSON*. Noa Steimatsky. Th 3:30-5:20 Hu Meets RP (o)

Graduate courses

Courses in the Graduate School are open to undergraduates with permission of the instructor and of the director of graduate studies. Course descriptions are available in the History of Art office, 56 High Street.
HISTORY OF GREECE AND ROME
(See under Classics.)

HISTORY OF SCIENCE, HISTORY OF MEDICINE

Director of undergraduate studies: Jennifer Klein, 237 HGS, 432-1355, jennifer.klein@yale.edu; Adviser: to be announced

FACULTY ASSOCIATED WITH THE PROGRAM OF HISTORY OF SCIENCE, HISTORY OF MEDICINE

Professors
Dimitri Gutas (Near Eastern Languages & Civilizations), Daniel Kevles, Jennifer Klein (History), Martin Klein (Emeritus), Joanne Meyerowitz (History), David Musto, Cynthia Russett (History), Frank Snowden (History), Frank Turner (History), John Warner

Associate Professors
Cynthia Connolly (School of Nursing), Naomi Rogers

Assistant Professors
Paola Bertucci, Bruno Strasser

Senior Lecturer
Bettyann Kevles

Lecturers
Jamie Cohen-Cole, Ivano Dal Prete, William Summers, Rebecca Tannenbaum (History)

Senior Lector
Ann Ellis Hanson (Classics)

History of Science, History of Medicine is an interdisciplinary program of studies leading toward an understanding of the development of science and medicine and their impact on society. It explores intellectual and cultural traditions, institutions, techniques, and practices; the social uses of science and medicine; the creation of science-based technologies; and the relations of science, medicine, and public health to the state. The program offers students considering a career in medicine, public health, or other fields of health care a way of combining the requirements of their preprofessional training with a broad liberal education. It also provides excellent preparation for many other careers in which a contextualized understanding of science and medicine is essential, including areas of law, industry, journalism, museum work, public policy, and government.

The major in History of Science, History of Medicine requires completion of at least thirteen courses in addition to the prerequisites. The thirteen courses must form a coherent whole, designed in consultation with the Adviser for the major. The prerequisites for the major are one yearlong course in science, including laboratory work, and one term course chosen from MATH 112a or b or STAT 101a–106a or equivalent. Beyond the prerequisites, the program requires four term courses in History of Science, History of Medicine; the junior seminar HSTM 328a or b, Methods and Literature in the History of Science and Medicine; and six additional term courses chosen in consultation with the Adviser for History of Science, History of Medicine. These six courses normally include at least one term course in science at an intermediate level and at least one History junior seminar (identified by the
suffix J on the course number) or History of Science, History of Medicine seminar (HSHM 400–469). Other courses may be drawn from history, the natural and social sciences, and other areas. Examples of other subjects often counted toward the major are medical anthropology, bioethics, philosophy of science, and medical sociology. Students also write a senior essay for two course credits taken as HSHM 490a or b, 491a or b. See under History in the text above for details of preregistration for junior seminars; see under HSHM 490a or b, 491a or b for requirements for the senior essay.

**Library orientation.** All majors are required to complete a ninety-minute introductory research session for historians by the end of the third week of the junior year. Several library orientation sessions are offered at the beginning of each term. Students are strongly encouraged to take this class during their sophomore year; indeed, sophomores who have not taken the library orientation before the end of February will not be permitted to preregister for the following year’s junior seminars. Students may offer no substitutions for this orientation. Students should register on the Web at www.library.yale.edu/rsc/schedule/intro.html.

Majors are also required to take a library resource and methods colloquium in the fall term of the senior year. Students planning to begin work on their senior essay in January should attend the colloquium in the previous September.

The undergraduate major is administered by the Department of History in cooperation with the Section of the History of Medicine in the School of Medicine. Questions about the History of Science, History of Medicine major should be directed to the Adviser for the major.

### REQUIREMENTS OF THE MAJOR

**Prerequisites:** Math 112a or b or 1 term from Stat 101a–106a or equivalent; 1 year science course with lab

**Number of courses:** 13 term courses beyond prereqs (incl senior essay)

**Specific course required:** HSHM 328a or b

**Distribution of courses:** 4 term courses in HSHM; 6 addtl term courses chosen in consultation with HSHM Adviser, including 1 in science at intermediate level and 1 Hist or HSHM sem

**Senior requirement:** Senior essay (HSHM 490a or b, 491a or b)

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### HSHM 005a/ Hist 006a, Medicine and Society in American History. Rebecca Tannenbaum.

For description see under History.

**HSHM 210bG/HIST 233b, The Cultures of Western Medicine: A Historical Introduction.** John Warner.

MW 10:30-11:20, 1 HTBA Hu (33)

A survey of medical thought, practice, institutions, and practitioners from classical antiquity to the present. Changing concepts of health and disease in Europe and America explored in their social, cultural, economic, scientific, technological, and ethical contexts. (Formerly HSHM 321b)

**[HSHM 210bG/HIST 190bG, Magic Bullets and Wonder Pills]**

**HSHM 215a/HIST 140a, Public Health in America, 1793–2000.** Naomi Rogers.

MW 1:30-2:20, 1 HTBA Hu (36)
A survey of public health in America from the yellow fever epidemic of 1793 to AIDS and breast cancer activism at the end of the past century. Focusing on medicine and the state, topics include quarantines, medical and social welfare failures and successes, the experiences of healers and patients, and organized medicine and its critics.

**hshm 235b/hist 234b, Epidemics and Society in the West since 1600.** Frank Snowden.
For description see under History.

**hshm 239a/hist 123a, Cultures and Histories of Mind.** Jamie Cohen-Cole.
*MW 10.30-11.20, 1 HTBA Hu (33)*
The development of the mind sciences in Europe and America in the nineteenth and twentieth centuries, from the invention of psychoanalysis and the creation of experimental psychology as a scientific discipline to recent developments in evolutionary psychology, psychopharmacology, and cognitive neuroscience. The mind sciences as they developed conceptual frameworks and methodological tools, their consolidation as disciplines, and their relationships with the cultures in which they formed.

**hshm 240b/hist 121b, Curiosity and Natural Inquiry.** Paola Bertucci.
*TH 11.35-12.25, 1 HTBA Hu (24)*
The origins of Western scientific culture and its connections with curiosity, ingenuity, and artisanal knowledge. Key topics in the historiography of early modern science, including the scientific revolution and the trial of Galileo.

**hshm 242a/hist 193a, Molecules, Life, and Disease: Twentieth Century.** Bruno Strasser.
*MW 11.35-12.25, 1 HTBA Hu (34)*
The emergence of the molecular vision of life and disease in the twentieth century. Topics include the role of technology and research practices, intellectual and political migrations, science policy and philanthropic foundations, constructions of risks and patenting of life, big science and biotechnology, politics of memory, and popular representation of science. Relationships to broad intellectual, social, cultural, and political changes.

**hshm 277a/amst 170a/hist 177a, Genetics, Reproduction, and Society**

**hshm 319b/hist 144Jb, Scientific Personae.** Jamie Cohen-Cole.
*T 1.30-3.20 WR, Hu (0)*
What it has meant to be a scientist in Europe and America from the seventeenth century to the twentieth. Character traits, such as objectivity, rationality, wealth, and masculinity, that may have given individuals authority to speak truth about nature. Science as a career; the relationship of the scientist to broader society.

**hshm 325a/hist 148Ja, History of Astronomy.** Ivano Dal Prete.
*TH 1.30-3.20 WR, Hu (0)*
An introduction to the history of astronomy from antiquity to modern times. The relationship between astronomy and astrology; visual representations in astronomy; astronomy, sociability, and gender.
**Hshm 328a or b**/**Hist 140Ja or Jb, Methods and Literature in the History of Science and Medicine.**

Hu (o) Junior sem

328a: T 1:30-3:20 Jamie Cohen-Cole
328b: M 1:30-3:20 Bruno Strasser

Discussion of recent literature in the history of science, medicine, and public health. Introduction to historiographic issues and to methods used in historical research and writing.

**Hshm 413b/**Hist 143Jb, X-Ray Visions: Medical Imaging since 1895. Bettyann Kevles.

W 1:30-3:20 WR, Hu (o)

The development of X rays, CT, MRI, ultrasound, and nuclear medicine. Their impact on diagnostic medicine, the legal system, and culture (high and low). Topics include the nature of invention—how new technologies appear; the economics of medicine in relation to technology; the role of warfare in invention; and the impact of these technologies on the arts.

[Hshm 421b/G/**Hist 448bG, Introduction to the History of Math: Certainty, Uncertainty, and the Infinite]

**Hshm 431a/**Hist 146Ja, Science and Spectacle in the Enlightenment. Paola Bertucci.

W 2:30-4:20 WR, Hu (o)

The central role of the human body in medical and experimental research; the spread of nonconventional therapies; the rise of a public culture of science; and attempts to naturalize gender roles. Focus on the Enlightenment.


T 7-8:50 p.m. WR, Hu (o)

The development of cybernetics, information theory, and computer science. Relationships among the cybernetic and computer sciences, the academy, society, and politics in the culture of the Cold War.

[Hshm 445b/Hist 142Jb/wgss 453b, Women and Medicine in America from the Colonial Era to the Present]


For description see under History.


T 3:30-5:20 WR, Hu (o)

The history of children’s health care, broadly defined to include not just physical and emotional health but also cognitive and social development, in the United States. Topics include differences between children’s and adults’ health; governmental responsibility; portrayals of illness in film; variables of race, gender, social class, and geographic region; child abuse; and subspecialties such as neonatology and adolescent health care.

**Hshm 470a and 471b, Directed Reading. Staff.**

HTBA (o)
Readings directed by members of the faculty in selected topics in the history of science or the history of medicine. Subjects depend on the interests of students and faculty. Weekly conferences; required papers.

\*Hshm 490a or b and 491a or b, The Senior Essay. Consult the director of undergraduate studies.

HTBA (o)

There will be a mandatory senior essay meeting on Monday, September 8, 2008, at a time and location to be announced.

Research and writing of the required senior essay under the supervision of HSHM or History faculty. To assist in selection of source materials and of a topic, special library resource and methods colloquia are held during the fall term. Students must attend one colloquium; those planning to start their senior essay work in January should attend in September. Students expecting to graduate in May 2009 enroll in 490a in the fall term and complete their essay in 491b in the spring term. Students expecting to graduate in December 2009 enroll in 490b in the spring term, and should notify the senior essay director by December 1, 2008. Each student majoring in HSHM must submit a completed Statement of Intention form signed by the faculty member who has agreed to supervise the essay to the HSHM administrator in 207 HGS no later than September 15, 2008 (for Hshm 490a), or January 23, 2009 (for Hshm 490b). Statement forms are available in 207 HGS and in the HSHM Senior Essay Handbook.

Students enrolled in 490a or b must submit to their advisers a prospectus, an annotated bibliography, and at least ten pages of the essay or a detailed outline of the entire project by December 8, 2008 (490a), or May 4, 2009 (490b). Those who meet the requirement receive a temporary grade of SAT, which will be changed to the grade received for the final essay. Failure to meet any requirement may result in the student’s being asked to withdraw from HSHM 490a or b.

Students enrolled in Hshm 491a or b must submit a completed senior essay to 211 HGS no later than 5 P.M. on April 6, 2009, in the spring term, or no later than 5 P.M. on December 8, 2008, in the fall term. Essays submitted after 5 P.M. will be subject to grade penalties. In order to graduate from Yale College, a student majoring in HSHM must receive a passing grade on the senior essay. The essay should take the form of a substantial article (approximately 12,500 words or 40 double-spaced typed pages). Please note that 12,500 words is the maximum word limit; there is no minimum word limit. The word limit is significant insofar as precision, clarity, and conciseness are essential to good historical writing. More details about the senior essay requirement are available in the HSHM Senior Essay Handbook.

OTHER COURSES OF PARTICULAR INTEREST

College seminars of interest may be found on the Web at www.yale.edu/collegeseminar.

\*Hums 076a, Epidemics in Global Perspective. William Summers.

\*Mbrb 110a, Current Issues in Biological Science.

William Summers.

Mcdb 150bG, Global Problems of Population Growth.

Robert Wyman.

For description see under Biology.


HUMANITIES

Director of undergraduate studies: Norma Thompson, Whitney Humanities Center, 53 Wall St., 432-1313, norma.thompson@yale.edu; director: R. Howard Bloch, 53 Wall St., 432-0670, howard.bloch@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF HUMANITIES

Professors
Jeffrey Alexander (Sociology), Dudley Andrew (Film Studies, Comparative Literature), R. Howard Bloch (French), Harold Bloom (Humanities), David Bromwich (English), Carlos Eire (History, Religious Studies), Benjamin Foster (Near Eastern Languages & Civilizations), Paul Freedman (History), Beatrice Gruendler (Near Eastern Languages & Civilizations), Karsten Harries (Philosophy), Stanley Insler (Linguistics), Carol Jacobs (German), Ivan Marcus (History, Religious Studies), Millicent Marcus (Italian), María Rosa Menocal (Humanities), Rainer Nägele (German), Leon Plantinga (Emeritus) (Music), Haun Saussy (Comparative Literature), William Sledge (School of Medicine), Frank Snowden (History, History of Medicine), William Summers (Molecular Biophysics & Biochemistry), Henry Sussky (Comparative Literature), William Sledge (School of Medicine), Frank Turner (History), Harvey Weiss (Near Eastern Languages & Civilizations, Anthropology), Anders Winroth (History)

Associate Professors
Ala Alryyes (Comparative Literature, English), Anne Biggs (Comparative Literature, English), Anne Dunlop (History of Art), Hilary Fink (Slavic Languages & Literatures), Bryan Garsten (Political Science), Corinne Pache (Classics)

Assistant Professors
Alexander Beecroft (Humanities, Comparative Literature), Angela Capodivacca (Italian), Shannon Craig-Snell (Religious Studies), John Fisher (Classics), El Mokhtar Ghabou (English), Jonathan Gilmore (Philosophy), David Lummus (Italian), Karuna Mantena (Political Science), Diana Paulin (English, African American Studies), Eeva-Liisa Pelkonen (Architecture), Youval Rotman (History), Marci Shore (History), Elliott Visconsi (English), Kirk Wetters (German)

Senior Lecturers
Peter Cole (Judaic Studies), Jane Levin (Humanities), Norma Thompson (Humanities)

Lecturers
Edward Barnaby (Comparative Literature), Francesco Casetti (Film Studies), Karen Foster (Near Eastern Languages & Civilizations), Veronika Grimm (Classics, History), Charles Hill (International & Area Studies), Virginia Jewiss (Humanities), Timothy Robinson (Classics), Hizky Shoham (Humanities, Religious Studies), Kathryn Slanski (Humanities, Near Eastern Languages & Civilizations), George Syrimis (Hellenic Studies), Justin Zaremby (Political Science)

Senior Lector II
Risa Sodi (Italian)

The interdisciplinary program in Humanities is designed to contribute to an integrated understanding of the Western cultural tradition. Selected works of European literature, music, philosophy, and visual arts are studied in relation to each other and to the history of ideas and political institutions. The varied program of study offers a wide range of options for students in all years interested in interdisciplinary and broad-based work in the humanities, from special seminars for freshmen to the Franke and Shulman Seminars for senior majors. Most courses are open to nonmajors.

The major in Humanities offers three areas of concentration: the arts in the humanities, intellectual history, and the West and its encounters. The major is intended to emphasize breadth and interdisciplinary effort without sacrificing depth. It brings together traditional disciplines in the humanities such as history, literature, history of art, philosophy, and history of music in a manner that is both broadly based and intensively rigorous.
Prerequisite. There is a prerequisite in ancient civilization, which can be satisfied by Directed Studies or by two courses in classical civilization or in ancient Near Eastern civilization.

Requirements of the major. In addition to the prerequisite, thirteen term courses are required for the major, including two core seminars in one of the areas of concentration; any five Humanities electives (including Franke and Shulman Seminars), with at least one in each of the three areas of concentration; five additional electives selected to complement the student's area of concentration, with approval of the director of undergraduate studies; and the senior essay, normally written in the spring term of the senior year. Majors in Humanities are strongly encouraged to enroll in at least one term course on literature in a foreign language. Students are expected to declare their intent to major in Humanities in a meeting with the director of undergraduate studies before their junior year.

Core courses. Two core seminars must be selected from one area of specialization: the arts in the humanities, intellectual history, or the West and its encounters. All seminars listed under these subheads are core seminars.

The Franke Seminar and the Shulman Seminar. Sponsored by the Whitney Humanities Center and designed to speak across disciplinary lines to broad public and intellectual issues, the Franke Seminar and the Shulman Seminar each include a series of coordinated public lectures. The seminars are for enrolled students; the lecture series is open to the Yale and local communities. Humanities majors may enroll in a Franke or a Shulman Seminar with permission of the director of undergraduate studies and the instructor.

Summer program in Rome. Humanities majors who take the spring-term course HUMS 396b, The City of Rome, and develop individual research topics to be pursued in Rome may apply for enrollment in a two-credit summer course offered by Yale Summer Session. Museums, archaeological sites, churches, piazas, libraries, and the city itself are part of the classroom for the summer course, which addresses key issues relevant to all three areas of concentration in the Humanities major. Further information is available on the Web at www.yale.edu/humanities/summer.html and www.yale.edu/summer.

REQUIREMENTS OF THE MAJOR

Prerequisite: Directed Studies, or 2 courses in classical civ or ancient Near Eastern civ
Number of courses: 13 term courses beyond prereq (incl senior essay)
Distribution of courses: 2 core sems in 1 area of concentration; 5 Humanities electives, with at least 1 in each of the 3 areas of concentration; 5 addtl electives
Senior requirement: Senior essay (HUMS 491a or b)

SEMINARS FOR FRESHMEN

The seminars below are designed for freshmen who are interested in the Humanities program but are not enrolled in Directed Studies. Enrollment in each seminar is limited to 18.

★HUMS 002a/★LITR 002a/★MMES 002a/★NELC 002a, CLASSICAL ARABIC LITERATURE IN TRANSLATION. Beatrice Gruendler.
For description see under Near Eastern Languages & Civilizations.

★HUMS 075a/★SPAN 070a, THE CULTURES OF MEDIEVAL SPAIN. María Rosa Menocal.
TTTh 2:30-3:45 WR, Hu (o) Fr sem
An introduction to texts and monuments from Islamic and Christian Spain that shaped a cultural landscape both unique and influential in European history. Topics include the achievements of the Umayyad Caliphate; the invention of modern Europe's first vernacular poetry; the translation movement that brought the Greek philosophical canon to Latin Christendom; and the adaptation of Arabic forms (architectural as well as literary) in the creation of both the Jewish Golden Age and early Castilian culture. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**HUMS 076a, EPIDEMICS IN GLOBAL PERSPECTIVE.** William Summers.  
MW 2:30-3:45 Hu, So (o) Fr sem  
Interaction of epidemic diseases and society. The response of government, medicine, and the public to the threat or actual presence of widespread contagious diseases. The notion of major epidemics as one of the key contingencies of history, critically examined through contemporary medical, political, and literary accounts. The changing responses of societies and governments to epidemics as well as the reasons for those responses. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**HUMS 079a/HIST 009a, THE VIKING AGE.** Anders Winroth.  
For description see under History.

**HUMS 080a/HIST 088a/RLST 001a, ESSENTIAL HERESIES.** Carlos Eire.  
For description see under History.

**HUMS 083a/GMST 088a/LITR 088a, THE CONCEPT OF KNOWLEDGE IN THE GERMAN TRADITION.** Carol Jacobs.  
For description see under German Studies.

**HUMS 084a/FREN 014a, THE COURT OF LOUIS XIV.** Julia Prest.  
For description see under French.

**HUMS 086a, FREUD’S THEORY OF MIND.** William Sledge, Jeffrey Erbe.  
MW 2:30-3:45 Hu (o) Fr sem  
An intensive study of Freud's *Interpretation of Dreams*. Readings from other works by Freud as well as from secondary interpretations of Freud's work. Focus on the details of Freud's vision of human nature and man's symbol-making capacity. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**THE ARTS IN THE HUMANITIES**

**HUMS 100a/GMAN 230a/GMST 230a/LITR 340a, RESEARCH AND CRITICAL ANALYSIS PRACTICUM.** Kirk Wetters.  
For description see under German Studies.

**HUMS 226a, CLASSICAL TO ROMANTIC EPIC.** Jane Levin.  
TH 1-2:15 Hu (26)  
The epic as it was used first in Greece, then in Rome, and finally in England to express ideas about the nature of human life and culture. Conceptions of the divine and natural order and the role of poetry in human culture. Readings include *Beowulf*, *The Song of Roland*, and works by Homer, Vergil, Milton, Pope, and Wordsworth. (Formerly HUMS 221a)
**HUMS 228a, Shakespeare and the Canon: Histories, Comedies, and Poems.** Harold Bloom.

W 1:30-3:20 Hu (0)

A reading of Shakespeare’s histories, comedies, and poems, with an emphasis on their originality in regard to tradition and their influence on Western representation since the seventeenth century. Secondary readings included. (Formerly HUMS 258a)

**HUMS 229b, Shakespeare and the Canon: Tragedies and Romances.** Harold Bloom.

W 1:30-3:20 Hu (0)

A reading of Shakespeare’s tragedies and romances, with an emphasis on their originality in regard to tradition and their influence on Western representation since the seventeenth century. Secondary readings included. (Formerly HUMS 259b)

**HUMS 230b/RNST 258b, Life, Love, and Art at the Renaissance Courts.** Anne Dunlop.

 TH 2:30-3:45 (27)

The role of art in European courts between about 1300 and 1550, as displayed in such areas as clothing, table manners, music, games, and tournaments. Themes include the depiction of the sovereign’s body, the cult of war and chivalry, and the representation of love and desire. (Formerly HUMS 251b)

**HUMS 231a/MUSI 435a, Music in European Thought: Three Moments in the Modern Era.** Leon Plantinga.

 TH 1:30-3:20 Hu (0)

An inquiry into the role of music and thought about music at three critical junctures in the intellectual and cultural history of modern Europe: the birth of modernity and opera; the Enlightenment and the classical style; and German romanticism and Beethoven. (Formerly HUMS 435b)

**HUMS 232b/CLCV 115b, Classical Mythologies.** John Fisher.

 For description see under Classics.

**HUMS 233a/CLCV 232a/HIST 208a, Food and Diet in Greco-Roman Antiquity.** Veronika Grimm.

 For description see under Classics.

**HUMS 234a/FILM 473a/LITR 448a, American-French Film Relations and the Culture of Commitment, 1930–1965.** Dudley Andrew, David Bromwich.

 For description see under Film Studies. (Formerly HUMS 388a)

**HUMS 235a, Art of Reading a Poem.** Harold Bloom.

 TH 1:30-3:20 Hu (0)

Selections from the entire procession of poetry in English from the sixteenth century to the twenty-first. (Formerly HUMS 364a)

**HUMS 236b, Four Twentieth-Century Poets: W. B. Yeats, Wallace Stevens, D. H. Lawrence, Hart Crane.** Harold Bloom.

 TH 1:30-3:20 Hu (0)

A discussion group for poetry of Yeats, Stevens, Lawrence, and Crane, also involving their most relevant prose: Yeats’s A Vision, Stevens’s Necessary Angel, Lawrence’s polemics, and Crane’s letters. (Formerly HUMS 366b)
Goethe’s Faust, Part II. Rainer Nägele. For description see under Germanic Languages & Literatures.

Oedipus and Faust: Tragedies of Knowledge. Rainer Nägele. For description see under Germanic Languages & Literatures.

Self-Referentiality in Literature and Art. Kirk Wetters. For description see under German Studies.

A study of the major literary, intellectual, and visual forms of the High Middle Ages.

The Foundations of Modern Drama. Murray Biggs. For description see under Theater Studies.

Renaissance Italy. Francesca Trivellato. For description see under History. (Formerly hums 260a)

Visual Culture in Literature, Drama, and Film. Edward Barnaby. For description see under Literature. (Formerly hums 330a)

Drama and Demos. Timothy Robinson. For description see under Classics.

Hebrew Poetry in Muslim Spain. Peter Cole. For description see under Judaic Studies. (Formerly hums 363a)
**HUMS 261a/ITAL 279a/RNST 279a, Early Modern Women Authors.**  
Angela Capodivacca.  
For description see under Italian.

**HUMS 262a/LITR 341a/MGRK 210a/RLST 212a/WGSS 247a, Religion and Literature: Irreverent Texts.**  
George Syrimis.  
For description see under Hellenic Studies.

**HUMS 263b/CLCV 211b/LITR 335b/MGRK 211b/WGSS 248b, Literature and War in the Greek Tradition.**  
George Syrimis.  
For description see under Hellenic Studies.

**HUMS 264a/ITAL 157a, Italian through Opera and Film.**  
Risa Sodi.  
For description see under Italian.

**HUMS 265a/HIL 334a, Philosophy of Architecture.**  
Karsten Harries.  
For description see under Philosophy.  
(Formerly HUMS 355a)

**HUMS 266b/JDST 298b/RLST 213b, The Formation of New Hebrew Culture.**  
Hizky Shoham.  
For description see under Judaic Studies.

**INTELLECTUAL HISTORY**

**HUMS 300a, Oratory in Statecraft.**  
Charles Hill.  
**TTh 2.30-3.45 Hu (0)**

A seminar and practicum in oratory, the first tool of leadership. A study of oratory as it provides direction, builds support, and drives action on a strategic agenda. Analysis of speeches in antiquity, the early modern era, and the unique American voice: Edwards to Lincoln to King.  
(Formerly HUMS 223b)

**HUMS 302a/PLSC 290a/SOCL 151a, Foundations of Modern Social Theory.**  
Ivan Szelenyi.  
For description see under Sociology.  
(Formerly HUMS 284a or b)

**HUMS 304b/GMAN 412b/GMST 412b/LITR 405b, Lacan: Rereading Freud.**  
Rainer Nägele.  
For description see under Germanic Languages & Literatures.

**HUMS 305a/ENGL 242a/LITR 416a, The Enlightenment Today: Literature and Secularization.**  
Ala Alryyes.  
For description see under Literature.

**HUMS 306b, Intellectual Circles.**  
Charles Hill.  
**TTh 2.30-3.45, 1 HTBA Hu (0)**

Creative interactions produced by informal associations of innovative minds across history in literature, philosophy, politics, science, the arts, and war. Courtiers, advisers, disciples, and disputers around Confucius, Socrates, Johnson, Jefferson, Lincoln, Freud, Wittgenstein, Stalin, Frank Lloyd Wright, and others.

**HUMS 310a/HIST 231Ja, Responses to Totalitarianism.**  
Marci Shore.  
For description see under History.
*hums 311b/**hist 233Jb, Phenomenology, Structuralism, Existentialism. Marci Shore.
For description see under History.

*hums 315a/**hist 266Ja, Greek and Arabic Medieval Historiography. Youval Rotman.
For description see under History.

For description see under Religious Studies. (Formerly hums 386a)

For description see under Religious Studies. (Formerly hums 387b)

*hums 330a/**hist 204Ja, Slavery in the Medieval Mediterranean. Youval Rotman.
For description see under History.

*hums 331b/**plsc 328b, The Intellectual in Politics. Justin Zaremby.
For description see under Political Science.

For description see under Philosophy. (Formerly hums 381b)

hums 339a/hist 271a, European Intellectual History since Nietzsche. Marci Shore.
For description see under History.

*hums 340a/**gmst 456bG/**litr 456b, Interpretation and Authority. Carol Jacobs.
For description see under Literature.

For description see under Political Science. (Formerly hums 240a)

T 9.25-11.15 Hu (o)
Examination of a series of civic, corporate, and institutional buildings by Eero Saarinen and Kevin Roche. Architecture as it ties to networks of power, intertwines with local and national politics, and is influenced by and in turn influences historical events and social ideas.

*hums 346a/**russ 316a, Russian Literature in the Context of Western Philosophy. Hilary Fink.
For description see under Slavic Languages & Literatures.

For description see under English Language & Literature.
THE WEST AND ITS ENCOUNTERS

**HUMS 373a/EP&E 338a/PLSC 288a, Postcolonial Political Thought.** Karuna Mantena. For description see under Political Science.

**HUMS 376a/ANTH 150a/ARCG 100a/NELC 100a, The Genesis and Collapse of Old World Civilizations.** Harvey Weiss. TTTh 11.35-12.50 Hu, So (24) 
The archaeology of Mesopotamia, Egypt, and the Indus Valley from early agriculture to class formation and the early cities and empires. How did these societies develop and why did they collapse? Earliest epics and contemporary ideologies, including the Bushes in Baghdad, examined in literature and film. *Readings in translation.* (Formerly **HUMS 100a**)

**HUMS 377b/NELC 101b, Origins of Western Civilization: The Near East from Alexander to Muhammad.** Benjamin Foster. MW 9-10.15, 1 HTBA Hu (32) 
Cultural and historical survey of Hellenistic, eastern Roman, Parthian, Byzantine, and Sassanian empires in the Near East. Emphasis on mutual influences of Near Eastern and classical worlds, the rise of Christianity and Islam in Near Eastern contexts, and the division of East and West between conflicting ideas of unity. (Formerly **HUMS 101b**)

**HUMS 379a/HSAR 438a/RNST 421a, Silk Road Renaissance.** Anne Dunlop. For description see under History of Art.

**HUMS 380a/HIST 210a, The Early Middle Ages, 284–1000.** Paul Freedman. For description see under History.

**HUMS 381b/HIST 211b, The Birth of Europe, 1000–1500.** Anders Winroth. For description see under History. (Formerly **HUMS 230b**)

**HUMS 382a/CLCV 318a/LITR 445a, Literature and Philosophy in Early China and Greece.** Alexander Beecroft. For description see under Literature. (Formerly **HUMS 318b**)

**HUMS 383a/MMES 102a/NELC 102a, Introduction to the Middle East.** Benjamin Foster. For description see under Near Eastern Languages & Civilizations. (Formerly **HUMS 320a**)

**HUMS 384a/NELC 121a, The Hero in the Ancient Near East.** Kathryn Slanski. For description see under Near Eastern Languages & Civilizations. (Formerly **HUMS 331a**)

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Yale College Programs of Study 2008–2009
*HUMS 385a/*LING 112a/*LITR 150a, Sanskrit Classics in Translation.  
Stanley Insler.  
For description see under Linguistics.

*HUMS 388b/*ITAL 320b/*RNST 320b, Italy’s Cities.  
David Lummus.  
For description see under Italian.  (Formerly HUMS 268b)

*HUMS 389a/*J DST 296a/*RLST 198a, Tel Aviv: Between Image and Reality.  
Hizky Shoham.  
For description see under Judaic Studies.

*HUMS 390b/*CLCV 312b/*NELC 315b, Translating the Hero.  
Corinne Pache, Kathryn Slanski.  
Th 3:30-5:20 Hu (0)  
Relationships between masterworks of ancient Near Eastern and Greek literature and their reworkings by Western authors and artists. Traditional notions of heroism, such as the righteous sufferer, the epic hero, and the tragic hero. Adaptation and transformation of ancient heroic themes in modern literature and film. Manipulation of ancient sources in the retelling of stories and themes; the mechanics of transmission and borrowing; questions of archetype.

*HUMS 392a/*HIST 232Ja/*J DST 270a/*RLST 201a, Medieval Jews, Christians, and Muslims Imagining Each Other.  
Ivan Marcus.  
T 1:30-3:20 Hu (0)  
How members of Jewish, Christian, and Muslim communities thought of and interacted with members of the other two cultures during the Middle Ages. Topics include the cultural grids and expectations each imposed on the other; the rhetoric of otherness such as humans or devils, purity or impurity, and animal imagery; and models of religious community and power in dealing with the other when confronted with cultural differences. For History majors, counts toward either European or Middle Eastern distributional credit, upon application to the director of undergraduate studies. (Formerly HUMS 432a)

*HUMS 393a/*HIST 228Ja, Venice and the Mediterranean, 1400–1700.  
Francesca Trivellato.  
For description see under History.

HUMS 396b, The City of Rome.  
Virginia Jewiss.  
Th 1-2:15, 1 HTBA Hu (26)  
An interdisciplinary study of Rome from its legendary origins through its evolving presence at the crossroads of Europe and the world. Exploration of the city’s rich interweaving of history, theology, literature, philosophy, and the arts in significant moments of Roman and world history.  (Formerly HUMS 224b)

*HUMS 398b/*NELC 122b, Reimagining the Ancient Near East.  
Kathryn Slanski.  
W 3:30-5:30 Hu (0)  
How ancient Near Eastern narratives and characters remain inspiring for writers and artists of the Western tradition through the modern period; how modern works in turn can illuminate ancient texts. Some attention to questionable uses of ancient sources, theories of transmission, and archetype. Works include the stories of Job and Gilgamesh, Genesis and Milton’s Paradise Lost, the Book of Daniel and contemporary apocalyptic visions.
THE FRANKE SEMINAR

**HUMS 453a, MENTAL GEOGRAPHY.** Haun Saussy.

MW 2:30-3:45 Hu (o)
The human appropriation of the environment and the inscription of human meanings on natural features of the earth. Implications of such unremarkable terms as “territory,” “roadmap,” and “globalization” uncovered through a historical investigation of the semantics of inhabited space. Readings from Strabo, ibn Khaldun, Montesquieu, Hegel, Husserl, Bachelard, Leroi-Gourhan, Tuan, and Farmer.

THE SHULMAN SEMINAR

**HUMS 473b, DARWIN AND DARWINISM.** Frank Turner.

W 3:30-5:20 Hu (o)
The life, thought, and influence of Charles Darwin; his theory of evolution by natural selection. Readings include Darwin’s autobiography, *Origin of Species*, and *Descent of Man*, as well as works by William Paley, Charles Lyell, and Robert Chambers. Topics include debates over Darwin’s thought in his own day and in twentieth-century America.

INDIVIDUAL RESEARCH AND SENIOR ESSAY COURSES

**HUMS 470a and 471b, SPECIAL STUDIES IN THE HUMANITIES.** Consult the director of undergraduate studies.

HTBA (o)
For students who wish to pursue a topic in Humanities not otherwise covered. May be used for research or for directed reading under the guidance of one or more faculty advisers. In either case a term paper or its equivalent is required, as are regular meetings with the adviser or advisers. To apply, a student should present a prospectus and a bibliography signed by the adviser or advisers to the director of undergraduate studies. *Enrollment limited to juniors and seniors majoring in Humanities.*

**HUMS 491a or b, THE SENIOR ESSAY.** Consult the director of undergraduate studies.

HTBA (o)
Independent library-based research under faculty supervision. To register, students must consult the director of undergraduate studies no later than the end of registration period in the previous term. A written plan of study approved by a faculty adviser must be submitted to the director of undergraduate studies by November 21, 2008, if the essay is to be submitted during the spring term, by April 24, 2009, for yearlong or fall-term essays. A rough draft of the essay is due at noon on March 24, 2009, for spring-term essays or on November 3, 2008, for fall-term essays. The final essay is due at noon on April 9, 2009, for spring-term essays or on December 1, 2008, for fall-term essays; late essays will be penalized by a lower grade.

**INDONESIAN**

*(See under Southeast Asia Studies.)*
INTERNATIONAL STUDIES

Director of undergraduate studies: Pierre Landry, 210 Luce, 432-3418, pierre.landry@yale.edu, www.yale.edu/macmillan/iac/bainternational

FACULTY ASSOCIATED WITH THE PROGRAM OF INTERNATIONAL STUDIES

Professors
Julia Adams (Chair) (Sociology), John Dunn (Political Science) (Visiting), John Gaddis (History), Jolyon Howorth (Political Science) (Visiting), Stathis Kalyvas (Political Science), Boris Kapustin (Ethics, Politics, & Economics) (Visiting), Dean Karlan (Economics), Daniel Kevles (History), Jack Levy (Political Science) (Visiting), Patricia Pessar (Adjunct) (American Studies, Anthropology), Douglas Rae (School of Management, Political Science), Gustav Ranis (Emeritus) (Economics), Frances Rosenbluth (Political Science), Ian Shapiro (Political Science), Gaddis Smith (Emeritus) (History), Alec Stone Sweet (Political Science, Law School), Elisabeth Wood (Political Science), Abebe Zegeye (International Affairs) (Visiting), Qingmin Zhang

Associate Professors
Keith Darden (Political Science), Keller Easterling (School of Architecture), Pierre Landry (Political Science), Ellen Lust-Okar (Political Science), Mridu Rai (History), James Vreeland (Political Science)

Assistant Professors
Patrick Cohrs (History), Thad Dunning (Political Science), Beverly Gage (History), Susan Hyde (Political Science), Nomi Lazar (Political Science) (Visiting), Nikolay Marinov (Political Science), Vivek Sharma (Political Science)

Lecturers
Costas Arkolakis (Economics), Jasmina Beširević-Regan (Sociology), Elizabeth Brundige (International Affairs), Cheryl Doss (Associate Chair) (Economics), Stuart Gottlieb (Political Science), Charles Hill (Political Science), Sigrun Kahl (Political Science), Allison Kingsley (Political Science), Matthew Kocher (International Affairs), Jean Krasno (Political Science), Konstantina Maragkou (Hellenic Studies), Walter Mead (International Affairs), Nancy Ruther (Political Science), Jonathan Schell (International Affairs), James Silk (Law School), Robin Theurkauf (Political Science), John Varty (International Affairs)

The program in International Studies is designed for students who seek to combine the discipline-based requirements of a first major with an understanding, drawn from several disciplines, of the transformations occurring on this planet in their interconnected socioeconomic, environmental, political, and cultural dimensions. No student may major in International Studies by itself; it must be a second major. The number of students accepted into this major is limited.

The International Studies major requires mastery at an advanced level in one modern foreign language or intermediate-level proficiency in two foreign languages; courses in introductory economics (both macro- and micro-economics); and familiarity with the history, society, or politics of at least one country or region other than the United States. Students are also required to take one 300-level course in each of five areas that provide alternative lenses for analyzing international affairs: analytic and research methods, statecraft and power, ethnicity and culture, international political economy, and science and technology. The capstone of the International Studies major is the two-term senior seminar course, in which a group of students and a faculty member study topics connected to a single broad theme and/or a region of the world.
Students contemplating applying to the International Studies major should elect courses during the freshman and sophomore years with an awareness of the foreign language and economics requirements of the major. Admission to the major takes place during the sophomore year. Application forms are available in the office of the undergraduate registrar, 210 Luce, and on line at www.yale.edu/macmillan/iac/bainternational.

Students should note that, in accordance with the academic regulations concerning two majors (see “Two Majors” in chapter III, section K), each major must be completed independently of the other, with no more than two term courses overlapping. Although senior essays or projects may, with permission of both directors of undergraduate studies, be coordinated, they may not overlap in course credits earned. Close and continuous consultation between the student, the director of undergraduate studies, and appropriate faculty members is extremely important.

Permission to complete two majors must be secured from the Committee on Honors and Academic Standing. Application forms are available from the residential college deans. Forms must be submitted prior to the student’s final term.

Requirements of the major. In addition to fulfilling the requirements of the primary major, a student pursuing International Studies as a second major must complete eleven term courses, including the senior seminar, and meet the major’s language requirement. Up to two courses in the major may be taken on a Credit/D/Fail basis. Students are expected to choose their courses from the following categories:

1. One term course chosen from either INTS 171a, International Ideas and Institutions: Foundations, or 172b, International Ideas and Institutions: Contemporary Challenges.

2. Five 300-level term courses, one in each of the following lens areas: analytic and research methods, statecraft and power, ethnicity and culture, international political economy, and science and technology. A list of pre-approved courses is available from the International Studies office or on the program Web site. Additional courses, including those not listed below, may meet a lens requirement with approval from the director of undergraduate studies.

3. One term course in microeconomics and one in macroeconomics.

4. One term course in the history, culture, or politics of a region or country other than the United States.

5. One two-term senior seminar course (the senior requirement).

Language requirement. Majors in International Studies must demonstrate advanced ability in one, or intermediate-level ability in two, modern languages other than English. This requirement is normally met by the completion of two courses at the L5 level in one language or courses in two languages at the L4 level. Grades in language courses do not count toward Distinction in the Major.

Senior requirement. Each student takes a two-term senior seminar course. Senior seminars are yearlong working groups of about fifteen students directed by a faculty member and organized around a unifying theme or topic selected to reflect student and faculty interests. Each group produces a set of closely related, article-length research papers, with each student’s paper comprising the senior essay. Senior essays should draw on foreign language as well as English sources.

Senior seminars vary from year to year. The topics for 2008–2009 are indicated in the titles of the senior seminars below.
**REQUIREMENTS OF THE MAJOR**

*International Studies can be taken only as a second major.* Specific course selection and choices of linked majors should be made in consultation with the DUS.

**Prerequisites:** None

**Number of courses:** 11 (incl senior sem; excluding lang req)

**Distribution of courses:**
- 1 term course each in micro- and macroeconomics; either INTS 171a or 172b
- 1 course in hist, culture, or politics of a country or region other than the U.S.; 1 course in each of 5 lens areas

**Language requirement:** Advanced ability in one, or intermediate-level ability in two, modern langs other than English

**Senior requirement:** Two-term senior sem

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**INTS 171a, INTERNATIONAL IDEAS AND INSTITUTIONS: FOUNDATIONS.**

*Charles Hill.*

**TTh 1-2.15 Hu, So (26)**

Essential texts, concepts, events, and developments in international relations across the centuries. Topics include balance of power, sovereignty, diplomacy and negotiation, revolution, collective security, and culture.

**INTS 172b, INTERNATIONAL IDEAS AND INSTITUTIONS: CONTEMPORARY CHALLENGES.**

*Jolyon Howorth.*

**TTh 11.35-12.50, 1 HTBA So (24)**

Introduction to the contemporary study of international relations. Topics include reasons why countries go to war and why they enter into alliances; the effectiveness of international peacekeeping efforts; the determinants of consequences of international trade; and the role of international organizations such as the World Trade Organization, the World Bank, and the International Monetary Fund.

**INTS 232b/PLSC 168b, LAW AND POLITICS OF GLOBALIZATION.**

*Alec Stone Sweet.*

For description see under Political Science.

**INTS 302b, FOREIGN POLICY AND RELIGION IN THE UNITED STATES.**

*Walter Mead.*

**M 7-8.50 P.M. Meets RP (o)**

The ideological, cultural, and social consequences of Christian influence on American foreign policy. History of Christianity in the United States, including its distinct individualistic form, roots in the British Isles and the Protestant Reformation, and interactions with democracy and capitalism. Particular attention to U.S. relations with Europe, China, and the Middle East.

**INTS 310a/PLSC 165a, INTERNATIONAL SECURITY.**

*Matthew Kocher.*

For description see under Political Science.

**INTS 312a/PLSC 303a, LIMITING RIGHTS.**

*Nomi Lazar.*

**W 9.25-11.15 (o)**

The prerogative claimed by governments to curtail the rule of law and suspend rights in times of crisis. Discussion of how a government ought to govern during civil unrest, terrorist threats, epidemics, or war. The nature of rights in general as well as their limitations. Connections between philosophical questions and practical policy issues.

**INTS 313b/PLSC 404b, ORDER AND DISORDER IN POLITICS.**

*Matthew Kocher.*

For description see under Political Science.
INTS 314b/PLSC 192b, Development of the International Human Rights Regime. Robin Theurkauf.
M 3:30-5:30 (O)
The development of the human rights regime from the first appearance of the laws of war in Grotius, through the Hague conventions of 1899 and 1907, the Nuremberg Tribunal, the Universal Declaration of Human Rights, and the Covenant on Civil and Political Rights. Formation of the Yugoslav and Rwanda Tribunals; creation of the International Criminal Court. The politics of human rights law; effects of the Cold War on the human rights regime; the rise of the NGO community; the role of the great power states.

INTS 316a, U.S. Foreign Policy Traditions. Walter Mead.
M 7-8.50 P.M. Meets RP (O)
The history of America’s rise to power explored in the broader context of a changing international environment. The dominant intellectual and political approaches Americans themselves have used to understand and shape their role in the world.

INTS 318a/PLSC 427a, Sex, Markets, and Power. Frances Rosenbluth.
For description see under Political Science.

For description see under History.

INTS 320b/PLSC 194b, Religion in International Relations. Robin Theurkauf.
For description see under Political Science.

INTS 322a/PLSC 308a, Multiculturalism: Theory and Practice. Nomi Lazar.
T 9.25-11.15 (O)
Political and philosophical issues surrounding the doctrine of multiculturalism. The economic necessity of increased immigration as birthrates decline in many of the world’s wealthier countries. The reassessment by immigrant groups of historical practices of assimilation and accommodation. Readings from historical and philosophical texts as well as from government documents and case law.

INTS 324a/PLSC 359a, Violence and Civil Strife. Stathis Kalyvas.
For description see under Political Science.

INTS 326a/AFST 356a/PLSC 356a, Collective Action and Social Movements. Elisabeth Wood.
For description see under Political Science.

MW 1:30-2:20, 1 HTBA (36)
Capitalism as a fundamental creation of the modern era. The role of capitalism in generating wealth and inequalities, disrupting the natural environment, and creating rapid social change. Major contours of capitalist institutions; important variations over time and place; critical issues of legitimacy and practice. Ideas drawn from politics, literature, business management, and popular culture.

INTS 342a/G/ARCH 341a, Globalization Space. Keller Easterling.
For description see under Architecture.
The historical development of science and technology in the Atlantic Triangle, encompassing the United States, Canada, and Great Britain, from Thomas Malthus’s writings on population to post–World War II technologies of consumption.

A chronological inquiry into the central questions raised by the invention of nuclear weapons. Topics include the impact of nuclear weapons on the theory and practice of war, nuclear deterrence, disarmament, nuclear proliferation, preemptive war, and the capacity for human self-extinction.

Introduction to human rights issues in theory and practice. Concepts, instruments, and mechanisms of international law, including human rights treaties and regional systems; international enforcement dilemmas such as the use of force and humanitarian intervention; issues of accountability through international and domestic prosecutions and truth commissions; and critical issues such as women’s rights, cultural relativism, NGO advocacy, corporate accountability, and social and economic rights. Limited enrollment. (Formerly INTS 200a)

Introduction to the ethical, political, and economic challenges of international law and human rights. The course examines the evolution of international human rights law, the nature of international legal regimes, and the role of international organizations and NGOs in promoting and enforcing human rights. Limited enrollment. (Formerly INTS 200a)

Introduction to the ethical, political, and economic challenges of international law and human rights. The course examines the evolution of international human rights law, the nature of international legal regimes, and the role of international organizations and NGOs in promoting and enforcing human rights. Limited enrollment. (Formerly INTS 200a)
INTS 365A/PLSC 196A, FOREIGN POLICY ANALYSIS. Qingmin Zhang.
HTBA So (0)
Interdisciplinary theories of human behavior and interaction applied to the study of foreign policy. Perspectives on foreign policy explored through case studies. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

INTS 369A/PLSC 312A/RSEE 385A, MORAL VALUES IN CIVIL SOCIETY. Boris Kapustin.
T 1:30-3:20 So (0)
The role of ethics in shaping different and competing conceptions of civil society from early modernity to the present. An analytical and historical approach to the idea of civil society and to the methodology of civil society practices in diverse cultural contexts. (Formerly INTS 297A)

For description see under Hellenic Studies.

INTS 373B/PLSC 187B, TERRORISM AND COUNTERTERRORISM. Stuart Gottlieb.
MW 11.35-12.50, 1 HTBA So (34)
The origins and evolution of modern terrorism, and strategies employed to confront and combat terrorism. Assessment of a variety of terrorist organizations and the multidimensional causes of terrorist violence. Analysis of the strengths and weaknesses of counterterrorism strategies, with a particular focus on ways in which the threat of global terrorism might affect the healthy functioning of democratic states. Enrollment limited to juniors and seniors.

INTS 374B/HIST 243B/MGRK 225B, OCCUPIED EUROPE DURING WORLD WAR II. Konstantina Maragkou.
For description see under Hellenic Studies.

MW 11.35-12.50, 1 HTBA So (34)
The sources, substance, and enduring themes of American foreign policy. Overview of America’s rise to global power in the nineteenth and twentieth centuries and American foreign policy decision making during the Cold War and the post–Cold War era. Focus on current challenges, including the war on terrorism, the proliferation of weapons of mass destruction, the conflict in Iraq, and America’s role in global institutions and the world economy. Enrollment limited to juniors and seniors.

For description see under Political Science. (Formerly INTS 184A)

For description see under Sociology.

Th 3:30-5:20 (0)
Ethnicity and nationalism studied in the context of alternative social bases of political and social mobilization. Focus on the null hypothesis, that ethnicity and nationalism should not be treated as distinctive social forms. Discussion of what is distinctive about ethnicity and nationalism, and how it might be beneficial to separate nationalism and ethnicity from the study of other identity types.

INTS 389b/PLSC 415b/SOCY 188b, Religion and Politics. Sigrun Kahl.
For description see under Political Science.

SENIOR SEMINARS

Senior seminars are limited to senior International Studies majors.

*INTS 415a and 416b, Democracy in World Politics. Ian Shapiro.
M 3:30-5:20 So (O)
The discussion of challenges to, and possibilities for, democracy in the twenty-first century. The fall term is devoted to classic and contemporary literature and the design of student research projects. The spring term focuses on the completion of research projects.

T 2:30-4:20 So (O)
The development process analyzed from an evolutionary perspective, both in terms of changing objectives and policy options within developing countries and with respect to the rest of the world in an increasingly globalized environment.

*INTS 425a and 426b, Development and Governance in the Middle East and Africa. Ellen Lust-Okar.
W 1:30-3:20 (O)
The ongoing processes of transformation in Africa and the Middle East over the past two decades. The effects of such processes on governance; implications for development policies. Focus on changes in the economic sphere, social relations, and political institutions.

*INTS 447a and 448b, Global East Asia. Pierre Landry.
447a: W 7-8:50 P.M. (O)
448b: W 3:30-5:20 (O)
The effects of the globalization process on East Asian states. The creation of export-oriented industrial economies and the resulting domestic consequences, including pressures for democratization. Efforts by East Asian states to remain active in the international system while confronting the legacies of geopolitical conflicts such as the China-Taiwan confrontation, nuclear proliferation, and severe environmental pressures.

ISIZULU

(See under African Studies.)

ISLAMIC STUDIES

(See under Ethnicity, Race, and Migration, under History, under History of Art, under Humanities, under International Studies, under Modern Middle East Studies, under Near Eastern Languages and Civilizations, under Political Science, and under Religious Studies.)
ITALIAN

Director of undergraduate studies: Angela Capodivacca, Rm. 407, 82–90 Wall St., 432-0597, angela.capodivacca@yale.edu

FACULTY OF THE DEPARTMENT OF ITALIAN

Professors
Millicent Marcus (Chair), Giuseppe Mazzotta, Silvano Nigro (Visiting)

Assistant Professors
Angela Capodivacca, David Lummus

Senior Lector II
Risa Sodi

Senior Lector
Monica Georgeo

Lectors
Laura Chiesa, Michael Farina, Anna Iacovella

The major in Italian is a liberal arts major designed to explore Italy’s vital role in the development of the humanistic values and disciplines that have infused Western culture over several centuries. Central to the major in Italian is the conviction that study of another language yields the important benefit of enlightening students about their own culture while instructing them about a foreign one. Core courses provide students with a solid linguistic, literary, and historical background in Italian. Additional offerings range across several disciplines, including the study of film, philosophy, comparative literature, history, political theory, art, religious studies, theater, architecture, and music.

Requirements of the major
Candidates for the major should have completed a course in Italian at the level of 140b (L4) or should have received credit for equivalent work by the end of their sophomore year. Exceptions may be made in the case of outstanding students who have not satisfied this requirement.

The major normally consists of eleven term courses. Eight term courses in the Italian department numbered 150 or above (including graduate courses) are required, at least five of which must be conducted in Italian. The eight courses must include either ITAL 150a or 151b and a course on Dante’s Divine Comedy as well as four courses covering different periods in Italian literature: one in the Middle Ages (in addition to the one on Dante’s Divine Comedy), one in the Renaissance, and two in Italian literature after 1600. The aim of these six foundation courses is to provide students with both a broad acquaintance with the major works of Italy’s literary tradition and a more detailed knowledge of specific periods in Italian literature. Students are also strongly encouraged to use their elective courses to expand their knowledge of either the Trecento (fourteenth century) or the Cinquecento (sixteenth century). Three Italian department courses taught in English may count toward the major. Students intending to major in Italian should consult the director of undergraduate studies.

In completing their programs, students are required to elect two courses in other languages and literatures, history of art, history, or philosophy that are related to their field of study and approved by the director of undergraduate studies. Any graduate course in another national literature or in linguistics may be substituted for one of these two courses. Some knowledge of Latin is desirable.

Senior requirement. In the fall or spring of the senior year, all students majoring in Italian must present a departmental essay written in Italian and
completed under the direction of a faculty adviser in ITAL 491a or b. The essay should demonstrate careful reading and research on a topic approved by the adviser in consultation with the director of undergraduate studies. A recommended length for the essay is thirty pages. Prospectus and draft deadlines are determined by the adviser; the final deadline is determined by the director of undergraduate studies. The senior requirement culminates in an oral interview with department faculty that not only covers the thesis, but also touches on the range of periods and subjects the student has studied.

Related majors. In addition to the major in Italian literature, the department supports the applications of qualified students who wish to pursue a course in Italian studies under the provisions of a Special Divisional Major. Majors can devise a broad program in social, political, economic, or intellectual history as related to and reflected in Italian literature, or pursue special interests in architecture, film, art, philosophy, music, history, linguistics, theater, political theory, or other fields especially well suited for examination from the perspective of Italian cultural history. Majors in Italian studies must design their programs in close consultation with the director of undergraduate studies and seek the guidance of an additional member of the department whose interests closely coincide with the proposed program of study. For further information, see Special Divisional Majors in this chapter.

The department’s course offerings vary greatly from year to year. Students interested in planning course work in Italian that extends beyond the current academic year should consult the director of undergraduate studies.

For the Year or Term Abroad program, see chapter III.

Placement. All students who have not taken Italian at Yale are expected to take the departmental placement test, with the exception of students who have no previous knowledge of Italian. The departmental placement examination will be given at the beginning of the fall term on Tuesday, September 2, at 9 A.M.

REQUIREMENTS OF THE MAJOR

Prerequisite: ITAL 140b or equivalent
Number of courses: 11 term courses beyond prereq
Distribution of courses: 8 term courses in Italian dept numbered 150 or above, incl 1 in Middle Ages (in addition to 1 on Dante’s Divine Comedy), 1 in Renaissance, and 2 in Italian lit after 1600, at least 3 of these conducted in Italian; 2 term courses in other langs or lits, hist of art, hist, or phil approved by DUS
Specific courses required: ITAL 150a or 151b; ITAL 310a or equivalent
Substitution permitted: Any grad course in another national lit or in ling for 1 of the 2 courses in other depts, with DUS permission
Senior requirement: Senior essay (ITAL 491a or b) and oral interview

GROUP A COURSES

*ITAL 110a, Elementary Italian I. Staff.
  MTWThF 1 HTBA For sections see www.yale.edu/courseinfo
  L1 1 1/2 C Credits (61)
A beginning course with extensive practice in speaking, reading, writing, and listening and a thorough introduction to Italian grammar. Activities include group and pairs work, role-playing, and conversation. Introduction to Italian culture through readings and films. Conducted in Italian. Credit only on completion of ITAL 120b. (Formerly the first term of ITAL 115)
ITAL 120b, Elementary Italian II. Staff.

mtwthf 1 HTBA For sections see www.yale.edu/courseinfo
L2 3 C Credits (61)
Continuation of ITAL 110a. (Formerly the second term of ITAL 115)

ITAL 125a or b, Intensive Elementary Italian. Staff.

mtwthf 9.25-11.15 L1-L2 2 C Credits (32)
An accelerated beginning course in Italian that covers in one term the material taught in ITAL 110a and 120b. Admits to ITAL 130a or 145a or b. Enrollment limited to 15. (Formerly ITAL 117a or b)

ITAL 130a, Intermediate Italian I. Staff.

mtwthf 1 HTBA For sections see www.yale.edu/courseinfo
L3 1 1/2 C Credits (61)
The first half of a two-term sequence designed to increase students’ proficiency in the four language skills and advanced grammar concepts. Authentic readings paired with contemporary films. In-class group and pairs activities, role-playing, and conversation. Admits to ITAL 140b. Conducted in Italian. Prerequisite: ITAL 120b or equivalent.

ITAL 140b, Intermediate Italian II. Staff.

mtwthf 1 HTBA For sections see www.yale.edu/courseinfo
L4 1 1/2 C Credits (61)
Continuation of ITAL 130a. Emphasis on advanced discussion of Italian culture through authentic readings (short stories, poetry, and comic theater) and contemporary films. Admits to Group B courses. Conducted in Italian. (Formerly ITAL 131b)

ITAL 145a or b, Intensive Intermediate Italian. Staff.

mtwthf 9.25-11.15 L3-L4 2 C Credits (32)
An accelerated intermediate course in Italian that covers in one term the material taught in ITAL 130a and 140b. Continued practice in the four basic skills begun at the elementary level. Emphasis on grammar review, vocabulary enrichment, and appreciation of literary texts. Admits to Group B courses. Enrollment limited to 15. Prerequisite: ITAL 120b or 125a or b. (Formerly ITAL 132a or b)

GROUP B COURSES

Group B courses are conducted in Italian and are open to students who have passed ITAL 140b or 145a or b and to others with the consent of the director of undergraduate studies and of the instructor.

ITAL 150a, Studies in Advanced Language and Style. Risa Sodi and staff.

mwf 11.35-12.25 L5 (o)
Discussion of social, political, and literary issues in order to improve active command of the language. Development of advanced reading skills through magazine and newspaper articles, essays, short stories, films, and a novel; enhancement of writing skills through experiments with reviews, essays, creative writing, and business and informal Italian. Classroom emphasis on advanced speaking skills and vocabulary building. (Formerly ITAL 138a)

ITAL 151b, Advanced Italian Workshop: Writing and Conversation

ITAL 153b, Theater Practicum: Pirandello. Monica Georgeo.
tth 1-2.15 L5, Hu (o)
An in-depth study of Pirandello’s *Enrico IV*, culminating in a staged performance of the play in Italian. (Formerly *ITAL* 140b)

**ITAL 157a/HUMS 264a, Italian through Opera and Film.** Risa Sodi.  
*MWF 10.30-11.20* L5, Hu (33)  
Exploration of opera and contemporary Italian film to improve Italian grammar and conversational skills. Exercises include performances and presentations. Works include the operas *La Bohème*, *Otello*, and *I pagliacci* and the films *Storia di ragazzi e ragazze*, *Caro diario*, and *La stanza del figlio*. (Formerly *ITAL* 202a)

**ITAL 158b, Italian Workshop: Translating Literature.**  
David Lummus.  
*MWF 9.25-10.15* (32)  
Translations from English into Italian and from Italian into English of poems and short stories. Intensive classroom discussions of the translation process; consideration of the texts being translated and their cultural contexts. Emphasis on modern Italian poetry from Leopardi to contemporary poets.

**ITAL 163a, The Italian Novella.** David Lummus.  
*MW 2.30-3.45* (0)  
The formal, stylistic, and thematic shifts in the history of the Italian short story (novella) from the Middle Ages to the twentieth century. Authors include Boccaccio, Bandello, and Pirandello.

**ITAL 264a, The Italian Detective Novel.** Silvano Nigro.  
*MW 1-2.15* L5, Hu (0)  
Study of the Italian detective novel genre (*giallo*) and its renewed popularity in recent years. The relation of contemporary crime fiction to literary precedents and to current trends in the postmodern Italian cultural scene. Works by Andrea Camilleri, members of the Bolognese school, and others.

**ITAL 265b, Italian Cinema.** Risa Sodi.  
*TT 1-2.15*; *screenings* HTBA L5, Hu (0)  
A survey of Italian film from 1945 to 2000, examined through the lens of Italian historical and social development and as artifacts of filmmaking techniques and directorial choices. From neorealism to the new Italian cinema, with an emphasis on how Italian culture is revealed and transformed by Rossellini, De Sica, Antonioni, Bertolucci, the Tavianis, Wertmüller, and others.

**ITAL 279a/HUMS 261a/RNST 279a, Early Modern Women Authors.**  
Angela Capodivacca.  
*MW 11.35-12.50, 1 HTBA* Hu (0)  
Women authors of the early modern period (1450–1650) as they negotiated categories of gender and genre to self-fashion their identities as authors and to engender a female community. Writers include Laura Cereta, Isabella d’Este, Giulia Bigolina, Veronica Franco, Laura Terracina, Maddalena de’ Pazzi, Isabella Andreini, and Moderata Fonte. Additional readings from works by other authors of the period and by current writers.

[ITAL 312b, From Book to Film]  
[ITAL 334b, Dante, Petrarch, Boccaccio]  
[ITAL 344a, Italian Renaissance Drama]  
**ITAL 470, Special Studies in Italian Literature.**  
Angela Capodivacca.  
*HTBA* (0)
A series of tutorials to direct students in special interests and requirements. Students meet regularly with a faculty member.

**ITAL 491a or b, The Senior Essay.** Consult the director of undergraduate studies.

HTBA (0)

A research essay on a subject selected by the student in consultation with the faculty adviser.

GROUP C COURSES

Group C courses are conducted in English and are open to students without previous study of Italian. Majors in Italian are required to read the material and write their papers in Italian.

[ITAL 234a, Renaissance Literature, Philosophy, and Art]

**ITAL 305a/LITR 337a, Italian Food and Literature.** Risa Sodi.

MW 2:30-3:45 Hu (37) Tr

The intersection of food and literature in Italy from the Middle Ages and the Renaissance (Dante, Boccaccio, and the earliest cookbooks) to the modern age (the futurists, Calvino, and others). Discussion of foodways, or how food is tied to religions, holidays, gender roles and identities, and domestic economies. Consideration of film.

[ITAL 310a/LITR 183a, Dante in Translation.** Giuseppe Mazzotta.

TH 1-2:15, 1 HTBA Hu (26) Tr

A critical reading of Dante’s *Divine Comedy* and selections from the minor works, with an attempt to place Dante’s work in the intellectual and social context of the late Middle Ages by relating literature to philosophical, theological, and political concerns. One discussion section conducted in Italian.

**ITAL 320b/HUMS 388b/RNST 320b, Italy’s Cities.** David Lummus.

MW 1-2:15 (0) Tr

An interdisciplinary examination of the history, literature, painting, and architecture of Italy’s cities. Topics rotate from year to year. The topic for 2009 is Florence.

**ITAL 323a/FILM 366a/HIST 224a/HUMS 251a, Modern Italy: History and Film.** Millicent Marcus, Frank Snowden.

For description see under History.

**ITAL 378a, Courtly Love.** David Lummus.

TH 2:30-3:45 WR, Hu (27) Tr

Courtly love, the notion of ennobling passion that arose in the lyrics of the troubadours. Theory and literary applications of the courtly love formula in medieval France, Italy, and England. Texts include *Lancelot, The Romance of the Rose, The Decameron, The Canterbury Tales*, and love lyrics of Petrarch and Dante.

**ITAL 384b/FILM 362b/FREN 384b/JSTD 289b/LITR 338b, Representing the Holocaust.** Maurice Samuels, Millicent Marcus.

For description see under French.

READING COURSE

[ITAL 101b, Italian for Reading]
JUDAIC STUDIES

Director of undergraduate studies: Christine Hayes, 451 College St., 432-0843,
christine.hayes@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF JUDAIC STUDIES

Professors
Leslie Brisman (English), Peter Cole (Humanities) (Visiting), Steven Fraade (Religious
Studies), Isaiah Gafni (Religious Studies) (Visiting), Alyssa Gray (Religious Studies)
(Visiting), Benjamin Harshav (Comparative Literature), Christine Hayes (Religious
Studies), Paula Hyman (History, Religious Studies), Ivan Marcus (Chair) (History,
Religious Studies), María Rosa Menocal (Spanish & Portuguese), Baruch Schwartz
(Religious Studies) (Visiting), Steven Smith (Political Science), Laura Wexler (Women’s,
Gender, & Sexuality Studies, American Studies), Robert Wilson (Religious Studies)

Assistant Professor
Marci Shore (History)

Lecturers
Shai Secunda (Religious Studies), Hizky Shoham (Humanities), Daniel Stein Kokin
(History)

Senior Lector II
Ayala Dvoretzky

Lector
Shiri Goren

Judaic Studies enables students to develop a substantial knowledge of the
history, religion, literature, languages, and culture of the Jews. Jewish soci-
ety, texts, ideologies, and institutions are examined in comparative perspec-
tive in the context of the history and culture of nations in which Jews have
lived and created throughout the ages.

The program in Judaic Studies offers courses that encompass all the major
epochs of Jewish history: the biblical period, which includes biblical literature
and archaeology; the classical period, which includes the literature and history
of rabbinic Judaism and its antecedents; the medieval period, which includes
Jewish history and literature in both Christian and Islamic lands; the early
modern period, which includes Jewish history from the fifteenth through the
eighteenth centuries; and the modern period, which includes the history and
literature of Jews and Judaism from the late eighteenth to the twenty-first
centuries and the impact of different facets of modernization.

The Judaic Studies major, especially as a second major with Economics,
Political Science, English, or History, offers intensive background training
for those considering admission to graduate or professional schools and to
those planning careers in journalism, international relations, foreign service,
publishing, the rabbinate, international law, politics, or social work. The
interdisciplinary character of the program provides students with both a
broad liberal arts background and an intensive preparation in the historical
and religious experience of the Jewish culture.
Students considering the major in Judaic Studies should contact the director of undergraduate studies as early as possible.

**Requirements of the major.** The major in Judaic Studies requires thirteen term courses, including the senior essay course. Prerequisite or corequisite to the major is a year of elementary modern Hebrew (HEBR 110a, 120b) or its equivalent. The major consists of a Hebrew language and literature requirement, a set of core requirements, and two areas of concentration.

**Hebrew language and literature.** Each student majoring in Judaic Studies must attain the equivalent of the second year of modern Hebrew (HEBR 130a, 140b). In addition, each student must take two term courses in which Hebrew literature is studied in Hebrew, for which HEBR 110a or 120b (but not HEBR 130a or 140b) may count. Students who fulfill the Hebrew language requirement by passing an examination rather than by enrolling in HEBR 110a, 120b, 130a, and 140b must take two other term courses in which Hebrew literature is studied in Hebrew. Students concentrating in Hebrew Bible may, in consultation with the director of undergraduate studies, substitute two years of biblical Hebrew for the language and literature requirements.

**Core requirements.** Each student must elect at least three from the following: (1) one term course in Hebrew Bible (e.g., JDST 110a); (2) one term course in rabbinic literature; (3) JDST 200a, History of Jewish Culture to the Reformation; (4) JDST 201b, History of Jewish Culture, 1500 to the Present; (5) JDST 202b, Judaism: Continuity and Change; (6) a term survey course in Hebrew and Jewish literature.

**Areas of concentration.** Students must select two areas of concentration. The standard areas are ancient Israel/Hebrew Bible; Judaism of Second Temple and Talmudic times; Jewish history and civilization of medieval and early modern times; modern Jewish history and civilization; and Jewish/Hebrew literature (requires study of literature in Hebrew). With the approval of the director of undergraduate studies, students may design their own areas of concentration.

In each of the two areas of concentration, students choose three term courses in consultation with the director of undergraduate studies. These are normally expected to include one introductory course; one seminar taken in junior year and requiring a final research paper; and one relevant course in an area outside Judaic Studies, such as a course relating to the larger historical context if the concentration is in a historical period, or a course in the theory or practice of literature if the concentration is in Jewish or Hebrew literature. Most seminars listed under “Electives within the Major” may be counted as junior seminars in a student’s areas of concentration with permission of the director of undergraduate studies.

**Senior requirement.** Students are expected to write a one- or two-term senior essay (JDST 491a and 492b). If a one-term senior essay is chosen, the student must complete an additional seminar. The one-term essay normally relates to one of the student’s areas of concentration, while the seminar relates to the other. A two-term essay should relate to both of the student’s areas of concentration. The senior essay, whether completed during one or two terms, should build on one or both of the student’s junior seminar papers.

**Study in Israel.** Students majoring in Judaic Studies should be aware of the numerous opportunities for study and travel in Israel. Those interested in either a summer or an extended stay in Israel should consult the director of undergraduate studies.
REQUIREMENTS OF THE MAJOR

Prerequisites:  Hebrew 110a, 120b or equivalents
Number of courses:  13 term courses (incl senior essay)
Specific courses required:  Hebrew 130a, 140b or equivalents
Distribution of courses:  3 term courses from (1) Hebrew Bible (e.g., J DST 110a),
(2) rabbinic lit, (3) J DST 200a, (4) J DST 201b, (5) J DST 202b, (6) survey of Hebrew
and Jewish lit; 2 areas of concentration, with 3 courses in each (normally 1 intro, 1
junior sem, 1 outside Judaic Studies related to concentration), for a total of 6
Substitution permitted:  2 years of biblical Hebrew for Hebrew 130a, 140b or equivalents
for students with an area of concentration in Hebrew Bible
Senior requirement:  Two-term senior essay (J DST 491a, 492b), or one-term senior
essay and addtl sem

CORE COURSES

J DST 200a / H IST 219a / R LST 148a, History of Jewish Culture to the
Reformation.  Ivan Marcus.
For description see under Religious Studies.

J DST 201b / H IST 220b / R LST 149b, History of Jewish Culture, 1500
to the Present.  Paula Hyman.
For description see under Religious Studies.

[J DST 202b / R LST 146b, Judaism: Continuity and Change]

SPECIAL PROJECTS

*J DST 471a or b, Individual Tutorial.  Consult the director of
undergraduate studies.

HTBA  (O)
For students who wish, under faculty supervision, to investigate an area in Judaic
Studies not covered by regular course offerings. May be used for research or for
directed reading, but in either case a long essay or several short ones are required.
To apply for admission, a student should present a prospectus with bibliography
and a letter of support from the faculty member who will direct the work to the
director of undergraduate studies.

THE SENIOR ESSAY COURSE

*J DST 491a and 492b, The Senior Essay.  Consult the director of
undergraduate studies.

HTBA  (O)
The essay, written under the supervision of a faculty member, should be a sub-
stantial paper between 6,500 and 8,000 words for one term and between 12,500
and 15,000 words for two terms.

ELECTIVES WITHIN THE MAJOR

Biblical Period

J DST 110a / R LST 145a, Introduction to the Old Testament
(Hebrew Bible).  Christine Hayes.
For description see under Religious Studies.

*J DST 120a / *R LST 155a, Worship in Ancient Israel.  Baruch Schwartz.
T 2.30-4.30  Hu  (O)
The forms and institutions of worship in biblical Israel, in particular the divine abode (the Tabernacle and Temple) and its ritual (sacrificial, liturgical, etc.). The assumptions, inner logic, symbolic meanings, and theological significance of these institutions in ancient Israel. The role played by the sacrificial system in biblical literature generally and in the Priestly source specifically.

**Classical Period**

**J GST 235bG/RLST 147b, Introduction to Judaism in the Ancient World.** Steven Fraade.
For description see under Religious Studies.

**J GST 241a/RLST 192a, Introduction to Talmudic Culture.** Shai Secunda.
TTh 11.35-12.30 Hu (0)
Introduction to the cultural world of rabbinic Judaism as it developed in late antique Roman Palestine and Sassanian Mesopotamia. Thematic study of important values and cultural norms; introduction to major rabbinic literary works.

**J GST 400a/RLST 408aG, Midrash Seminar: Exodus 32 and Its Midrashic Development.** Christine Hayes.
For description see under Religious Studies.

Th 2.30-4.30 L5, Hu (0)
A close study of parallel sections of text from Talmud Yerushalmi and Talmud Bavli. Focus on possible literary relationships between the two works. Strengths and weaknesses of modern academic theories about inter-Talmudic parallels. Discussion of which theories best account for the relationships between the primary sources. *Knowledge of Talmudic Hebrew and Aramaic required.*

**Medieval and Early Modern Periods**

**J GST 265bG/HIST 345bG/RLST 202bG, Jews in Muslim Lands from the Seventh to the Sixteenth Centuries.** Ivan Marcus.
For description see under History.

**J GST 270a/HIST 232Ja/HUMS 392a/RLST 201a, Medieval Jews, Christians, and Muslims Imagining Each Other.** Ivan Marcus.
For description see under Humanities.

T 9.25-11.15 WR, Hu (0)
Jewish life and culture in Europe, the Levant, and North Africa from the fifteenth century through the seventeenth. Themes include expulsions and other demographic shifts, including the emergence of the Italian ghetto; Jewish cultural production, including historical writing, autobiography, Kabbalah, and codifications of Jewish law; relations between Jews and Christians and Muslims; and Messianism.

**J GST 312a/HUMS 259a, Hebrew Poetry in Muslim Spain.** Peter Cole.
M 2.30-4.30 Hu (37) Tr
Introduction to the Golden Age of Hebrew Poetry in Muslim Andalusia from the tenth century through the twelfth. Major figures of the period and the cultural and philosophical questions they confronted. The Judeo-Arabic social context in which the poetry emerged; critical issues pertaining to the study and transmission of this literature. Readings from the works of several poets. Readings in translation. Additional readings in Hebrew available.

Modern Period

*J DST 286aG/HIST 269aG/RLST 230aG, Holocaust in Historical Perspective.* Paula Hyman.
For description see under History.

J DST 289b/FILM 362b/FREN 384b/ITAL 384b/LITR 338b, Representing the Holocaust. Maurice Samuels, Millicent Marcus.
For description see under French.

*J DST 296a*/HUMS 389a*/RLST 198a, Tel Aviv: Between Image and Reality.* Hizky Shoham.
Th 9.25-11.15 Hu (0)
A history of Tel Aviv that addresses the unique role of urban space in the evolution of Zionist/Israeli society and culture. The city’s images in literature, architecture, song, cinema, and ideology as compared with its geographical, sociological, and economic reality.

*J DST 298b*/HUMS 266b*/RLST 213b, The Formation of New Hebrew Culture.* Hizky Shoham.
Th 9.25-11.15 Hu (0)
The formation of the New Hebrew culture from its beginnings in nineteenth-century Europe to contemporary Israel. The role of religion, ethnicity, politics, visual culture, folklore, song, architecture, and public ritual.

*J DST 385b*/HIST 244Jb*/RLST 225bG/*WGSS 383b, Women and Judaism.* Paula Hyman.
For description see under Religious Studies.

For description see under History.

Hebrew Language and Literature

For description see under Near Eastern Languages & Civilizations. (Formerly J DST 213a)

For description see under Near Eastern Languages & Civilizations. (Formerly J DST 301b)

*J DST 305a*/HEBR 158a, Contemporary Israeli Society in Film.* Shiri Goren.
For description see under Near Eastern Languages & Civilizations.
*JDST 310a / LITR 226a, Readings in Hebrew Poetry.*
  Benjamin Harshav.
  For description see under Literature.

*JDST 405b / HEBR 156b, Dynamics of Israeli Culture.*  Shiri Goren.
  For description see under Near Eastern Languages & Civilizations.

*HEBR 471a or b, Directed Reading and Research.*  Consult the
director of undergraduate studies.
  For description see under Near Eastern Languages & Civilizations.

ADDITIONAL COURSES RELEVANT TO THE MAJOR

HEBR 110aG, Elementary Modern Hebrew I.
  For description see under Near Eastern Languages & Civilizations.

HEBR 117a, Elementary Biblical Hebrew I.
  Joshua Burns.
  For description see under Near Eastern Languages & Civilizations.

HEBR 120bG, Elementary Modern Hebrew II.
  For description see under Near Eastern Languages & Civilizations.

HEBR 127b, Elementary Biblical Hebrew II.
  Joshua Burns.
  For description see under Near Eastern Languages & Civilizations.

HEBR 130aG, Intermediate Modern Hebrew I.
  For description see under Near Eastern Languages & Civilizations.

HEBR 140bG, Intermediate Modern Hebrew II.
  For description see under Near Eastern Languages & Civilizations.

GRADUATE AND PROFESSIONAL SCHOOL COURSES OF INTEREST
TO UNDERGRADUATES

Qualified students may elect relevant courses in the Graduate School with
permission of the director of graduate studies, the director of undergraduate
studies, and the instructor of the course. They may also offer as many as
four courses taken in professional schools of the University with permission
of the instructors, the director of undergraduate studies, and the dean or reg-
istrar of the schools involved. (See “Courses in the Yale Graduate and Pro-
fessional Schools” in chapter III, section K.) A complete list and descriptions
of relevant graduate and professional school courses are available from the
director of undergraduate studies.

KISWAHILI
  (See under African Studies.)

KOREAN
  (See under East Asian Languages and Literatures.)

LATIN
  (See under Classics.)
LATIN AMERICAN STUDIES

Director of undergraduate studies: Marcello Canuto, 51 Hillhouse Ave.,
432-6610, marcello.canuto@yale.edu; www.yale.edu/macmillan/lais

FACULTY ASSOCIATED WITH THE PROGRAM OF LATIN AMERICAN STUDIES

Professors
Rolena Adorno (Spanish & Portuguese), Mark Ashton (Forestry & Environmental Studies), Gary Brewer (Forestry & Environmental Studies), Richard Burger (Anthropology), Hazel Carby (African American Studies, American Studies), Amy Chua (Law School), Lisa Curran (Forestry & Environmental Studies), Carlos Eire (History, Religious Studies), Eduardo Engel (Economics), Robert Evenson (Economics), Paul Freedman (History), Aníbal González (Spanish & Portuguese), Roberto González Echevarría (Spanish & Portuguese), K. David Jackson (Spanish & Portuguese), Gilbert Joseph (History), Stathis Kalyvas (Political Science), Enrique Mayer (Anthropology), Robert Mendelsohn (Forestry & Environmental Studies), Mary Miller (History of Art), Florencia Montagnini (Forestry & Environmental Studies), Patricia Pessar (Adjunct American Studies), Stephen Pitti (History), Susan Rose-Ackerman (Law School), T. Paul Schultz (Economics), Stuart Schwartz (History), Susan Stokes (Political Science), Robert Thompson (History of Art), Noël Valis (Spanish & Portuguese), Michael Veal (Music), Elisabeth Wood (Political Science)

Associate Professors
Richard Bribiescas (Anthropology), Alicia Schmidt Camacho (American Studies), Jaime Lara (Divinity School)

Assistant Professors
Robert Bailiss (Forestry & Environmental Studies), Irene Brambilla (Economics), Sean Brotherton (Anthropology), Marcello Canuto (Anthropology), Jason Cortés (Spanish & Portuguese), Ana De La O (Political Science), Thad Dunning (Political Science), Ernesto Estrella (Spanish & Portuguese), Seth Fein (History, American Studies), Moira Fradinger (Comparative Literature), Lillian Guerra (History), Oscar Martín (Spanish & Portuguese), Paulo Moreira (Spanish & Portuguese), Pauline Ochoa Espejo (Political Science)

Senior Lecturer
Priscilla Meléndez (Spanish & Portuguese)

Lecturer
Nancy Ruther (Political Science)

Senior Lectors
Sybil Alexandrov, Marta Almeida, Teresa Carballal, Mercedes Carreras, Sebastián Díaz, María Jordán, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Terry Seymour, Margherita Tórtora, Sonia Valle

Lectors
Pilar Asensio, Christine Atkins, Yovanna Cifuentes, Ame Cividanes, Maripaz García, Oscar González Barreto, Tania Martuscelli, Barbara Safille

The major in Latin American Studies is designed to further understanding of the societies and cultures of Latin America as viewed from regional and global perspectives. The Latin American Studies major builds on a foundation of language and literature, history, history of art, theater studies, humanities, and the social sciences; its faculty is drawn from many departments and professional schools of the University.

The major: The major in Latin American Studies is interdisciplinary. With two goals in mind—intellectual coherence and individual growth—the student proposes a course of study that must satisfy the requirements listed below. The proposed course of study must be approved by the director of undergraduate studies. Though all students choose courses in both the humanities and the social sciences, they are expected to concentrate on one or the other.
Prerequisite to the major is knowledge of the two dominant languages of the region, Spanish and Portuguese. Depending on their interests, students select one language for two years of instruction and the other for one. Other languages necessary for research may in appropriate circumstances be substituted for the second language with the consent of the director of undergraduate studies. Students are encouraged to meet the language requirements as early as possible. Courses used to satisfy the language prerequisite may not be counted toward the major.

The major itself requires twelve term courses: one introductory required course, ANTH 207a; eight courses related to Latin America from departmental offerings or the list of electives below; two further electives, preferably seminars; and the senior essay, LAST 491a or b. The eight Latin American content courses must be selected from the following categories: two courses in the social sciences (anthropology, economics, political science, or sociology), two courses in history, two courses in Spanish American or Brazilian literatures beyond the language requirement, one course in history of art or theater studies, and a seminar. Recommended courses are LAST 314b and SPAN 266b and 267b.

Students must enroll in three seminars or upper-level courses during their junior and senior years. For a list of seminars students should consult the director of undergraduate studies. Elective seminars must be approved by the director of undergraduate studies.

The senior essay is a research paper written usually in one term (LAST 491a or b). Students choose their own topics, which may derive from research done in an earlier course. The essay is planned in advance in consultation with a qualified adviser and a second reader.

In preparing the senior essay, students may undertake field research in Latin America. Support for research is available to recipients of an Albert Bildner Travel Prize, for which application should be made in the spring of the junior year. Students may also apply for summer travel grants through the Council on Latin American and Iberian Studies. Information about these and other grants is available on the Web at http://studentgrants.yale.edu.

Students are strongly encouraged to take advantage of study abroad opportunities during summers or through the Year or Term Abroad program.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** 2 years of 1 lang (Spanish or Portuguese), 1 year of the other

**Number of courses:** 12 term courses beyond prereqs (incl senior essay)

**Distribution of courses:** 8 courses related to Latin America in specified fields, one a sem from approved list; 2 electives; 3 sems or upper-level courses in junior and senior years

**Specific course required:** ANTH 207a

**Senior requirement:** Senior essay (LAST 491a or b)

*last 314b, Contemporary Issues in Latin American Studies.*

Enrique Mayer.

W 3:30-5:20 Hu, So (o)

A seminar for juniors majoring in Latin American Studies, covering selected topics important to Latin America. *Conducted in Spanish.*

*last 471a or b, Directed Reading.* Staff.

HTBA (o)
For students who wish to investigate an area of Latin American Studies not covered by regular offerings. The project must terminate with a term paper or its equivalent. No more than one term of credit may be earned. To apply for admission, a student should present a prospectus and a bibliography to the director of undergraduate studies no later than one day before the course selection period concludes. Written approval from the faculty member who will direct the student’s reading and writing must accompany the prospectus.

*LAST 491a or b, The Senior Essay.  Staff.

HTBA (0)
Preparation of a research paper about forty pages long under the direction of a faculty adviser, in either the fall or the spring term. Students write on subjects of their own choice. During the term before the essay is written, students plan the project in consultation with a qualified adviser or the director of undergraduate studies.

The student must submit a suitable project outline and bibliography to the adviser and the director of undergraduate studies by the third week of the term. The outline should indicate the focus and scope of the essay topic, as well as the proposed research methodology.

Permission may be given to write a two-term essay after consultation with an adviser and the director of undergraduate studies and after submission of a project statement. Only those who have begun to do advanced work in a given area are eligible. The requirements for the one-term senior essay apply to the two-term essay, except that the two-term essay should be substantially longer.

ELECTIVES WITHIN THE MAJOR

Students wishing to count toward the major courses that do not appear on this list should consult with the director of undergraduate studies.


*AFAM 367a/AMST 431a/ER&M 344a/WGSS 455a, Representation and the Black Female.  Hazel Carby.
  For description see under African American Studies.

ANTH 207a/ER&M 340a, Peoples and Cultures of Latin America.
  Enrique Mayer.
  For description see under Anthropology.

ANTH 232b/ARCg 232bG, Ancient Civilizations of the Andes.
  Richard Burger.
  For description see under Anthropology.

ANTH 233bG/ARCg 233bG, Ancient Civilizations of Mesoamerica.
  Marcello Canuto.
  For description see under Anthropology.

ANTH 440aG/ARCg 440aG, Topics in Maya Archaeology.
  Marcello Canuto.
  For description see under Anthropology.

*ECON 463a/EPE&E 320a, Economic Problems of Latin America.
  Eduardo Engel.
  For description see under Economics.
*ECON 467a/*EP&E 319a, Issues in Health Economics. Howard Forman. For description see under Economics.

ER&M 200b, Introduction to Ethnicity, Race, and Migration. Alicia Schmidt Camacho.

*ER&M 348a, Music and Performance from the Hispanophone Caribbean. Alexandra Vázquez.

HIST 128a/AMST 213a/ER&M 286a, Mexicans, Mexican Americans, and the U.S.–Mexico Borderlands since 1848. Stephen Pitti. For description see under History.

*HIST 165Ja/*AMST 411a/*ER&M 390a, The Idea of the Western Hemisphere. Seth Fein. For description see under History.

HIST 325a, Race, Spirituality, and Revolution in the Caribbean. Lillian Guerra.

HIST 358a/ER&M 341a, Mexico in the Nineteenth and Twentieth Centuries. Gilbert Joseph. For description see under History.

*HIST 370Jb/*WGSS 470b, Gender, Nation, and Sexuality in Modern Latin America. Lillian Guerra. For description see under History.

*HIST 372Jb/*ER&M 342b, Revolutionary Change in Twentieth-Century Latin America. Gilbert Joseph. For description see under History.

HIST 377Jb, Transnationalism in the Caribbean. Lillian Guerra.

HSAR 200a/ARC 120a, Art and Architecture of Mesoamerica. Mary Miller. For description see under History of Art.


*PLSC 387b, Rebels in Civil Wars. Ana Arjona.

*PLSC 423b/*EP&E 374b, Political Economy of Poverty Alleviation. Ana De La O. For description see under Political Science.

PORT 246a/SPAN 245a, Latin American Film: Brazil, Mexico, and Argentina. Paulo Moreira. For description see under Portuguese.
port 249b, Introduction to Brazilian Culture. Paulo Moreira.

*port 350a\textsuperscript{G}/litr 297a, Novels of Machado de Assis. K. David Jackson.
For description see under Portuguese.

*port 389a/litr 288a/span 341a, Faulkner, Rosa, and Rulfo: Regionalism and Modernism in the Americas. Paulo Moreira.
For description see under Portuguese.

*port 392b\textsuperscript{G}/litr 296b, Brazil’s Modern Art Movement. K. David Jackson.
For description see under Portuguese.

port 393b/litr 231b, Modern Brazilian and Portuguese Fiction in Translation. K. David Jackson.
For description see under Portuguese.

port 396a/litr 292a, Modern Brazilian Literature in Translation. K. David Jackson.
For description see under Portuguese.

*span 223b, Spanish in Film: An Introduction to the New Latin American Cinema. Margherita Tórtora.

*span 224b, Spanish in Politics, International Relations, and the Media. Teresa Carballal.

span 247b/er&m 265b, Cultural Studies: Latin America. Staff.

span 266b, Studies in Latin American Literature I. Susan Byrne.

span 267b, Studies in Latin American Literature II. Priscilla Meléndez.

*span 343a, Twentieth-Century Spanish American Revolutions. Priscilla Meléndez.

*span 348b, Politics and Violence in Latin American Theater. Priscilla Meléndez.


span 351a, Politics and Culture in Contemporary Mexican Narrative. Priscilla Meléndez.

OTHER COURSES RELEVANT TO THE MAJOR

A list of courses intended as a guide to students in preparing their programs is available at the office of the director of undergraduate studies. Qualified students may also elect pertinent courses in the Graduate School and in some of the professional schools with permission of the director of graduate studies and the director of undergraduate studies.
LESBIAN AND GAY STUDIES

Lesbian and gay studies courses are offered through the Women’s, Gender, and Sexuality Studies program. For a listing of Yale College courses in lesbian and gay studies and a description of the track in lesbian, gay, bisexual, transgender, and queer studies (LGBTQ), see under Women’s, Gender, and Sexuality Studies.

LINGUISTICS

Director of undergraduate studies: Darya Kavitskaya, Rm. 304, 370 Temple St., 432-7656, darya.kavitskaya@yale.edu [F]; Laurence Horn, Rm. 208, 370 Temple St., 432-2457, laurence.horn@yale.edu [Sp]

FACULTY OF THE DEPARTMENT OF LINGUISTICS

Professors
Stephen Anderson (Chair), Carol Fowler (Adjunct), Robert Frank, Roberta Frank, Laurence Horn, Stanley Insler, Frank Keil, Zoltán Szabó, Raffaella Zanuttini

Associate Professors
Ann Biersteker (Adjunct), Maria Piñango

Assistant Professors
Claire Bowern, Ashwini Deo, Gaja Jarosz, Darya Kavitskaya, Jelena Krivokapić

Lecturers
Itamar Francez, Einar Mencl

Linguistics is the scientific study of language. The major in Linguistics is an interdisciplinary program of studies leading toward an understanding of phonological, grammatical, and semantic structure and of various approaches to descriptive, historical, and experimental linguistics. It also includes course work leading to proficiency in one or two foreign languages. Majors may concentrate on theoretical linguistics, on various aspects of comparative grammar, or on a particular family of languages. Interested students should consult the director of undergraduate studies.

Preparation for the Linguistics major during the freshman and sophomore years should include LING 110b or 117a with a grade of B+ or better, and the equivalent of one or two years’ college study of at least one foreign language. Language-related courses in anthropology, computer science, mathematics, philosophy, psychology, and area studies programs are also considered valuable as preparation or as electives to accompany the major.

The major consists of fourteen term courses, as described below:

1. Six term courses in Linguistics above the level of 110b, including LING 490a, Research Methods in Linguistics, and LING 491b, The Senior Essay, the latter to be taken in the senior year. At least one course each in phonology and syntax must be taken by the end of the junior year. In addition, students must complete at least one course in two of the remaining core areas of phonetics, morphology, semantics/pragmatics, and historical linguistics.

2. Two years (or the equivalent) in one or two foreign languages and/or literatures beyond the elementary level; courses designated L3 or higher are normally accepted. A qualified student may fulfill this requirement in part as a freshman or sophomore. With permission from the director of undergraduate studies, an additional linguistics course may substitute for one term of the foreign language requirement.
3. Four term courses selected from: (a) additional course offerings in Linguistics; (b) another course in a foreign language or literature designated L3; (c) any other courses relevant to linguistics in Anthropology, Computer Science, Philosophy, Psychology, or other departments.

For the Class of 2010 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Graduate seminars in linguistics are normally open to qualified undergraduates; consult the director of undergraduate studies for an annual listing of such seminars.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** LING 110b or 117a with appropriate grade; 1 or 2 years’ college study of a foreign lang or equivalent

**Number of courses:** 14 term courses beyond LING 110b (incl senior req)

**Specific course required:** LING 490a

**Distribution of courses:** 6 term courses in Ling (incl 490a and 491b) above level of 110b in at least 4 of 6 categories, incl 1 each in syntax and phonology; 4 term courses in foreign lang and/or lit designated L3 or higher in 1 or 2 langs and/or lits or equivalent; 4 term courses from Ling, or L5 foreign lang or lit, or courses relevant to ling in other depts

**Substitution permitted:** 1 term course in ling for 1 term course in foreign lang or lit, with DUS permission

**Senior requirement:** Senior essay (LING 491b)

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**INTRODUCTORY COURSES**

**LING 108b, Structure and History of English Words.**

Laurence Horn.

Th 11.35-12.30 Hu (0)

Sources and resources of the English lexicon. The development and internal structure of English words, especially those of classical origin. Application of linguistic principles to the study of etymology, word meaning, and semantic change. Focus on understanding the richness of the English vocabulary and its cultural roots while acquiring tools to analyze words and their elements.

**LING 110bG, Language: Introduction to Linguistics.**

Darya Kavitskaya.

MW 1-2.15 So (36)

The goals and methods of linguistics. Basic concepts in phonology, morphology, syntax, and semantics. Techniques of linguistic analysis and construction of linguistic models. Trends in modern linguistics. The relation of linguistics to psychology, logic, and other disciplines.

**LING 111a/HUMS 385a/LITR 150a, Sanskrit Classics in Translation.**

Stanley Insler.

Tu 9.25-11.15 Hu (0) Tr

The chief genres of Sanskrit secular literature set against the background of the cultural history of ancient India. Various literary styles compared with those of other world literary traditions.

**LING 112aG, Historical Linguistics.**

Ashwini Deo.

MW 1-2.15 Hu (36)

Types of change that a language undergoes over time: sound change, analogy, syntactic and semantic change, borrowing. Techniques for recovering earlier linguistic stages: philology, internal reconstruction, the comparative method. Language change and linguistic theory. The role of language contact in language change.
LING 115G, ELEMENTARY SANSKRIT. Ashwini Deo [F], David Mellins [Sp].
MWF 9:25-10:15 Meets RP (32) Cr/Year only
Careful study of Sanskrit grammar both in its historical development and as the
synchronous system attested in classical Sanskrit. Comparisons with other Indo-
European languages. Close reading of later Sanskrit texts.

[LING 117a/PSYC 137a, PSYCHOLINGUISTICS]

LING 120aG/PSYC 318a, GENERAL PHONETICS. Jelena Krivokapić.
MW 11:35-12:50 So (34)
Investigation of possible ways to describe the speech sounds of human languages.
Development of tools such as acoustics and physiology of speech, computer syn-
thesis of speech, and practical exercises in producing and transcribing sounds.

LING 130bG/PSYC 322b, EVOLUTION OF LANGUAGE. Stephen Anderson.
TTh 4:15-5:30 So (0)
The origin and evolution of human language from an interdisciplinary perspec-
tive. Topics include the design features of language, the structure of evolutionary
theory, cognitive continuity and discontinuity with other species, domain speci-
ficity and generality of the language faculty, adaptationist and exaptationist
approaches to language evolution, language learning in humans and other pri-
mates, and the evolution of particular languages with reference to linguistic
typology.

LING 132aG, INTRODUCTION TO PHONOLOGICAL ANALYSIS.
Darya Kavitskaya.
TTh 11:35-12:50 So (24)
The structure of sound systems in particular languages. Phonemic and mor-
phonemic analysis, distinctive-feature theory, formulation of rules, and problems
of rule interpretation. Emphasis on problem solving. Prerequisite: LING 120a or
a grade of B or above in LING 110b.

LING 135bG, PHONOLOGICAL THEORY. Gaja Jarosz.
TTh 11:35-12:50 So (0)
Topics in the architecture of a theory of sound structure. Levels of representa-
tion; classical phonological rules and their interaction. Ordering paradoxes;
cyclicity and lexical phonology. Motivations for replacing a system of rules with
a system of constraints. Optimality theory: constraint types and their interac-
tions. Correspondence theory. Opacity and stratal optimality theory. Prerequisite:
LING 132a or permission of instructor.

LING 140bG/GCSC 320b, COMPUTATIONAL MODELS IN COGNITIVE
SCIENCE. Robert Frank.
MW 9-10:15 So (0)
Introduction to connectionist, symbolic, and statistical techniques used in com-
putational modeling of language, learning, and reasoning. Implementation of
models. Extensive programming background is not assumed. Prerequisite: a course in
cognitive science or permission of instructor.

★LING 141aG/★PSYC 327a, LANGUAGE AND COMPUTATION. Gaja Jarosz.
MW 11:35-12:50 QR, So (0)
The computational study of natural language and the use of linguistic theories in
applied problems. Topics include finite state tools, computational morphology
and phonology, grammar and parsing, discourse models, machine translation,
and language learning in children and machines.

[LING 146bG/PSYC 329b, LANGUAGE, SEX, AND GENDER]
LING 147aG, INDIGENOUS LANGUAGES OF AUSTRALIA. Claire Bowern.
Th 9.25-11.15 So (0)
A general introduction to the indigenous languages of Australia. Issues in phonology, morphology, syntax, sociolinguistics, prehistory (e.g., theories of colonization and spread), and language endangerment and revitalization.

LING 149b/PSYC 149b, COMMUNICATION AND LANGUAGE ABILITIES IN ANIMALS

LING 153aG, SYNTAX I. Raffaella Zanuttini.
Th 1-2.15 So (0)
An introduction to the syntax of natural language. Generative syntactic theory and key theoretical concepts. Syntactic description and argumentation. Topics include phrase structure, transformations, and the role of the lexicon.

LING 180bG, MORPHOLOGY. Stephen Anderson.
Mw 2.30-3.45 So (0)
The theory of word structure within a formal grammar. Relation to other areas of grammar (syntax, phonology); basic units of word structure; types of morphology (inflection, derivation, compounding). Prerequisites: LING 132a and 153a, or permission of instructor.

LING 190aG, TOPICS IN THE HISTORY OF LINGUISTICS: The Linguistic Wars

ADVANCED COURSES

LING 222bG, TOPICS IN PHONETICS: PROSODY IN DISCOURSE.
Jelena Krivokapić.
M 9.25-11.15 So (0)
Phonetic properties of prosodic structure at the discourse level; spoken speech compared to laboratory speech; speaker interaction in the shaping of prosodic properties of the discourse. Prerequisite: LING 120a or permission of instructor.

LING 224aG, FORMAL FOUNDATIONS OF LINGUISTIC THEORIES.
Gaja Jarosz.
Th 2.30-3.45 (27)
Mathematical methods in linguistics. Topics include set theory, logic and formal systems, model theory, lambda calculus, formal language theory, elementary statistics, and probability.

LING 231aG or bG/PSYC 331a or b, NEUROLINGUISTICS

LING 232aG, UNIVERSALS OF LANGUAGE

LING 236bG, ARTICULATORY PHONOLOGY. Jelena Krivokapić.
Mw 11.35-12.30 So (0)
Introduction to phonology as a system for combining units of speech (constriction gestures of the vocal organs) into larger structures. Both theory (reading) and practice (analysis of articulatory movement data; modeling using techniques of dynamical systems). Emphasis on universal versus language-particular aspects of gestural combination and coordination.

LING 240aG, TOPICS IN PHONOLOGY: VARIATION. Gaja Jarosz.
W 3.30-5.20 So Meets RP (0)
Variation in phonology; interfaces of phonology with phonetics and morphology. Formal theories of cross-linguistic variation (typology), lexically conditioned
variation, and free variation. Formal characterization of grammatical variation, the relationship between the grammar and the lexicon, and the role of frequency in phonological theory. **Prerequisite:** LING 135b or permission of instructor.

**LING 241bG, Language Description.** Claire Bowern.

TTH 2.30-3.45 So (0)

Principles of phonetics, phonology, morphology, syntax, and semantics applied to the collection and interpretation of novel linguistic data. Data are collected and analyzed by the class as a group, working directly with a speaker of a relatively undocumented language. **Open to majors in Linguistics, and to others with permission of instructor.**

**LING 242aG, Rhythm in Speech.** Darya Kavitskaya, Jelena Krivokapić.

T 3.30-5.30 So (0)

Phonetics and phonology of rhythmic patterns in the world’s languages. Tonal and temporal properties of rhythm. The existence of isochrony in production and perception. **Prerequisites:** LING 120a and 132a, or permission of instructors.

**LING 251bG, Learnability and Development**

**LING 254bG, Syntax II.** Robert Frank.

MW 1-2.15 So (0)

Recent developments in syntactic theory: government and binding, principles and parameters, and minimalist frameworks. In-depth examination of the basic modules of grammar, including lexicon, X-bar theory, theta-theory, case theory, and movement theory. Comparison and critical evaluation of specific syntactic analyses. **Prerequisite:** LING 153a.

**LING 255bG, Subjects.** Raffaella Zanuttini.

MW 11.35-12.50 So (0)

The syntax of subjects: their structural positions, cross-linguistic differences relative to their order with respect to verb and object, and differences between lexical and pronominal subjects. The nature of null subjects in languages with and without agreement; exceptional properties that subjects exhibit in imperative, exhortative, and “promissive” clauses. **Prerequisite:** LING 153a.

**LING 260aG, Topics in Syntax: Compositional Syntax.**

Robert Frank.

T 1.30-3.20 So (0)

Two grammatical frameworks in which compositional operations play a central role: tree adjoining grammar and combinatory categorial grammar. Implications for syntactic theory and consequences for the nature of the syntax-semantics interface. **Prerequisite:** LING 254b or permission of instructor.

**LING 261bG, Topics in Syntax: Micro-Parametric Variation.**

Raffaella Zanuttini.

T 9.25-11.15 So (0)

Differences in the syntax of closely related linguistic varieties, or dialects, and what they reveal about the limits of syntactic variation. Focus on varieties of English spoken in the United States and the United Kingdom, such as Appalachian English and Belfast English. Differences in dialects from one another and from standard English in grammatical domains such as subject-verb agreement, relative clauses, and negation. **Prerequisites**: two courses in syntax or permission of instructor.

**LING 262bG/PSYC 362bG, Topics in Syntax: Specific Language Impairment**
LING 263aG, INTRODUCTION TO SEMANTICS. Ashwini Deo.

TTh 1-2.15 So (o)

LING 264bG, SEMANTIC THEORY

LING 270bG, TOPICS IN SEMANTICS: FOCUS. Ashwini Deo, Laurence Horn.
W 2.30-4.30 So Meets RP (o)
Focus as the expression of information structural prominence in natural language discourse. Semantic and pragmatic properties of focus and its phonological, lexical, and word-order correlates. Treatment of focus-sensitive and scalar particles ("only", "too", "almost") in dynamic models of meaning. Parallels with the semantics of questions. Prerequisite: a course in semantics or permission of instructors.

LING 280aG, TOPICS IN MORPHOLOGY: CLITICS. Stephen Anderson.
M 1.30-3.20 (o)
The analysis of clitics within a formal theory of grammar. Phonological versus morphosyntactic dimensions of clitic structure ("simple" versus "special" clitic status). Prosodic and segmental correlates of clitic elements. The adequacy of syntactic mechanisms for describing the grammar of clitics. Rules versus constraints in the description of clitic positioning. Extensions of the analysis of clitics to other phenomena, especially verb-second. Prerequisites: LING 132a, 153a, and 180b, or permission of instructor.

LING 290bG, NEGATION AND POLARITY

LING 471a and 472b, SPECIAL PROJECTS. Staff.
HTBA (o)
Special projects set up by students with the help of a faculty adviser and the director of undergraduate studies to cover material not otherwise offered by the department. The project must terminate with at least a term paper or its equivalent and must have the approval of the director of undergraduate studies. Only one term of credit for a project may count toward the major; no more than two terms may count toward the bachelor’s degree.

LING 490aG/PSYC 372a, RESEARCH METHODS IN LINGUISTICS. Claire Bowern.
W 3.30-5.20 (o)
An introduction to research methods in linguistics. Observational and experimental approaches to research in the field. Topics include collection and organization of linguistic data, basic field methods, and use of language corpora and databases. Introduction to research in language acquisition and language change. Prerequisites: one course in syntax and one course in phonology.

LING 491b, THE SENIOR ESSAY. Laurence Horn.
M 2.30-4.20 (o)
A weekly colloquium in which senior Linguistics majors, in rotation, make presentations of research material that will culminate in the development of their senior essays. Under the guidance of departmental faculty (or in some cases supporting faculty in other departments), students select a topic, present material related to the research on that topic, give preliminary versions of their essay, and complete the essay. Prerequisite: LING 490a.
RELATED COURSES

★ANTH 413bG, Language, Culture, and Ideology.
J. Joseph Errington.

CGSC 110a/PSYC 130a, Introduction to Cognitive Science.
Daniel Rothschild.
For description see under Cognitive Science.

★CGSC 201a/PSYC 120a, Brain and Thought: An Introduction to the Human Brain.
Amy Arnsten.
For description see under Cognitive Science.

PHIL 115a, First-Order Logic.  Sun-Joo Shin.

PHIL 267aG, Mathematical Logic I.  Sun-Joo Shin.


Itamar Francez, Zoltán Szabó.


PSYC 140a, Developmental Psychology.  Frank Keil.

★SLAV 210a, Introduction to Slavic Languages.
Robert Greenberg.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Graduate courses in linguistics and in related fields such as anthropology, philosophy, and psychology appear in the bulletin of the Graduate School. They require permission of the director of graduate studies and the instructor.

THE LITERATURE MAJOR

Director of undergraduate studies: Barry McCrea, Rm. 102, 451 College St., 432-4750, maryjane.stevens@yale.edu

FACULTY ASSOCIATED WITH THE LITERATURE MAJOR

Professors
Dudley Andrew (Comparative Literature, Film Studies), Harold Bloom (Humanities), Peter Brooks (Comparative Literature, French), Kang-i Sun Chang (East Asian Languages & Literatures), Katerina Clark (Comparative Literature, Slavic Languages & Literatures), Paul Fry (English), Roberto González Echevarría (Spanish & Portuguese, Comparative Literature), Benjamin Harshav (Comparative Literature), Carol Jacobs (German, Comparative Literature), Pericles Lewis (Comparative Literature, English), Rainer Nägele (German, Comparative Literature), David Quint (English, Comparative Literature), Haun Saussy (Chair) (Comparative Literature), Henry Sussman (German (Visiting), Katie Trumpener (Comparative Literature, English)

Associate Professor
Ala Alryyes (Comparative Literature, English)

Assistant Professors
Alexander Beecroft (Comparative Literature, Humanities), Moira Fradinger (Comparative Literature), Barry McCrea (Comparative Literature)
The Literature Major allows students to address fundamental questions about the nature, function, and value of literature in a broadly comparative context. Majors read and write about a wide variety of literary works across periods, genres, and national traditions. They investigate traditional and contemporary approaches to literary study, ancient and modern literary theory, and the relationship of literature to film and to other branches of the arts and sciences.

The Literature Major offers students the freedom to construct a program of study that reflects their intellectual goals. All students planning to major in Literature should register with the director of undergraduate studies, who will work with them to develop a coherent, well-focused sequence of courses suited to their individual interests.

The major offers a number of its own courses, which constitute the core of the program. Other courses are normally chosen from different language and literature programs, many of which offer courses on literature and film in translation. Among these programs are African American Studies, Classics, East Asian Languages and Literatures, English, Film Studies, French, German, Italian, Near Eastern Languages and Civilizations, Portuguese, Slavic Languages and Literatures, and Spanish. Courses in film studies count toward the major in the same way as courses in literature.

The experience of reading a foreign literature in the original language enables us to understand the nature of both language and literature more fully. Prospective Literature majors are strongly encouraged to begin the study of a foreign language as early as possible in their academic careers and to continue such study throughout their time at Yale. Students interested in graduate study in literature should be aware that many programs require reading knowledge of two or three foreign languages.

Prerequisites. Completion of the Yale College foreign language distributional requirement is a prerequisite for entry into the major. Two specific courses are also prerequisites, LITR 120a, Introduction to Narrative, and 122b, World Poetry and Performance. These courses may be taken in either order, but at least one of them must be completed in either the freshman or the sophomore year.

The major: The Literature Major requires fourteen term courses, including two prerequisites, one required course, two core seminars, and the senior requirement. Students must take LITR 300b, Introduction to the Theory of Literature, in the sophomore or junior year. Students take an additional three courses in a foreign literature, in which they read the texts in the original language. Students may also elect to include in their major two courses in a related discipline that has direct bearing on their study of literature, such as English, history of art, philosophy, anthropology, music, or theater studies. One of these elective courses may be in creative writing. A third elective from a related discipline may be applied to the major with permission of the director of undergraduate studies.
Core seminars. In core seminars, LITR 400–480, students focus intensively on particular texts, films, literary and cultural issues, and theoretical problems. Students are required to take at least two core seminars, preferably one in the junior and one in the senior year. The seminars provide training in literary interpretation and theory, preparing students for the senior essay.

Pre-1800 course requirement. The Literature Major requires at least one course in literature before 1800. Because both genres and individual works of literature refer to, emulate, challenge, and even rewrite older works and generic conventions, students benefit from acquiring a degree of historical perspective. All courses listed under “The Ancient World” and “Medieval and Early Modern Literature to 1800” fulfill the pre-1800 requirement. Courses from other departments may also fulfill the requirement.

Poetry or drama requirement. In addition to LITR 122b and the pre-1800 course, all students must take one course in poetry or drama. The course may be one offered in a program other than Literature.

All majors are required to take at least three additional term courses, beyond the foreign language distributional requirement, in an ancient or modern foreign language, in which the literature is read in the original language. One or more courses can be taken at a basic literature level (normally equivalent to the third year of language study); however, at least one course must be taken at an advanced level (normally equivalent to the fourth year of language study or higher). Students are encouraged to continue developing their foreign language skills by taking advanced language courses and may, with permission of the director of undergraduate studies, substitute one such course for one of the three required foreign literature courses.

A literature course in translation is sometimes suitable as a foreign literature course. In such cases, Literature majors are expected to request additional assignments from their instructors that enable them to work with texts in the original language. They should fill out a form, signed by the instructor, attesting to their intent to do so. This form is available in the department office in Room 102, 451 College St.; students should submit it to the director of undergraduate studies along with their course schedule.

Nonnative speakers of English who are granted permission by Yale College to complete the foreign language distributional requirement by taking ENGL 114a or b, 120a or b, or 450b may take three additional English literature courses to fulfill the foreign literature requirement of the Literature Major, or they may fulfill the major requirements in a third language.

The senior essay. In the senior essay, required of all majors, students develop a research topic of their choice and work closely with a faculty adviser. Normally, the essay makes use of texts in the language of their original composition. Any exceptions must be approved by the director of undergraduate studies. Deadlines for the prospectus, the rough draft, and the completed essay are listed in the course descriptions of the senior essay course (LITR 491a or b and 492a or b, 493a or b).

The senior essay may be written over one term (LITR 491a or b) or over two terms (LITR 492a or b, 493a or b). Alternatively, students may fulfill the senior essay requirement within the context of a core seminar (the senior seminar essay). Because no more than five students per seminar may elect this option, students should petition the instructor promptly at the beginning of the term. It is understood that students choosing the senior seminar essay will work closely with the instructor throughout the term and produce a substantial paper, approximately thirty pages.
Students with an especially well-developed project may petition to write a yearlong senior essay. Interested juniors must apply to the curriculum committee by the last day of classes in the spring term. Students may count the second term of the essay as one elective course toward the total number of courses required for the major. Students expecting to graduate in May enroll in LITR 492a during the fall term and complete their essays in 493b in the spring term. December graduates enroll in 492b in the spring term and complete their essays in 493a during the following fall term. Students planning to begin their essay in the spring term should notify the director of undergraduate studies by the last day of classes in the fall term.

**Intensive major.** Students in the intensive major complete three courses in a second literature, in which literature is read in the original language, in place of three electives. If the additional literature is in English, intensive majors must demonstrate proficiency at the intermediate (L4) level in a second foreign language.

**Year or term abroad.** The Literature Major encourages students to consider spending a summer, a term, or a year abroad. Courses taken on international programs may, with permission of the director of undergraduate studies, be applied to the Literature Major’s foreign literature requirement.

The following table lists languages in which advanced literature instruction is available at Yale, specifying courses that fulfill the basic and advanced literature requirements for the major. Courses with numbers higher than those listed also normally fulfill the requirement, providing that they focus on literature (rather than language) and that the literature is read in the original language.

<table>
<thead>
<tr>
<th>Language</th>
<th>Basic Literature Course</th>
<th>Advanced Literature Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>ARBC 150a, 151b</td>
<td>ARBC 165a or b or 166b</td>
</tr>
<tr>
<td>Chinese</td>
<td>CHNS 150a, 151b</td>
<td>CHNS 170a, 171b</td>
</tr>
<tr>
<td>French</td>
<td>FREN 170a or b</td>
<td>Courses in French numbered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 or higher</td>
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<tr>
<td>German</td>
<td>Courses in German numbered</td>
<td>Courses in German numbered</td>
</tr>
<tr>
<td></td>
<td>170 or higher</td>
<td>200 or higher</td>
</tr>
<tr>
<td>Ancient Greek</td>
<td>GREK 131a or 141b</td>
<td>Ancient Greek courses</td>
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<tr>
<td></td>
<td></td>
<td>numbered 400 or higher</td>
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<tr>
<td>Biblical Hebrew</td>
<td>HEBR 137a, 147b</td>
<td>HEBR 471a or b</td>
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<tr>
<td>Modern Hebrew</td>
<td>HEBR 150b or 151b</td>
<td>HEBR 150b or 151b</td>
</tr>
<tr>
<td>Italian</td>
<td>Courses in Italian numbered</td>
<td>Courses in Italian numbered</td>
</tr>
<tr>
<td></td>
<td>200 or higher</td>
<td>200 or higher</td>
</tr>
<tr>
<td>Japanese</td>
<td>JAPN 150a, 151b</td>
<td>JAPN 170a or 171b</td>
</tr>
<tr>
<td>Korean</td>
<td>KREN 150a, 151b</td>
<td>KREN 470a or 471b</td>
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<tr>
<td>Latin</td>
<td>LATN 131a or 141b</td>
<td>Latin courses numbered</td>
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<tr>
<td></td>
<td></td>
<td>400 or higher</td>
</tr>
<tr>
<td>Persian</td>
<td>PERS 150b</td>
<td>PERS 150b</td>
</tr>
<tr>
<td>Portuguese</td>
<td>By arrangement with instructor</td>
<td>By arrangement with instructor</td>
</tr>
<tr>
<td>Russian</td>
<td>RUS 150a, 151b</td>
<td>Courses in Russian numbered</td>
</tr>
<tr>
<td></td>
<td></td>
<td>170 or higher</td>
</tr>
<tr>
<td>Spanish</td>
<td>SPAN 261a, 262b, 266b,</td>
<td></td>
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<tr>
<td></td>
<td>or 267b</td>
<td>Courses in Spanish numbered</td>
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<tr>
<td></td>
<td></td>
<td>300 or higher</td>
</tr>
</tbody>
</table>

Other ancient and modern languages, including those from Africa, South Asia, and the Middle East, may be suitable for the Literature Major if a qualified faculty adviser is available to supervise the major.
REQUIREMENTS OF THE MAJOR

Prerequisites:  LITR 120a; LITR 122b; completion of Yale College foreign lang distributional req

Number of courses:  12 term courses beyond prereqs (incl senior essay)

Required course:  LITR 300b

Distribution of courses:  3 courses in 1 foreign lit, as specified; 1 course in lit before 1800; 1 course in poetry or drama; 2 core sems

Substitution permitted:  For 2 electives, 2 courses in another discipline, incl 1 in creative writing; a third course in another discipline for a lit elective, with DUS permission; 1 advanced lang course for 1 of 3 req foreign lit courses, with DUS permission

Senior requirement:  One-term senior essay (LITR 491a or b); or two-term senior essay (LITR 492a and 493b, or 492b and 493a); or 1 core sem (LITR 400–480) with senior sem essay

Intensive major:  3 addtl lit courses in a second lang in place of 3 electives; demonstrated command of a second foreign lang

PREREQUISITES AND REQUIRED COURSES

LITR 120a, INTRODUCTION TO NARRATIVE.  Barry McCrea, Ala Alryyes, Moira Fradinger, Richard Maxwell.
  MW 2.30-3.45 WR, Hu  (0)
A team-taught course that examines how narratives work and what they do. Emphasis on fictional form, the mechanics of plot, and questions of time and duration. Texts are drawn from a variety of periods and cultures, and include folktales, short stories, novels, case studies, graphic novels, and films.

LITR 122b, WORLD POETRY AND PERFORMANCE.  Alexander Beecroft, Richard Maxwell.
  MW 1-2.15 WR, Hu  (0)
Examination of lyric and epic poetry, drama, film, song, and performance. Texts are drawn from a broad range of cultures and time periods, from the ancient Near East to our own time. Emphasis on how poetic and dramatic forms shape the stories they tell, on the social and cultural uses to which these forms are put, on the relationship between text and performance, and on historical and cross-cultural connections among texts.

LITR 300b/ENGL 300b, INTRODUCTION TO THEORY OF LITERATURE.  Paul Fry.
  TTH 11.35-12.25, 1 HTBA  WR, Hu  (24)
An examination of concepts and assumptions present in contemporary views of literature. Theory of meaning, interpretation, and representation. Critical analysis of formalist, psychoanalytic, structuralist, poststructuralist, Marxist, and feminist approaches to theory and to literature.

FRESHMAN SEMINARS

*LITR 002a/#HUMS 002a/#MMES 002a/#NELC 002a, CLASSICAL ARABIC LITERATURE IN TRANSLATION.  Beatrix Gruendler.
  For description see under Near Eastern Languages & Civilizations.

*LITR 088a/#GMST 088a/#HUMS 083a, THE CONCEPT OF KNOWLEDGE IN THE GERMAN TRADITION.  Carol Jacobs.
  For description see under German Studies.
THE ANCIENT WORLD

*LITR 150a/HUMS 385a/LING 111a, Sanskrit Classics in Translation.  
Stanley Insler.  
For description see under Linguistics.

*LITR 154b/ENGL 395b, The Bible as Literature.  
Leslie Brisman.  
For description see under English Language & Literature.

LITR 158a/CLCV 254a, Introduction to Greek Literature.  
Egbert Bakker.  
For description see under Classics.

LITR 159b/CLCV 255b, Introduction to Latin Literature.  
Kirk Freudenburg.  
For description see under Classics.

LITR 160b, Classical Indian Drama and Dramaturgy.  
David Mellins.  
MW 2.30-3.45 Hu (0) Tr  
A survey of Sanskrit dramas, read in translation, and an exploration of Indian dramaturgical theory. Aesthetic, social, and historical dimensions of Sanskrit drama; the evolution of literary methods applied in dramatic context. Technical specifications for Sanskrit drama as they reflect the ritual and political cultures of classical India.

*LITR 161b/CLCV 218b/HUMS 258b/THST 218b, Drama and Demos.  
Timothy Robinson.  
For description see under Classics.

MEDIEVAL AND EARLY MODERN LITERATURE TO 1800

LITR 172a/CHNS 200a, Man and Nature in Chinese Literature.  
Kang-i Sun Chang.  
For description see under East Asian Languages & Literatures.

Edward Kamens.  
For description see under East Asian Languages & Literatures.

LITR 183a/ITAL 310a, Dante in Translation.  
Giuseppe Mazzotta.  
For description see under Italian.

LITR 189a/SPAN 300a, Cervantes’ Don Quijote.  
Roberto González Echevarría.  
For description see under Spanish.

*LITR 190a/FREN 210a/HUMS 241a, Renaissance of the Middle Ages.  
R. Howard Bloch.  
For description see under Humanities.

EUROPEAN LITERATURE SINCE 1800

Vladimir Alexandrov.  
For description see under Slavic Languages & Literatures.
litr 208a/see 256a/russ 256a, Studies in the Novel: Dostoevsky.
Kate Holland.
For description see under Slavic Languages & Literatures.

★litr 216a/*gman 305a/G/gmst 305a/*hums 238a, Oedipus and Faust: Tragedies of Knowledge. Rainer Nägele.
For description see under Germanic Languages & Literatures.

★litr 218b/*gman 306b/G/gmst 306b/*hums 237b, Goethe’s Faust, Part II. Rainer Nägele.
For description see under Germanic Languages & Literatures.

For description see under Slavic Languages & Literatures.

For description see under Theater Studies.

★litr 226a/*jdst 310a, Readings in Hebrew Poetry.
Benjamin Harshav.
T 1.30-3.20 Hu (26)
Modernism in Hebrew poetry. Poets studied vary from year to year. Prerequisite: a high level of reading Hebrew texts in poetry and criticism. May be repeated for credit.

★litr 230a/*fren 390a, Modernism and the Avant-Garde.
Jean-Jacques Poucel.
For description see under French. (Formerly litr 338a)

litr 231b/port 393b, Modern Brazilian and Portuguese Fiction in Translation. K. David Jackson.
For description see under Portuguese.

★litr 232a/russ 319a, Criminality and the Novel. Kate Holland.
For description see under Slavic Languages & Literatures. (Formerly litr 332b)

★litr 243a/engl 430a, British Literature of the Sixties.
Nigel Alderman.
For description see under English Language & Literature. (Formerly litr 337b)

NON-EUROPEAN LITERATURE SINCE 1800

litr 252b/japn 260b/G, Imagining Space in Japanese Fiction and Film. Christopher Hill.
For description see under East Asian Languages & Literatures.

litr 260a/japn 250a/G, Modern Japanese Fiction.
Christopher Hill.
For description see under East Asian Languages & Literatures.

★litr 261b/*taml 190b/G, Literatures of South Indian Languages.
E. Annamalai.
For description see under South Asian Studies.
LITR 269A/AFST 343A/ENGL 343A, Introduction to Postcolonial Literatures. El Mokhtar Ghambou. For description see under English Language & Literature.

LITR 270A/ENGL 328A/ER&M 310A, Fiction without Borders. Shameem Black. For description see under English Language & Literature.


LITR 273A/ENGL 302A, International Britain. Tanya Agathocleous. For description see under English Language & Literature.


LITR 296B/PORT 392B, Brazil’s Modern Art Movement. K. David Jackson. For description see under Portuguese.

LITR 297A/PORT 350A, Novels of Machado de Assis. K. David Jackson. For description see under Portuguese.

LITERARY THEORY AND SPECIAL TOPICS


LITR 323B/ENGL 336B/THST 303B, The Opera Libretto. J. D. McClatchy. For description see under English Language & Literature.

LITR 328A/GMST 212A/MGRK 212A, Folktales and Fairy Tales. Maria Kaliambou. For description see under Hellenic Studies.


Masterpieces of European and American lyric studied in relation to the various determinants of poetry: grammar and logic, meter and rhyme, self-consciousness and performativity, myth and theme. Poets include Brecht, Rilke, Goethe, Frost, and Elizabeth Bishop. Reading knowledge of German or French useful but not required.
LITR 335b/CLCV 211b/HUMS 263b/MGRK 211b/WGSS 248b, Literature and War in the Greek Tradition. George Syrimis. For description see under Hellenic Studies.

LITR 336a, Childhood and Memory. Henry Sussman. MW 1-2.15 Hu (o)
Investigation of the centrality of children in nineteenth- and twentieth-century literature and culture. Children’s modalities of thinking, playing, and coping. Childhood as a prototype for experimentation and critique. Works by Joyce, Proust, Woolf, Baldwin, Benjamin, and Golding. Some attention to different models of memory from the literatures of psychoanalysis, philosophy, and cognitive science.

LITR 337a/ITAL 305a, Italian Food and Literature. Risa Sodi. For description see under Italian.

LITR 338b/FILM 362b/FREN 384b/ITAL 384b/JDST 289b, Representing the Holocaust. Maurice Samuels, Millicent Marcus. For description see under French.

LITR 340a/GMAN 230a/GMST 230a/HUMS 100a, Research and Critical Analysis Practicum. Kirk Wetters. For description see under German Studies.

LITR 341a/HUMS 262a/MGRK 210a/RSLT 212a/WGSS 247a, Religion and Literature: Irreverent Texts. George Syrimis. For description see under Hellenic Studies.

FILM

LITR 352a/FILM 340a/HUMS 257a, Issues in Contemporary Film Theory. Francesco Casetti. For description see under Film Studies.

LITR 355b/FILM 310b, Theory of TV and Media. John MacKay. For description see under Film Studies.

LITR 357a/ENGL 321a/HUMS 246a, Visual Culture in Literature, Drama, and Film. Edward Barnaby. Th 1.30-3.20 Hu (o)
A discussion of texts that address the transformation of visual culture and the act of seeing in modern industrial society. The dynamics such texts reveal in relationships between individuals and mass culture, authenticity and commodity, theory and ideology. Questions of imperialism, rationalism, industrialism, voyeurism, tourism, and realism as inscribed in landscape, architecture, painting, photography, theater, and cinema.

LITR 360b/FILM 363b, Latin American Cinema. Moira Fradinger. For description see under Film Studies.

LITR 375a/FILM 462a, Realist French Film: Renoir, Bazin, Rohmer. Dudley Andrew. For description see under Film Studies.

LITR 379b/FILM 466b/GMST 370b, The Films of Fassbinder, Herzog, and Wenders. Brigitte Peucker. For description see under Film Studies.
Genre Study: The Western.
Aaron Gerow.
For description see under Film Studies.

Russian Film.
John MacKay.
Th 1:30-3:20; screenings Su 7 P.M. Hu (o)
A historical overview of the development of Russian film, with special attention to the classics of directors such as Eisenstein and Vertov. Russian film examined in terms of its contribution to film theory and practice and in view of the specific historical and cultural contexts of the major films.

CORE SEMINARS

Two seminars are required for all Literature majors; nonmajors may be admitted with permission of the instructor.

Stories of the Strange.
Richard Maxwell.
MW 1-2.15 Hu (o) Tr
The genre of the fantastic or folkloric tale collection traced through a range of Western and Eastern cultures, with particular focus on issues of narration and audience. Texts include The Thousand and One Nights, the lays of Marie de France, Charles Perrault's Mother Goose Tales, Grimm's Fairy Tales, Jan Potocki's Manuscript Found in Saragossa, Washington Irving's Tales of the Alhambra, and Zora Neale Hurston's Mules and Men.

For description see under Germanic Languages & Literatures.

The Eighteenth-Century European Novel.
Katie Trumpener.
MW 1-2.15 Hu (o) Tr
Eighteenth-century novels reground fiction in everyday documents: letters, diaries, travelogues, and confessions. Their formal experiments raise questions about cultural identity, historical experience, social roles, and the vicissitudes of knowledge.

For English majors, pre-1800 with permission of the instructor and the director of undergraduate studies.

Systems and Their Theory.
Henry Sussman.
For description see under German Studies.

Literatures of World War II: Homefront Narratives.
Katie Trumpener.
M 9.25-11.15 Hu (o)
Quotidian civilian experiences of World War II examined from a pan-European perspective. The kinds of literary reflection war occasioned; how civilians experienced the relationship between history and everyday life, both during and after the war; children’s experience of war; and ways in which home front, occupation, and concentration camp memories shaped postwar avant-garde aesthetics. Works analyzed include wartime and postwar fiction, diaries, memoirs, and films.

**Litr 440b/Engl 422b, James Joyce’s Ulysses.** Pericles Lewis.
For description see under English Language & Literature.

**Litr 445a/Clcv 318a/Hums 382a, Literature and Philosophy in Early China and Greece.** Alexander Beecroft.
T 2.30-4.20 (0) Tr
A comparison of the poetic and philosophical traditions of Archaic and Classical Greece and predynastic China, with some attention to early historical writings. Themes include the value and function of poetry within society; the relationship between literature and truth; views on the individual within society; and the dangers and enchantments of literature.

**Litr 448a/Film 473a/Hums 234a, American-French Film Relations and the Culture of Commitment, 1930–1965.** Dudley Andrew, David Bromwich.
For description see under Film Studies.

**Litr 451a, Autobiography and Fiction.** Katerina Clark.
Th 1-2.15 Hu (0)
Close reading of a variety of works of fiction that present themselves as autobiographies. Texts include works by Augustine, Rousseau, Goethe, Joyce, Sartre, and Coetzee, as well as slave narratives and trial confessions.

**Litr 456b/Gmst 456b/Rel 340b, Interpretation and Authority.** Carol Jacobs.
T 1.30-3.20 Hu (0)
Close readings of works on problems of authority and interpretation by Sigmund Freud, Roland Barthes, Paul de Man, and Walter Benjamin. Exploration of their writing as a performance that questions simplistic notions of truth. Consideration of the problem of how to interpret texts that unsettle the very nature of interpretation.

**Litr 480a, Topics in Literary Theory: Psychoanalysis in Literature and Film.** Moira Fradinger.
W 7-8.50 p.m. Hu (0)
In-depth examination of a field of literary theory; topics change annually, and the course can be taken more than once. The topic for 2008 is concepts in psychoanalytic theory that bridge the clinical world, literary and critical theory, and film and gender studies. Foundational works by Freud and Lacan are considered together with literary and theoretical texts in order to explore the link between the arts and psychoanalytic theory. Concepts from the clinical field that have been imported into theories of culture, society, and the arts.

**Litr 488a or b, Directed Reading and/or Individual Research.**
Barry McCrea.
HTBA (0)
Special projects in an area of the student’s particular interest set up with the help of a faculty adviser and the director of undergraduate studies. Projects must cover
material not otherwise offered by the department, must terminate in at least a
term paper or its equivalent, and must have the approval of the director of under-
grade studies. *Enrollment limited to Literature majors.*

**SENIOR COURSES**

*LITR 491a or b, The Senior Essay.* Consult the director of
undergraduate studies.

HTBA (o)
An independent writing and research project. The senior essay is due in the office
of the director of undergraduate studies according to the following schedule:
(1) by September 12 (for LITR 491a) or January 23 (for LITR 491b), a three-page
prospectus signed by the student’s adviser; (2) by October 24 (for LITR 491a) or
March 2 (for LITR 491b), a full rough draft (not notes); (3) by December 5 (for
LITR 491a) or April 17 (for LITR 491b), the completed essay. The minimum length
for an essay is twenty-five pages. Students are urged to arrange a topic and adviser
carly in the term before the term in which the essay is to be written.

*LITR 492a or b and 493a or b, The Yearlong Senior Essay.* Consult
the director of undergraduate studies.

HTBA (o)
An extended research project. Students must petition the curriculum commit-
tee for permission to enroll by the last day of classes in the term preceding enroll-
ment in LITR 492a or b. For students expecting to graduate in May, the senior
essay is due in the office of the director of undergraduate studies according to the
following schedule: (1) by September 12, a three-page prospectus signed by the
student’s adviser; (2) by January 23, a full rough draft (not notes); (3) by April 17,
the completed essay. December graduates should consult the director of under-
grade studies for required deadlines. The minimum length for a yearlong
senior essay is forty pages.

**MANAGEMENT SCIENCES**

*(See under Operations Research.)*

**MATHEMATICS**

*(See also Applied Mathematics.)*

Director of undergraduate studies: Yair Minsky, 448 DL, 432-4018,
yair.minsky@yale.edu

**FACULTY OF THE DEPARTMENT OF MATHEMATICS**

**Professors**
Donald Brown, Andrew Casson, Ronald Coifman, Igor Frenkel, Howard Garland,
Roger Howe, Peter Jones, Ravindran Kannan, Mikhail Kapranov, Bruce Kleiner,
Benoit Mandelbrot (*Emeritus*), Gregory Margulis, Yair Minsky, Vincent Moncrief,
Steven Orszag, David Pollard, Vladimir Rokhlin, Peter Schultheiss (*Emeritus*),
Katepalli Sreenivasan, Gregg Zuckerman

**J. W. Gibbs Assistant Professors**
Dennis Borisov, Tuilla Dymarz, Matt Feiszli, Marketa Havlickova, Triet Le, Jaejeong
Lee, Yiqiang Li, Karin Melnick, Hisham Sati, Dapeng Zhan

**Adjunct Professors**
Michael Frame, Alex Lubotzky
Both the course offerings and the major in Mathematics reflect the many roles of mathematics itself: the language and tool of the sciences, a cultural phenomenon with a rich historical tradition, and a model of abstract reasoning. The Mathematics major provides a broad education in various areas of mathematics in a program flexible enough to accommodate many ranges of interest.

**B. A. and B.S. degree programs.** The prerequisite for each program is calculus through the level of math 120a or b, or the equivalent. Each program normally consists of ten term courses in Mathematics numbered 222 and higher, including math 480a or b. Each student is expected to take vector calculus and linear algebra through the level of math 230 or of math 250a, and one of math 222a or b or 225a or b. Beyond this, it is strongly recommended that the major include courses in real analysis (math 300b or 301a), in algebra (math 350a), and in complex analysis (math 310a), together with other courses to provide additional breadth and depth. Students are required to take at least two term courses in each of three of the following five categories: analysis, algebra and number theory, statistics and applied mathematics, geometry and topology, and logic and foundations. Specific courses in each category are listed below.

Each Mathematics major is urged to acquire additional familiarity with the uses of mathematics by taking courses in Applied Mathematics, Computer Science, Engineering and Applied Science, Economics, Operations Research, Physics, Statistics, or other departments. In some instances a limited number of such courses may be counted among the ten courses required for the major in Mathematics, with the approval of the director of undergraduate studies.

A candidate for the B.S. degree must take at least two advanced term courses in the physical sciences, such as chem 328a, 332a, 333b, or phys 401a, 402b, in addition to the ten term courses required for the B.A. degree. Such courses require the approval of the director of undergraduate studies; written approval is advised.

Any student interested in pursuing further study in pure mathematics should include math 301a, 305b, 310a, 350a, 370b, and either 430b or 435b in his or her program, and should consider taking one or more graduate-level courses. Students interested in applications of mathematics should include math 300b or 301a, 310a, 350a, and a selection of courses among 241a, 242b, 244a, 246a or b, 251b, 260b, 435b, and cpsc 440b.

For the Class of 2011 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**The intensive major.** Candidates for a degree with an intensive major in Mathematics are expected to include at least two graduate term courses in the Mathematics department, or equivalent independent study, in their programs. Familiarity with the material of the following courses is prerequisite to graduate courses in each category: algebra: two courses between math 350 and 399; analysis: math 301a, 305b, 310a; algebraic topology: math 301a, 350a; logic and foundations: math 270a.
Senior requirement. During the senior year students majoring in Mathematics normally take the senior seminar (MATH 480a or b). Alternatively, with the consent of the director of undergraduate studies, highly qualified students may write a senior essay in MATH 470a or b under the guidance of a faculty member, and give an oral report to the department. Students wishing to write a senior essay should consult the director of undergraduate studies early in the fall term.

COMBINED B.S./M.S. DEGREE PROGRAM

Students who, by the end of their senior year, complete the requirements of the department for the M.S. in Mathematics will be eligible to receive this degree at their Senior Commencement. Required are: (1) eight term courses numbered 500 or higher, most of which must be completed with grades of B or better; (2) a reading knowledge of mathematical literature in a foreign language of importance for mathematical research (normally French, German, or Russian); (3) satisfactory performance on a general oral examination.

The master's program is in no sense a substitute for the B.A. or B.S. program; rather, it is designed to accommodate a very few exceptional students who, by means of accelerated or independent study, can satisfy the department as to their command of the content of the normal undergraduate program. During spring term of the sophomore year candidates must submit a proposal that foresees this level of achievement by the end of junior year to the director of undergraduate studies. If approved by the department this proposal will be forwarded to the Dean's Office; see “Simultaneous Award of the Bachelor’s and Master's Degrees” in chapter III, section K. Students' status and progress will be reviewed before they are permitted to continue in the program in the senior year.

Students take at least two graduate term courses in the junior year (normally courses in algebra or analysis are the first graduate courses taken). The general oral examination covers a list of topics available from the director of graduate studies and will be accepted in lieu of the usual senior oral presentation. Details concerning the requirements for the master's degree may be obtained from the director of graduate studies.

PLACEMENT IN COURSES

The department offers a three-term sequence in calculus, MATH 112a or b, 115a or b, and 120a or b. Students who have not taken calculus at Yale and who wish to enroll in calculus must take the online placement examination found on the department Web page (www.math.yale.edu). At the beginning of each term a calculus preregistration session is held in DL 432. To enroll in a calculus course a student must bring the results of the placement exam, as well as other pertinent information such as Advanced Placement test scores, to the preregistration session. Advisers will be on hand to assist each student in enrolling in the appropriate course.

MATH 112a or b is an introductory course that presupposes basic skills in high school algebra, geometry, and trigonometry. Enrolling students are expected to know the basic definitions of the trigonometric functions, synthetic division, factorization, and elementary area and volume formulas of plane and solid geometry. MATH 115a or b presupposes familiarity with the topics covered in MATH 112a or b. MATH 120a or b presupposes familiarity with the topics covered in MATH 115a or b.
MATH 230 is an advanced course in linear algebra and introductory analysis for students with exceptionally strong backgrounds in mathematics. Students who wish to enroll in MATH 230 should consult the instructor of the course. After MATH 115a or b, students with a strong interest in abstract mathematics should consider taking MATH 230.

REQUIREMENTS OF THE MAJOR

Prerequisite: MATH 120a or b or equivalent
Number of courses: B.A. — 10 term courses numbered 222 or higher, incl MATH 480a or b; B.S. — same, with 2 addtl courses in physical sciences
Distribution of courses: B.A. — 2 courses in each of 3 categories chosen from (a) analysis, (b) algebra and number theory, (c) stat and applied math, (d) geometry and topology, (e) logic and foundations; B.S. — same, with 2 addtl advanced courses in physical sciences approved by DUS
Specific courses required: MATH 230 (counts as 2 courses) or MATH 250a; MATH 222a or b or 225a or b
Senior requirement: Senior sem (MATH 480a or b) or, with DUS permission, senior essay (MATH 470a or b) and oral report
Intensive major: 2 grad courses or equivalent independent study counted among the required courses

INTRODUCTORY COURSES: MATH 112a or b, 115a or b, 118a or b, 120a or b, 190a

ANALYSIS: MATH 230 (counts as one term course in this category), 246a or b, 250a, 300b, 301a, 305b, 310a, 315b, 320a, 325b

STATISTICS AND APPLIED MATHEMATICS: MATH 235b, 241a, 242b, 244a, 246a or b, 251b, 260b, 301a, 330b, 400a; CPS 201a or b, 365b, 440b

ALGEBRA AND NUMBER THEORY: MATH 222a or b, 225a or b, 230 (counts as one term course in this category), 244a, 350a, 353a, 360a, 370b, 380a, 381b, 440a

GEOMETRY AND TOPOLOGY: MATH 228a, 290b, 430b, 435b

LOGIC AND FOUNDATIONS: MATH 270a; PHIL 267a, 268b

INTRODUCTORY COURSES

These courses do not count toward the requirements of a major in Mathematics. Students wishing to enroll in MATH 112a or b, 115a or b, or 120a or b are expected to preregister for a specific section. In the fall, preregistration is on Tuesday, September 2, 2008, from 9:30 a.m. to 4 p.m. in 432 DL; in the spring, preregistration is on Monday, January 12, 2009, from 9:30 a.m. to 4 p.m., also in 432 DL. Students who have not taken calculus at Yale must complete the online placement exam at www.math.yale.edu/public_html/placement.html before preregistering. Those who do not preregister may be excluded from sections that are full.

TTh 2:30-3:45 QR (27)
Geometric patterns in nature, including classical models of spirals in seashells and sunflowers, symmetry of honeycombs and snowflakes, and the curvature of soap films; the shape of the universe; ways to visualize the fourth dimension; and a brief introduction to fractal geometry. *Enrollment limited to freshmen and sophomores.*

**MATH 112a or b, Calculus of Functions of One Variable I.**
Howard Garland [F], Igor Frenkel [Sp].
3 HTBA For sections see www.yale.edu/courseinfo QR (69)
Limits and their properties. Definitions and some techniques of differentiation and the evaluation of definite integrals, with applications. Students are instructed in use of the software package Mathematica, which is used in graphical, symbolic, and numerical methods and is required on some problem sets. *No prior acquaintance with calculus or computing assumed.*

**MATH 115a or b, Calculus of Functions of One Variable II.**
Steven Orszag [F], Andrew Casson [Sp].
3 HTBA For sections see www.yale.edu/courseinfo QR (69)
A continuation of MATH 112a or b. Applications of integration, with some formal techniques and numerical methods. Improper integrals, approximation of functions by polynomials, infinite series. Exercises involve the software package Mathematica. *After MATH 112a or b or equivalent.*

**MATH 118a or b, Introduction to Functions of Several Variables.**
Jayadev Athreya [F], Jaejeong Lee [Sp].
TTTh 11.35-12.50 QR (24)
Calculus of several variables and some linear algebra. Intended for students in the social sciences, especially Economics. Covers parts of MATH 120a or b and MATH 222a or b. *May not be taken after MATH 120a or b or 222a or b. Prerequisite: MATH 112a or b.*

**MATH 120a or b, Calculus of Functions of Several Variables.**
Michael Frame.
3 HTBA For sections see www.yale.edu/courseinfo QR (69)
Analytic geometry in three dimensions, using vectors. Real-valued functions of two and three variables, partial derivatives, gradient and directional derivatives, level curves and surfaces, maxima and minima. Parametrized curves in space, motion in space, line integrals; applications. Multiple integrals, with applications. Divergence and curl. The theorems of Green, Stokes, and Gauss. *After MATH 115a or b, or with permission of instructor.*

**MATH 170a, Mathematical Patterns in the Natural World.**
Michael Frame.
TTTh 2.30-3.45 QR (27)
A mathematical investigation of patterns in nature. Topics include the geometry of growth and form, periodic and aperiodic tilings, curvature of soap films, non-Euclidean geometries, topology and the structures of space and time, and geometry of higher-dimensional spaces. *Some familiarity with calculus is assumed.*

**MATH 190a, Fractal Geometry.** Michael Frame.
TTTh 9-10.15 QR (22)
A visual introduction to the geometry of fractals and the dynamics of chaos, accessible to students not majoring in science. Study of mathematical patterns repeating on many levels and expressions of these patterns in nature, art, music, and literature.
INTERMEDIATE AND ADVANCED COURSES

These courses count toward the requirements of a major in Mathematics.

**MATH 222a or b/AMTH 222a or b, Linear Algebra with Applications.**
Matt Feiszli [F], Peter Schultheiss [Sp].
MWF 10:30-11:20; disc. 1 HTBA QR (33)

**MATH 225a or b, Linear Algebra and Matrix Theory.**
225a: TTh 11.35-12.50; disc. 2 HTBA QR (24) Yoav Moriah
225b: TTh 9-10.15; disc. 2 HTBA QR (22) Triet Le
An introduction to the theory of vector spaces, matrix theory and linear transformations, determinants, eigenvalues, and quadratic forms. Some relations to calculus and geometry are included. **After or concurrently with MATH 120a or b. May not be taken after MATH 222a or b.**

**MATH 228a, From Euclid to Einstein.** Roger Howe.
MWF 2.30-3.20 QR (37)
An introduction to the fundamental role of symmetry in geometry. Transformational geometry and its relation to Euclidean geometry, to non-Euclidean geometries, and to Einstein's theory of relativity. Includes a geometric introduction to linear algebra.

**MATH 230, Vector Calculus and Linear Algebra.** Hisham Sati.
MWF 9.25-10.15 [F], TTh 11.35-12.50 [Sp] QR (50)
A careful study of the calculus of functions of several variables, combined with linear algebra.

**MATH 235b/STAT 230bG, Introductory Data Analysis.** Hannes Leeb.
For description see under Statistics.

**MATH 241a/STAT 241aG, Probability Theory.** Hannes Leeb.
For description see under Statistics.

For description see under Statistics.

**MATH 244a/AMTH 244a, Discrete Mathematics.** Jayadev Athreya.
TTh 11.35-12.50 QR (24)
Basic concepts and results in discrete mathematics: graphs, trees, connectivity, Ramsey theorem, enumeration, binomial coefficients, Stirling numbers. Properties of finite set systems. **Recommended preparation: MATH 115a or b or equivalent.**

**MATH 246a or b, Ordinary Differential Equations.**
246a: TTh 2.30-3.45 QR (27) Steven Orszag
246b: TTh 9-10.15 QR (22) Dan Kushner
First-order equations, second-order equations, linear systems with constant coefficients. Numerical methods. Complex variables and their applications. **After MATH 120a or b; after or concurrently with MATH 222a or b, or 225a or b, or equivalent.**
MATH 247b, PARTIAL DIFFERENTIAL EQUATIONS.  Steven Orszag.
TTh 2:30-3:45  QR (27)
Introduction to partial differential equations; wave equation; Laplace’s equation; heat equation; method of characteristics; calculus of variations; series and transform methods; numerical methods. Prerequisites: MATH 222a or b or 225a or b, MATH 246a or b, ENAS 194a or b, or equivalents.

MATH 250a, VECTOR ANALYSIS.  Roger Howe.
MWF 9:25-10:15  QR (32)
Calculus of functions of several variables, using vector and matrix methods. Inverse and implicit function theorems. Transformation of multiple integrals. Line and surface integrals of vector fields. Curl and divergence. Differential forms. Theorems of Green, Gauss, and Stokes. After MATH 120a or b, and 222a or b or 225a or b or equivalent.

MATH 251b/STAT 251b, STOCHASTIC PROCESSES.  David Pollard.
For description see under Statistics.

MATH 260b/AMTH 260b, BASIC ANALYSIS IN FUNCTION SPACES.
Ronald Coifman.
TTh 1-2:15  QR (26)
The standard basic functional analytic tools needed by scientists and users of mathematics. MATH 260b is a natural continuation of PHYS 301a.

MATH 270a, SET THEORY.  Mikhail Kapranov.
MWF 1:30-2:20  QR (36)
Algebra of sets; finite, countable, and uncountable sets. Cardinal numbers and cardinal arithmetic. Order types and ordinal numbers. The axiom of choice and the well-ordering theorem. After MATH 120a or b or equivalent.

[MATH 290b, FRACTAL GEOMETRY: CONCEPTS AND APPLICATIONS]

MATH 300b, TOPICS IN ANALYSIS.  Triet Le.
MWF 11:35-12:25  QR (34)
An introduction to analysis, with topics chosen from infinite series, the theory of metric spaces, and fixed-point theorems with applications. Students who have taken MATH 230 should take MATH 301a instead of this course. After MATH 250a or with permission of instructor.

*MATH 301a, INTRODUCTION TO ANALYSIS.  Peter Jones.
TTh 1-2:15  QR (26)
Foundations of real analysis, including metric spaces and point set topology, infinite series, and function spaces. After MATH 230 or equivalent.

MATH 305b, REAL ANALYSIS.  Dapeng Zhan.
TTh 1-2:15  QR (26)
The Lebesgue integral, Fourier series, applications to differential equations. After MATH 301a or with permission of instructor.

MATH 310a, INTRODUCTION TO COMPLEX ANALYSIS.  Nikola Lakic.
TTh 11:35-12:50  QR (24)
*Th 2.30-3.45 QR Meets RP (27)
Continuation of Math 310a. Topics may include argument principle, Rouche’s theorem, Hurwitz theorem, Runge’s theorem, analytic continuation, Schwarz reflection principle, Jensen’s formula, infinite products, Weierstrass theorem. Functions of finite order, Hadamard’s theorem, meromorphic functions. Mittag-Leffler’s theorem, subharmonic functions. *After Math 310a.*

*Th 1-2.15 QR Meets RP (26)
Construction and limit theorems for measures and integrals on general spaces; product measures; Lp spaces; integral representation of linear functionals. *After Math 305b or equivalent.*

*Th 1-2.15 QR Meets RP (26)
Hilbert, normed, and Banach spaces; geometry of Hilbert space, Riesz-Fischer theorem; dual space; Hahn-Banach theorem; Riesz representation theorems; linear operators; Baire category theorem; uniform boundedness, open mapping, and closed graph theorems. *After Math 305b.*

For description see under Statistics.

**Math 350a**, Introduction to Abstract Algebra. Andrew Casson.
*MWF 10.30-11.20 QR (33)
Group theory, structure of Abelian groups, and applications to number theory. Symmetric groups and linear groups including orthogonal and unitary groups; properties of Euclidean and Hermitian spaces. Some examples of group representations. Modules over Euclidean rings, Jordan and rational canonical forms of a linear transformation. *After Math 222a or b or equivalent.*

*Th 2.30-3.45 QR (27)
An introduction to basic ideas and methods of representation theory of finite groups and Lie groups. Examples include permutation groups and general linear groups. Connections with symmetric functions, geometry, and physics. *After Math 222a or b or equivalent.*

[Math 360a, Introduction to Lie Groups]

*Th 11.35-12.50 QR (24)
Rings, with emphasis on integral domains and polynomial rings. The theory of fields and Galois theory, including finite fields, solvability of equations by radicals, and the fundamental theorem of algebra. Quadratic forms. *After Math 350a.*

*M 2.30-3.45 QR Meets RP (37)
A survey of algebraic constructions and theories at a sophisticated level. Topics include categorical language, free groups and other free objects in categories, general theory of rings and modules, artinian rings, and introduction to homological algebra. *After Math 350a and 370b.*

**Math 381b**, Modern Algebra II. Gregg Zuckerman.
*Th 2.30-3.45 QR Meets RP (27)*
Topics in commutative algebra: general extension of fields; Noetherian, local, and Dedekind rings. Introduction to valuation theory. Rudiments of algebraic geometry. After MATH 380a.

[MATH 400a, Introduction to Mathematical Mechanics]

[MATH 430b, Introduction to Algebraic Topology]


Th 9-10.15 QR (22)
Applications of calculus to the study of the geometry of curves and surfaces in Euclidean space, intrinsic differential geometric properties of manifolds, and connections with non-Euclidean geometries and topology. After MATH 230 or 250a or equivalent.

MATH 440aG, Introduction to Algebraic Geometry.

Dennis Borisov.

Th 11.35-12.50 QR (0)
An introduction to algebraic geometry through the study of algebraic curves. Topics include curves in the projective plane and their intersection theory; Bezout’s theorem; divisors and line bundles; the Riemann-Hurwitz formula; hyperelliptic curves; and the Riemann-Roch theorem. Prerequisites: MATH 310a, 350a, and some background in differential forms.

MATH 470a or b, Individual Studies. Consult the director of undergraduate studies.

HTBA (0)
Individual investigation of an area of mathematics outside of those covered in regular courses, involving directed reading, discussion, and either papers or an examination. A written plan of study approved by the student’s adviser and the director of undergraduate studies is required. The course may normally be elected for only one term.

*MATH 480a or b, Senior Seminar: Mathematical Topics.

480a: 2 HTBA (50) Gregory Margulis
480b-1: 2 HTBA (50) Yair Minsky
480b-2: 2 HTBA (50) Peter Jones and staff
A number of mathematical topics are chosen each term—e.g., differential topology, Lie algebras, mathematical methods in physics—and explored in one section of the seminar. Students present several talks on the chosen topic. One section each year is devoted to topics of interest to Economics and Mathematics majors, and is co-taught by a member of the Economics department.

Courses Relevant to the Major in Other Departments

Normally two of the following courses may, with permission of the director of undergraduate studies, be counted with Mathematics courses toward the requirements of the major.

cpsc 201a or b, Introduction to Computer Science.


OPRS 235a/AMTH 235a, Optimization I. Eric Denardo.
For description see under Operations Research.
GRADUATE COURSES OF INTEREST

Each year the Mathematics and Statistics departments offer a large number of graduate courses, some of which are accessible to undergraduates with advanced preparation in mathematics. Further information may be obtained from the directors of undergraduate studies whose permission, with that of the relevant director of graduate studies, is required for admission.

MATHEMATICS AND COMPUTER SCIENCE

(See under Computer Science and Mathematics.)

MATHEMATICS AND ECONOMICS

(See under Economics and Mathematics.)

MATHEMATICS AND PHILOSOPHY

The Mathematics and Philosophy major allows students to explore those areas where philosophy and mathematics meet, in particular, mathematical and philosophical logic and the philosophy of mathematics.

The prerequisite for the major is MATH 120a or b. The major requires twelve term courses including the prerequisite, at least five of which must be in mathematics at the level of MATH 120a or b or higher and five of which must be in philosophy. All philosophy courses are eligible for credit toward the major, with the exception of First-Order Logic (PHIL 115a). Required courses include Set Theory (MATH 270a), Mathematical Logic I (PHIL 267a), Mathematical Logic II (PHIL 268b), an advanced philosophy course (other than PHIL 267a or 268b) with a substantive logical component, and one seminar in either Mathematics or Philosophy that fulfills the senior requirement (see below). Set Theory (MATH 270a) and Mathematical Logic I (PHIL 267a) must be taken before the end of the junior year; it is strongly recommended that they be taken earlier.

Senior requirement. Each year certain seminars offered by the Mathematics and Philosophy departments are designated as fulfilling the senior requirement of this major. If such a seminar is taken in order to fulfill the senior requirement, majors must consult with the instructor and agree upon additional work required. Typically, additional work includes a substantial class presentation and/or preparation of a series of drafts prior to submission of the final paper.

The Mathematics seminar fulfilling the senior requirement for 2008–2009 is MATH 480a or b, Senior Seminar: Mathematical Topics. For Philosophy seminars that fulfill the senior requirement, consult the director of undergraduate studies in Philosophy.

A typical program satisfying the major might consist of MATH 120a or b, 222a or b or 225a or b, 270a, 300b, 350a, and a designated seminar; PHIL 126b, 267a, 268b, a designated seminar, and two additional electives.

Majors should consult Yair Minsky, 448 DL, 432-4018, yair.minsky@yale.edu (adviser in Mathematics), and Kenneth Winkler, 406A C, 432-1679, kenneth.winkler@yale.edu (adviser in Philosophy).
REQUIREMENTS OF THE MAJOR

Prerequisite: MATH 120a or b
Number of courses: 12 term courses (incl prereq and senior sem)
Distribution of courses: At least 5 in math and 5 in phil
Specific courses required: MATH 270a, PHIL 267a, 268b
Senior requirement: Senior sem

MATHEMATICS AND PHYSICS

A minimum of fourteen term courses in Mathematics and Physics above the sophomore level is required for the major, with at least six courses in each of the two subjects. A senior essay, or a project from PHYS 471a, 472b, on a topic appropriate for the combined major and acceptable to both the Physics and the Mathematics departments is also required. The student must present an oral report on this essay or project to the Mathematics department. Majors should consult Vincent Moncrief, 64 SPL, 432-6930.

REQUIREMENTS OF THE MAJOR

Prerequisites: MATH 120a or b or equivalent; PHYS 180a, 181b, or 200a, 201b, or 260a, 261b; PHYS 205La or Lb and 206La or Lb
Number of courses: 14 term courses beyond prereqs
Distribution of courses: 6 in Math at or above the level of MATH 222a or b; 6 advanced Physics courses selected in consultation with DUS
Senior requirement: Senior essay or project from PHYS 471a, 472b on topic acceptable to both depts; oral report on essay or project to Math dept

MECHANICAL ENGINEERING

Director of undergraduate studies: Marshall Long, 201 BCT, 432-4229, marshall.long@yale.edu

FACULTY OF THE DEPARTMENT OF MECHANICAL ENGINEERING

Professors
Ira Bernstein (Emeritus), Boa-Teh Chu (Emeritus), Juan Fernández de la Mora, Alessandro Gomez, Amable Liñan-Martinez (Adjunct), Marshall Long, Mitchell Smooke (Chair), Peter Wegener (Emeritus), Forman Williams (Adjunct)

Associate Professors
Jerzy Blawzdziewicz, Corey O’Hern, Ainissa Ramirez, Jan Schroers, Udo Schwarz

Assistant Professors
Eric Dufresne, John Morrell, Nicholas Ouellette, †Hong Tang

Lecturers
Beth Anne Bennett, Weiwei Deng, Kailasnath Purushothaman

†A joint appointment with Electrical Engineering.

Mechanical engineering is among the most diversified of the traditional engineering disciplines. The mechanical engineer builds machines to extend our physical and mental capabilities and to convert traditional and novel energy sources into useful forms.

The role of the mechanical engineer has changed dramatically over the past few decades with the extensive use of high-performance computers (in such areas as CFD design, data acquisition, control, and manufacturing), the interfacing of MEMS and actuators via microprocessors to measure and control (e.g., in flow control, robot control, and optimization of automobile
performance), and the advent of new materials (composite, shape-memory alloy, ceramic, superconducting) for new applications (e.g., prosthetic devices, biomaterials, stealth aircraft). These new areas offer mechanical engineering students special opportunities for creativity, demanding that they learn not only in depth but also in breadth. Demands for increased energy efficiency and reduced environmental impact—as might be realized, for example, in novel gas turbine or electric hybrid vehicles—require that students understand the fundamentals of mechanics, thermodynamics, fluid mechanics, combustion, and materials science. In all these tasks, the utmost consideration of the modern mechanical engineer is improving the quality of human life. The engineer must be constantly aware both of the finiteness of Earth’s resources and its environment and of the burden that engineering works place on them.

The educational mission of the Department of Mechanical Engineering is to provide an excellent education that will prepare students to become members of the next generation of mechanical engineers. To implement this mission, the department adheres to the following set of educational goals: to provide a balanced technical and nontechnical education to enable graduates to enter highly selective graduate schools and/or to pursue technical careers in industry or government laboratories; to enable graduates to improve and adapt their skills to accommodate rapid technological changes; to prepare graduates to communicate effectively and to understand the ethical responsibilities and impact on society of their profession. To achieve these goals, the following educational objectives have been established for the Department of Mechanical Engineering: to provide a comprehensive introduction to basic science and mathematics, which form the foundation of mechanical engineering; to provide a thorough training in methods of analytical, experimental, and data analysis, including problem formulation; to provide instruction in the fundamentals of the design process, including project innovation, synthesis, and management, both individually and in a team setting; to provide both a technical and a nontechnical program of study in which oral and written communication skills are developed; to instill in students an understanding of their professional and ethical responsibilities, which affect society and their profession.

At Yale, three mechanical engineering programs are offered: a B.S. degree program with a major in Mechanical Engineering, a B.S. degree program with a major in Engineering Sciences (Mechanical), and a B.A. degree program with a major in Engineering Sciences (Mechanical). Prospective majors in both B.S. programs are advised to complete introductory physics and mathematics through calculus (MATH 115a or b) by the end of their freshman year.

A student’s undergraduate engineering program usually culminates in one or more special project courses (MENG 471a, 472b), in which the student pursues a particular interest through design-oriented projects and experimental investigations. Projects may be initiated by the student, may be performed in a team, or may be derived from the ideas of faculty members who place undergraduates in their ongoing research projects. All interested students should contact the director of undergraduate studies, preferably no later than the beginning of the sophomore year.

B.S. degree program in Mechanical Engineering. This is the most technically intensive mechanical engineering degree program and is accredited by the Accreditation Board for Engineering and Technology (ABET). This program
is appropriate for students who plan careers as practicing engineers in industry, consulting firms, or government as well as for students who are considering a career in research and plan to pursue an advanced degree in engineering.

The prerequisites in mathematics are MATH 112a or b, 115a or b, and ENAS 151a, or the equivalent. The basic science prerequisites are PHYS 200a, 201b, or 180a, 181b; one laboratory from PHYS 165La or 205La or Lb, and one from PHYS 166Lb or 206Lb or Lb, or equivalents.

Nineteen term courses beyond the prerequisites are required as follows:
1. Advanced mathematics: ENAS 194a or b and MATH 222a or b or 225a or b
2. Mechanical engineering and related: MENG 211a, 280a, 285a, 286La, 361a, 363Lb, 383a, 389b, 390b, 471a or 472b (the senior requirement), 489a, ENAS 130b, EENG 200a, and at least one term course in chemistry (e.g., CHEM 112a, 113b, 114a, 115b, or 118a)
3. Technical electives: Three approved technical electives chosen in consultation with the director of undergraduate studies.

The curriculum in this program is arranged in prescribed patterns, but some departures from it are possible with approval of the director of undergraduate studies.

B.S. degree program in Engineering Sciences (Mechanical). This degree program is suitable for students who wish to gain significant expertise within mechanical engineering while combining their engineering studies with related disciplines. For example, a number of students have taken courses in architecture while pursuing a program in mechanical engineering that emphasizes structural mechanics; similarly, a student with an interest in computer graphics might combine engineering courses in computer-aided design with programming courses from the Department of Computer Science. The major requires twelve approved term courses in engineering, which can cover a broad array of topics within the subject provided that they contribute to a coherent program. Students should consult with the director of undergraduate studies at the beginning of their sophomore year.

The prerequisites in mathematics are MATH 112a or b, 115a or b, and ENAS 151a, or the equivalent. The basic science prerequisites are PHYS 180a, 181b, or 200a, 201b; one laboratory from PHYS 165La or 205La or Lb, and one from PHYS 166Lb, 206Lb or Lb, or MENG 286La.

The program requires twelve approved term courses beyond the prerequisites, including the senior project.

B.A. degree program in Engineering Sciences (Mechanical). In a society with increasing levels of technical sophistication, a well-rounded individual must have some background in science and technology. The B.A. program is designed for students who may be planning careers in business, law, medicine, journalism, or politics but need to understand the impact that science and technology can have on society at large. An understanding of engineering methods and practices, combined with a traditional liberal arts education, provides a strong background for a variety of careers. The program is well suited for students who wish to fulfill the requirements of two majors.

The prerequisites in mathematics are MATH 112a or b and 115a or b. The basic science prerequisite is physics at least to the level of PHYS 150a, 151b.

The program requires eight approved term courses beyond the prerequisites, including the senior project.

Senior requirement. In all B.S. and B.A. degree programs, students must successfully complete a project (MENG 471a or 472b) during their senior year.
Courses for majors in the humanities and social sciences. Mechanics and mechanical engineering content can be found in several courses intended for those not majoring in science. See under Engineering and Applied Science.

Select Program in Engineering. Qualified students majoring with a B.S. degree in Mechanical Engineering or Engineering Sciences (Mechanical) may be eligible to apply for a special program that includes industry research experience. See under Engineering.

REQUIREMENTS OF THE MAJOR

MECHANICAL ENGINEERING, B.S.

Prerequisites: MATH 112a or b, 115a or b, and ENAS 151a, or equivalent; PHYS 200a, 201b, or 180a, 181b, and 2 labs (1 from PHYS 165La or 205La or Lb, and 1 from PHYS 166Lb or 206La or Lb, or equivalents)

Number of courses: 19 term courses beyond prereqs (incl senior project)

Specific courses required: ENAS 130b and 194a or b; EENG 200a; MATH 222a or b or 225a or b; MENG 211a, 280a, 285a, 286La, 361a, 363Lb, 383a, 389b, 390b, 489a

Distribution of courses: 3 technical electives chosen in consultation with DUS; 1 term course in chem

Substitution permitted: With DUS approval

Senior requirement: Senior project (MENG 471a or 472b)

ENGINEERING SCIENCES (MECHANICAL), B.S. AND B.A.

Prerequisites: B.S. — MATH 112a or b, 115a or b, and ENAS 151a, or equivalent; PHYS 180a, 181b (or 200a, 201b), and 2 labs (1 from PHYS 165La or 205La or Lb; 1 from PHYS 166Lb, 206La or Lb, or MENG 286La); B.A. — MATH 112a or b, 115a or b; Physics at least at level of 150a, 151b

Number of courses: B.S. — 12 term courses beyond prereqs (incl senior project); B.A. — 8 term courses beyond prereqs (incl senior project)

Substitution permitted: With DUS approval

Senior requirement: Both degrees — senior project (MENG 471a or 472b)

MENG 101b, ENERGY AND THE ENVIRONMENT. Alessandro Gomez.

TH 2.30-3.45 Sc (27)

Environmental and sustainability issues, including global warming, from an energy perspective. Consideration of wind, solar, and other renewable sources, conservation, increased efficiency, new technologies, and the role of nuclear energy. Dependency on fossil fuels; combustion technologies and reactants/products treatment associated with fossil-fuel consumption. Enrollment limited to freshmen and sophomores with scores of 4 or 5 on the Advanced Placement examination in either Chemistry or Physics.

MENG 185b, MECHANICAL DESIGN. Staff.

MW 10.30-11.20; lab HTBA Sc Meets RP (33)

A course designed for potential majors in mechanical engineering, with units on creativity and design, utilization of a machine shop, mechanical dissection, and computers in mechanical engineering. Includes a design project competition.

Prerequisite: physics at the level of PHYS 180a, or permission of instructor.

MENG 211a, THERMODYNAMICS FOR MECHANICAL ENGINEERS.

Alessandro Gomez.

MWF 11.35-12.25, 1 HTBA QR, Sc Meets RP (34)

Study of energy and its transformation and utilization. First and Second Laws for closed and open systems, equations of state, multicomponent nonreacting systems, auxiliary functions (H, A, G), and the chemical potential and conditions of
equilibrium. Applications focus on engineering devices such as power and refrigeration systems and their efficiencies. \textit{Prerequisites: PHYS 180a or 200a, and MATH 115a or b.}

\textbf{meng 280a, Mechanical Engineering I: Strength and Deformation of Mechanical Elements.}  
Kailasnath Purushothaman.  
\textit{TTh 11.35-12.50; prob sess 1 HTBA QR, Sc Meets RP (24)}  
Elements of statics; mechanical behavior of materials; equilibrium equations, strains and displacements, and stress-strain relations. Elementary applications to trusses, bending of beams, pressure vessels, and torsion of bars. \textit{Prerequisites: PHYS 180a or 200a, and MATH 115a or b.}

\textbf{meng 285a, Introduction to Materials Science.}  
Ainissa Ramirez.  
\textit{TTh 1-2.15 QR, Sc Meets RP (26)}  
Study of the atomic and microscopic origin of the properties of engineering materials: metals, glasses, polymers, ceramics, and composites. Phase diagrams; diffusion; rates of reaction; mechanisms of deformation, fracture, and strengthening; corrosion; thermal and electrical conduction. \textit{Prerequisites: MATH 120a or b or ENAS 151a, and PHYS 180a, 181b.}

\textbf{meng 286La, Solid Mechanics and Materials Science Laboratory.}  
Ainissa Ramirez.  
\textit{TTh 10.30-11.20 Sc 1/2 C Credit Meets RP (0)}  
Experiments that involve either structural mechanics or materials science. Comparisons between structural theories and experimental results. Relationships among processing, microstructure, and properties in materials science. Introduction to techniques for the examination of the structure of materials.

\textbf{ceng 315b/enve 315b, Transport Phenomena.}  
Daniel Rosner.  
\textit{For description see under Chemical Engineering.}

\textbf{meng 361a, Mechanical Engineering II: Fluid Mechanics.}  
Mitchell Smooke.  
\textit{TTh 9-10.15; prob sess 1 HTBA QR, Sc Meets RP (22)}  
Mechanical properties of fluids, kinematics, Navier-Stokes equations, boundary conditions, hydrostatics, Euler’s equations, Bernoulli’s equation and applications, momentum theorems and control volume analysis, dimensional analysis and similitude, pipe flow, turbulence, concepts from boundary layer theory, elements of potential flow. \textit{Prerequisites: ENAS 194a or b or equivalent, and physics at least at the level of PHYS 150a.}

\textbf{meng 363Lb, Fluid Mechanics and Thermodynamics Laboratory.}  
Weiwei Deng.  
\textit{4 HTBA Sc Meets RP (0)}  
Hands-on experience in applying the principles of fluid mechanics and thermodynamics. Integration of experiment, theory, and simulation to reflect real-world phenomena. Students design and test prototype devices. \textit{Prerequisites: MENG 211a and 361a.}

\textbf{[meng 365b, Propulsion and Energy Conversion]}  

\textbf{meng 383a, Mechanical Engineering III: Dynamics.}  
Udo Schwarz.  
\textit{MWF 9.25-10.15; prob sess 1 HTBA QR, Sc Meets RP (32)}  
Kinematics and dynamics of particles and systems of particles. Relative motion; systems with constraints. Rigid body mechanics; gyroscopes. \textit{Prerequisites: PHYS 180a or 200a, and MATH 120a or b or ENAS 151a.}

TH 9-10.15 QR, Sc (0)

An introduction to the principles, fabrication, and design of microelectromechanical systems (MEMS) and devices. Emphasis on materials for these devices and on the processes for micromachining. Concepts of actuation and sensing by capacitive, thermal, piezoelectric, and electrostatic means. Prerequisites: MATH 120a or b and PHYS 180a, 181b.


MWF 9.25-10.15; prob sess 1 HTBA QR, Sc Meets RP (32)

Development of fundamentals of mechanical engineering applicable to the calculation of energy and power requirements, as well as transport of heat by conduction, convection, and radiation. Prerequisites: MENG 211a, 361a, and ENAS 194a or b; or permission of instructor.

MENG 390Lb, Mechatronics Laboratory. John Morrell.

T 1-5 1/2 C Credit (26)


TH 1-2.15, 1 HTBA QR Meets RP (26)

Aspects of computer-aided design and manufacture (CAD/CAM). The computer’s role in the mechanical design and manufacturing process; commercial tools for two- and three-dimensional drafting and assembly modeling; finite-element analysis software for modeling mechanical, thermal, and fluid systems. Prerequisite: ENAS 130b or permission of instructor.


For description see under Electrical Engineering.

MENG 440a/ENAS 440aG, Applied Numerical Methods I. Beth Anne Bennett.

For description see under Engineering & Applied Science.

MENG 441b/ENAS 441bG, Applied Numerical Methods II. Beth Anne Bennett.

For description see under Engineering & Applied Science.

MENG 457b/ENGS 457bG, Biomechanics. Staff.

For description see under Biomedical Engineering.

MENG 463bG, Theoretical Fluid Dynamics. Nicholas Ouellette.

TH 11.35-12.50 QR, Sc Meets RP (24)

Derivation of the equations of fluid motion from basic principles. Potential theory, viscous flow, flow with vorticity. Topics in hydrodynamics, gas dynamics, stability, and turbulence. Prerequisite: MENG 361a or equivalent.

MENG 469b, Aerodynamics. Juan Fernández de la Mora.

MWF 11.35-12.25 QR, Sc (34)
Review of fluid dynamics. Potential flows over airfoils; finite wing theory; boundary layer theory. Compressible aerodynamics: normal and oblique shock waves and expansion waves. Linearized compressible flows; elements of computational aerodynamics. **Prerequisite: MENG 361a or permission of instructor.**

**MENG 471a and 472b, Special Projects.** Consult the director of undergraduate studies.

**HTBA (0)**
Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory), engineering design (required for the accredited program), or tutorial study. Students are expected to consult the director of undergraduate studies and appropriate faculty members to discuss ideas and suggestions for topics. These courses may be taken at any time during the student’s career when appropriate and may be taken more than once. **Permission of adviser and director of undergraduate studies required.**

**MENG 489a**, **Mechanical Design: Process and Implementation.**
John Morrell.

MW 2:30-3:20; lab F 1:30-4:20  Sc  Meets RP (0)
Study of the design process, including concept generation, project management, teamwork, detail design, and communication skills. Student teams implement a real-world design project with hardware objectives that can be achieved in a term, and a problem definition that allows room for creative solutions. **Prerequisite: MENG 280a, 361a, or permission of instructor.**

**MIDDLE EAST STUDIES**

(See under Modern Middle East Studies and under Near Eastern Languages and Civilizations.)

**MODERN MIDDLE EAST STUDIES**

Directors of undergraduate studies: Ellen Lust-Okar, Rm. 105, 8 Prospect Pl., 432-3648, ellen.lust-okar@yale.edu; Colleen Manassa, 321 HGS, 436-8181, colleen.manassa@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF MODERN MIDDLE EAST STUDIES**

**Professors**
Abbas Amanat (History), Gerhard Böwering (Religious Studies), Benjamin Foster (Near Eastern Languages & Civilizations), Steven Fraade (Religious Studies), Beatrice Grundler (Near Eastern Languages & Civilizations), Dimitri Gutas (Near Eastern Languages & Civilizations), Marvan Khawaja (Visiting), Ivan Marcus (History), Tarik Ramahi (Visiting), Ashgar Rastegar (School of Medicine), W. Michael Reisman (Law School), Sallama Shaker (Visiting)

**Associate Professors**
Stephen Davis (Religious Studies), Frank Griffel (Religious Studies), Ellen Lust-Okar (Political Science)

**Assistant Professors**
Ala Alryyes (Comparative Literature), Michael Gasper (History), Kaveh Khoshnood (Public Health), Adria Lawrence (Political Science), Colleen Manassa (Near Eastern Languages & Civilizations), Andrew March (Political Science), Hala Khamis Nassar (Near Eastern Languages & Civilizations), Kishwar Rizvi (History of Art), Youval Rotman (History)
Lecturers
Adel Allouche (History, Religious Studies), Karen Foster (Near Eastern Languages & Civilizations, History of Art), Tolga Koker (Economics), Kathryn Slanski (Near Eastern Languages & Civilizations)

Senior Lector II
Ayala Dvoretzky

Senior Lectors
Fereshteh Amanat-Kowssar, Fatma-Nihan Ketrez

Lectors
Muhammad Aziz, Shiri Goren, Ghassan Husseinali, Boutheina Khaldi

The Modern Middle East Studies major focuses on the culture, history, religion, politics, and society of the modern Middle East in its full geographical breadth, using any of its four major languages, Arabic, Hebrew, Persian, and Turkish. Courses are selected from the Department of Near Eastern Languages and Civilizations and from other departments in the humanities and social sciences, including Anthropology, History, History of Art, Political Science, and Religious Studies. The Modern Middle East Studies major gives students the language skills necessary to understand complex issues of the Middle East, and serves as excellent preparation for graduate study or for business and professional careers in which an understanding of that region is essential.

Prerequisites. There are no prerequisites in Modern Middle East Studies, but prospective majors should keep the language requirement in mind while planning their course schedules (see below).

Language requirement. All students are required to complete a year of language training at the third- or fourth-year level, depending on their level of competence. Students may apply two course credits at the third- or fourth-year level of language study toward the twelve-course major requirement. Courses that may be applied toward the major include ARBC 150a, 151b, HEBR 150b, and PERS 150b.

Requirements of the major: Twelve term courses are required for the major, including three foundational courses in modern thought, classical thought, and the modern Middle East. Six elective courses on the modern Middle East examine culture and thought, history, religion, politics, and society. Elective courses are to be spread geographically and substantively, and must focus on at least two different sub-regions and originate in at least two different departments. The proposed course of study must be approved by the director of undergraduate studies.

Senior requirement. Students in the major undertake a senior essay that involves use of materials in one or more modern Middle Eastern languages. The topic and prospectus, signed by an adviser, must be submitted to the director of undergraduate studies by the end of the fourth week of classes in either term of the senior year. The student selects an adviser from among the faculty with competence in an appropriate language. Senior essays are graded by the adviser and a second reader. Alternatively, majors take an additional seminar and write an essay in that course.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 12 term courses
Distribution of courses: Foundational courses in modern thought, classical thought, and the modern Middle East; 6 electives spread geographically and substantively, focusing on at least 2 sub-regions and from at least 2 depts
Language requirement: One year of third- or fourth-year study in Middle Eastern language.
Senior requirement: Senior essay or addtl sem

CORE AND ELECTIVE COURSES

*MMES 002A/*HUMS 002A/*LITR 002A/*NELC 002A, CLASSICAL ARABIC LITERATURE IN TRANSLATION. Beatrice Gruendler.
For description see under Near Eastern Languages & Civilizations.

MMES 102A/HUMS 383A/NELC 102A, INTRODUCTION TO THE MIDDLE EAST. Benjamin Foster.
For description see under Near Eastern Languages & Civilizations.

MMES 151B/NELC 151B, DRAMA AND THEATER IN THE ARAB WORLD. Hala Khamis Nassar.
For description see under Near Eastern Languages & Civilizations.

*MMES 152A/*NELC 152A, GENDER AND NATIONALISM IN ARAB WOMEN'S WRITING. Hala Khamis Nassar.
For description see under Near Eastern Languages & Civilizations.

T 2.30-4.30 So Meets RP (0)
Gender studies as an effective tool for analyzing alternate readings of Islam. The dichotomy between ethical and orthodox readings of Islam, focusing on “women in development”; factors that empower women as agents of change in Muslim societies.

*MMES 251A/WGSS 327A, CONSTRUCTING THE SELF: FROM AUTOBIOGRAPHY TO FACEBOOK. Geetanjali Singh Chanda.
For description see under Women’s, Gender, & Sexuality Studies.

*MMES 330A, HEALTH, CONFLICT, AND SOCIETY IN THE ARAB WORLD. Marwan Khawaja.
W 3.30-5.20 So Meets RP (0)
Introduction to the social and political context of health in the Arab region. The impact of wars and conflicts on health and health services; health consequences of population change during periods of conflict and instability.

*MMES 331B, HEALTH IN CONFLICT: THE CASE OF THE PALESTINIAN POPULATION. Tarik Ramahi.
W 3.30-5.20 So Meets RP (0)
Review and analysis of factors affecting the health status of a population in a long-standing situation of conflict; the Palestinian population and the Israeli-Palestinian conflict as the focus and departure point of the discussion. Exploration of ideas and methods for improving the care of populations caught in conflict.
*MMES 407a/*NELC 407aG, Modern Arab Thought.
  Hala Khamis Nassar.
  For description see under Near Eastern Languages & Civilizations.

*MMES 490a/*NELC 490aG, Introduction to Classical Arabic and Islamic Studies.
  Dimitri Gutas.
  For description see under Near Eastern Languages & Civilizations.

*MMES 493b/*NELC 493bG/*WGSS 493b, Introduction to Modern Middle Eastern Studies.
  Hala Khamis Nassar.
  For description see under Near Eastern Languages & Civilizations.

*ENGL 345b/*HUMS 401b, Orientalism.
  El Mokhtar Ghambou.
  For description see under English Language & Literature.

*FREN 215b, Introduction to Maghreb Literature and Culture.
  Farid Laroussi.

HIST 345bG/JDST 265bG/RLST 202bG, Jews in Muslim Lands from the Seventh to the Sixteenth Centuries.
  Ivan Marcus.
  For description see under History.

*INTS 425a and 426b, Development and Governance in the Middle East and Africa.
  Ellen Lust-Okar.

*PLSC 329aG/*RLST 197aG, Islamic Law and Ethics.
  Andrew March.
  For description see under Political Science.

PLSC 394a, Introduction to Middle East Politics.
  Ellen Lust-Okar.

RLST 100b, Introduction to World Religions.
  Gerhard Böwering.

RLST 170a, The Religion of Islam.
  Gerhard Böwering.

RLST 290b/PLSC 435b, Islam Today: Jihad and Fundamentalism.
  Frank Griffel.
  For description see under Religious Studies.

Language Courses

ARBC 110aG, Elementary Modern Standard Arabic I.
  For description see under Near Eastern Languages & Civilizations.

ARBC 120bG, Elementary Modern Standard Arabic II.
  For description see under Near Eastern Languages & Civilizations.

ARBC 130aG, Intermediate Modern Standard Arabic I.
  For description see under Near Eastern Languages & Civilizations.

ARBC 140bG, Intermediate Modern Standard Arabic II.
  For description see under Near Eastern Languages & Civilizations.

*ARBC 150aG, Advanced Modern Standard Arabic I.
  Ghassan Husseinali.
  For description see under Near Eastern Languages & Civilizations.
**ARBC 151bG, Advanced Modern Standard Arabic II.**
Ghassan Hussein Ali.
For description see under Near Eastern Languages & Civilizations.

**ARBC 166bG, Modern Arabic Seminar.** Staff.
For description see under Near Eastern Languages & Civilizations.

**HEBR 110aG, Elementary Modern Hebrew I.**
For description see under Near Eastern Languages & Civilizations.

**HEBR 120bG, Elementary Modern Hebrew II.**
For description see under Near Eastern Languages & Civilizations.

**HEBR 130aG, Intermediate Modern Hebrew I.**
For description see under Near Eastern Languages & Civilizations.

**HEBR 140bG, Intermediate Modern Hebrew II.**
For description see under Near Eastern Languages & Civilizations.

**HEBR 150bG / JDST 150b, Advanced Modern Hebrew: Israeli Society.** Shiri Goren.
For description see under Near Eastern Languages & Civilizations.

**HEBR 151bG / JDST 151b, Introduction to Modern Israeli Literature.** Ayala Dvoretzky.
For description see under Near Eastern Languages & Civilizations.

**HEBR 156bG / JDST 405b, Dynamics of Israeli Culture.** Shiri Goren.
For description see under Near Eastern Languages & Civilizations.

**HEBR 158a / JDST 305a, Contemporary Israeli Society in Film.** Shiri Goren.
For description see under Near Eastern Languages & Civilizations.

**PERS 110aG, Elementary Persian I.** Fereshteh Amanat-Kowssar.
For description see under Near Eastern Languages & Civilizations.

**PERS 120bG, Elementary Persian II.** Fereshteh Amanat-Kowssar.
For description see under Near Eastern Languages & Civilizations.

**PERS 130aG, Intermediate Persian I.** Fereshteh Amanat-Kowssar.
For description see under Near Eastern Languages & Civilizations.

**PERS 140bG, Intermediate Persian II.** Fereshteh Amanat-Kowssar.
For description see under Near Eastern Languages & Civilizations.

For description see under Near Eastern Languages & Civilizations.

**TKSH 110aG, Elementary Modern Turkish I.** Staff.
For description see under Near Eastern Languages & Civilizations.

**TKSH 120bG, Elementary Modern Turkish II.** Staff.
For description see under Near Eastern Languages & Civilizations.
MOLECULAR BIOPHYSICS AND BIOCHEMISTRY

Director of undergraduate studies: Michael Koelle, CE 28A SHM, 785-5808, madeline.cavanaugh@yale.edu, www.mbb.yale.edu

FACULTY OF THE DEPARTMENT OF MOLECULAR BIOPHYSICS AND BIOCHEMISTRY

Professors
Susan Baserga, †Ronald Breaker, †Gary Brudvig, †Daniel DiMaio, Donald Engelman, Alan Garen, Mark Gerstein, †Sankar Ghosh, Nigel Grindley, Mark Hochstrasser, William Konigsberg, †I. George Miller, †Peter Moore, Thomas Pollard, Anna Marie Pyle, Lynne Regan, †Michael Snyder, Dieter Söll, Mark Solomon, Joan Steitz, Thomas Steitz, Scott Strobel, †William Summers, Patrick Sung, Kenneth Williams (Adjunct)

Associate Professors
Enrique de la Cruz, Michael Koelle, Anthony Koleske, Andrew Miranker, Vinzenz Unger, †Sandra Wolin

Assistant Professors
Thomas Biederer, Yorgo Modis, A. Elizabeth Rhoades, Yong Xiong

Lecturers
Carol Bascom-Slack, Aruna Pawashe

†A joint appointment with primary affiliation in another department.

The programs offered by the Department of Molecular Biophysics and Biochemistry are planned for students interested in the molecular and chemical basis of biological processes and are well suited to students hoping to attend medical school or pursue graduate studies in biochemistry, molecular biology, genetics, or biophysics. The B.S. major, designed for those with a strong commitment to research, provides an intensive introduction to laboratory techniques in biochemistry and biophysics. Students in this program usually carry out research projects in faculty laboratories during their junior and senior years. The B.A. major provides the intellectual discipline of biochemistry and biophysics for students who also wish to have sufficient time to pursue in-depth studies outside the major or who are interested in molecular biology as a liberal education; they, too, may engage in research during their junior and senior years.

Basic science prerequisites. The basic science courses required of all majors include one term of introductory biology (MCDB 120a or E&EB 122b); a general chemistry course with laboratory (CHEM 112a, 113b, or 114a, 115b, and 116La, 117Lb; or 118a and 119La); a year course in organic chemistry with laboratory (CHEM 124a, 125b and 126La, 127Lb; or either 220a, 221b or 225b, 227a, and the two-term sequence 222La or Lb, 223La or Lb); one term of physical chemistry (CHEM 328a); two terms of calculus (MATH 112a or b and 113a or b); and one year of physics with laboratory (either PHYS 180a, 181b...
and 165La, 166Lb, or 200a, 201b and 205La or Lb, 206La or Lb; 150a, 151b are allowed only with permission of the director of undergraduate studies). The B.A. major also requires one term of biology laboratory (MCDB 121La or EEB 123Lb). Any of these prerequisites may be satisfied by receiving scores on Advanced Placement tests sufficient to earn acceleration credits in the particular subjects (see chapter II), even if the student does not choose to accelerate.

**B.S. degree.** Ten courses are required beyond the prerequisites: MB&b 300a, 301b, 302b, 360Lb, and 490b; two additional upper-level MB&B electives, one of which must be a lecture course; one quantitative reasoning elective (MATH 120a or b or above, STAT 105a or above, CPSC 201a or b or above, or ENAS 130b or above); one biology elective at the 200 level or higher; and one elective in the natural sciences at a level higher than required in the prerequisites. Students choose the elective courses in consultation with a faculty adviser (see below). Only two course credits of MB&b 470a, 471b, and 478a, 479b may count toward these electives. Students may substitute CHEM 333b for MB&b 302b. The quantitative reasoning requirement may not be fulfilled by Advanced Placement test scores.

**B.A. degree.** Seven courses are required beyond the prerequisites: MB&b 251La, 300a, 301b, 302b, and 490b; one additional upper-level MB&B elective; and one quantitative reasoning elective (MATH 120a or b or above, STAT 105a or above, CPSC 201a or b or above, or ENAS 130b or above). Students choose the elective courses in consultation with a faculty adviser (see below). Students may substitute CHEM 333b for MB&b 302b. The quantitative reasoning requirement may not be fulfilled by Advanced Placement test scores.

**Senior requirement.** The senior requirement for both the B.S. and the B.A. is fulfilled by successful completion of MB&b 490b, The Senior Project. Students enrolled in this course prepare a written report and make an oral presentation of a literature project. Students meet with faculty members in charge of the colloquium during the first two weeks of the spring term to agree on a topic and an approach. It is appropriate for students who took research for credit earlier in their training to write on their research topic. It is inappropriate for students to submit a revised version of a past research report or to resubmit a literature paper prepared for another course. The literature project for the senior requirement should be original work approved by the faculty member overseeing the senior colloquium.

The written report is expected to be 15–25 pages in length (double-spaced, twelve-point font exclusive of figures). A first draft of the paper is due two weeks prior to the date of the oral presentation. Faculty in charge of the program will review the draft and return it to the student with suggestions. A final draft of the paper is due the first day of the reading period in the student’s final term.

Students make a fifteen-minute oral presentation during the last three weeks of their final term in a general scientific forum open to the public. Other students in the series are expected to attend all presentations.

**Credit/D/Fail option.** Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**Recommended courses.** All B.S. majors are encouraged to include MB&B 470a or 471b among their MB&B electives. The prerequisites in either general or organic chemistry should be taken in the freshman year.

Students with a strong interest in biophysics, including those planning to attend graduate school, are strongly encouraged to take courses beyond
the basic requirements of the major. Such students are advised to take mathematics through differential equations (ENAS 194A or b, MATH 246A or b, or PHYS 301A) and a full year of physical chemistry (CHEM 328A or 332A, and 333B). In place of one term of biophysics (MB&B 302B) they may elect a full year of upper-level biophysics (MB&B 420A and 421B). Such revisions to the basic curriculum must be made in consultation with the faculty adviser.

**Typical programs.** Programs with the minimal number of science courses required of B.A. and B.S. majors are shown below. Students whose scores on the Advanced Placement tests make them eligible for advanced courses are urged to replace the elementary science courses by more advanced ones in their freshman year, and to complete the required biochemistry and physics courses by the end of their sophomore and junior years respectively. Students are permitted to take the biochemistry sequence (MB&B 300A, 301B) after one term of organic chemistry (CHEM 220A or 225B).

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<tr>
<th>Freshman</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>MCDB 120A or E&amp;EB 122b</td>
<td>MB&amp;B 300A, 301B One quantitative reasoning elective</td>
<td>CHEM 328A One MB&amp;B elective</td>
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<tr>
<td>CHEM 112A, 113b; 116La, 117Lb</td>
<td>PHYS 180A, 181B; 165La, 166Lb</td>
<td>MB&amp;B 490B And, for B.S. major:</td>
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<td>And, for B.A. major:</td>
<td>And, for B.A. major:</td>
<td>One biology elective</td>
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<tr>
<td>MCDB 121La or E&amp;EB 123Lb</td>
<td>MB&amp;B 251Lb</td>
<td>One science elective</td>
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<tr>
<td>And, for B.S. major:</td>
<td>MB&amp;B 360Lb</td>
<td>A second MB&amp;B elective</td>
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**Sophomore**

| CHEM 220A, 221b; 222La, 223Lb | MATH 112A, 115b |

**Combined B.S./M.S. degree program.** A program leading to the simultaneous award of the B.S. and M.S. degrees is offered to exceptionally able undergraduates. Candidates for the combined degrees normally have entered Yale as freshmen with advanced placement equivalent to the first year of the B.S. curriculum in Molecular Biophysics and Biochemistry as described in “Typical programs” above. Potential candidates must apply to the director of undergraduate studies for admission to the program no later than the first week of their sixth term, having achieved at the time of application grades of A or A– in at least two-thirds of all course credits as well as in at least two-thirds of all credits in courses directly related to the B.S. major program. B.S./M.S. candidates must complete all the biology, mathematics, physics, and chemistry prerequisites of the B.S. major, as well as the 300-level biochemistry requirements (MB&B 300A, 301B, 302B or CHEM 333B, and MB&B 360LB) and the quantitative reasoning elective. Prior to acceptance into the program, candidates must complete at least one term of Research in Biochemistry and Biophysics (MB&B 470A or 471B) in the laboratory where the thesis research will be completed. In lieu of the MB&B, biology, and science electives required of B.S. majors, B.S./M.S. candidates must complete two MB&B graduate-level lecture electives and four graduate-level electives that may be in MB&B or in other biological or physical sciences. During the senior year, candidates must complete two terms of Intensive Research in Biochemistry and Biophysics (MB&B 570A and 571B). In lieu of the senior colloquium required of B.S. majors, the B.S./M.S. candidate prepares a master's thesis based on his or her research results and makes a public oral defense of the thesis to a thesis committee. The thesis committee is composed of the
candidate’s research supervisor and the director of undergraduate studies. During the last four terms of enrollment the candidate must take six course credits outside the major (and preferably outside the sciences). Course schedules during the seventh and eighth terms must be approved by the director of undergraduate studies. The master’s thesis must be submitted by the last day of the reading period in the eighth term; it is evaluated by the research committee. Further information about the program may be obtained from the MB&B undergraduate studies registrar.

**MB&B Faculty Committee on the Undergraduate Major.** Committee members are available for consultation throughout the year and are the only faculty advisers eligible to approve and sign MB&B majors’ course schedules at the beginning of each term. Members acting as faculty advisers are:

**Class of 2009:**
M. Gerstein, 432A BASS (432-6105)
V. Unger, CE 25 SHM (785-5652)

**Class of 2010:**
L. Regan, 322 BASS (432-9843) [F]
W. Konigsberg, CE 14A SHM (785-4599) [F]
D. Söll, 238 BASS (432-6200) [Sp]
Y. Modis, 430 BASS (432-4330) [Sp]

**Class of 2011:**
A. E. Rhoades, 218 BASS (432-5342)
Y. Xiong, 423A JWG (436-2608)

**Class of 2012:**
T. Biederer, C 127 SHM (785-5465)
A. Koleske, CE 31 SHM (785-5624)

**Director of B.S./M.S. degree program:**
M. Koelle, CE 28A SHM (785-5808)

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:**

- **B.S.** — MCDB 120A or E&EB 122b; CHEM 112A, 113b or 114A, 115b and 116La, 117Lb (or 118A, 119La); year course in organic chem (CHEM 124A, 125b, or 220a, 221b, or 223b, 227a, with labs); 1 term of physical chem (CHEM 328a); MATH 112A or b, 115A or b; PHYS 180A, 181b (or 200a, 201b) and associated labs; **B.A.** — same, plus MCDB 121La or E&EB 123Lb

**Number of courses:**

- **B.S.** — 10 term courses beyond prereqs, incl senior req, for letter grades; **B.A.** — 7 term courses beyond prereqs, incl senior req, for letter grades

**Specific courses required:**

- **B.S.** — MB&B 300A, 301b, 302b, 360Lb;
- **B.A.** — MB&B 251La, 300a, 301b, 302b

**Distribution of courses:**

- **B.S.** — 2 addtl MB&B electives, as specified; 1 quantitative reasoning elective, 1 biology elective, and 1 science elective, all as specified; **B.A.** — 1 addtl MB&B elective and 1 quantitative reasoning elective, as specified

**Substitution permitted:**

- CHEM 333b for MB&B 302b

**Senior requirement:**

- Senior project (MB&B 490b)

**mb&b 105a or b/mcdb 105a or b, An Issues Approach to Biology.**

Timothy Nelson, William Summers, David Wells [F], Ronald Breaker, A. Elizabeth Rhoades, Dieter Söll [Sp].

For description see under Biology.

**mb&b 110a, Current Issues in Biological Science.**

William Summers.

**110a-1:** T 1:30-3:20 Sc (o)
**110a-2:** T 7-8:50 P.M. Sc (o)
Students identify a scientific problem and then plan and execute a program of individualized learning aimed at the particular scientific knowledge required to understand and analyze the chosen problem. Intended to help students develop self-education skills as applied to scientific understanding, apply those skills to acquire some specific scientific knowledge, and understand the process by which scientific knowledge and understanding are achieved. For non-science majors.

**MB&B 200a/MCDB 300aG, Biochemistry.** L. Nicholas Ornston, Ronald Breaker, Donald Engelman.

For description see under Biology.

**MB&B 230b/MCDB 230b, Rain Forest Expedition and Laboratory.** Scott Strobel, Carol Bascom-Slack.

MWF 10.30-11.20, 1 HTBA

Preparation for a two-week expedition to one of the world’s rain forests during spring break and for a ten-week summer laboratory experience using samples collected during the expedition. Integrated topics draw on the fields of ecology, microbiology, chemistry, pharmacology, molecular biology, and bioinformatics. Students participate in an original scientific project from field biology to natural product characterization. After one year of introductory biology or equivalent; after or concurrently with one term of organic chemistry. Limited enrollment. Funding for major travel expenses and summer research provided.

**MB&B 251La/MCDB 301La, Laboratory for Biochemistry.** William Konigsberg, Aruna Pawashe.

Lab and disc. TTH 1-5

An introduction to current experimental methods in molecular biology. After or concurrently with MB&B 200a or 300a. Limited enrollment. Preregistration required; e-mail William Konigsberg prior to the first week of classes.


TTH 11.35-12.50; disc. 1 HTBA

Discussion of the physical, structural, and functional properties of proteins, lipids, and carbohydrates, three major classes of molecules in living organisms. Energy metabolism, hormone signaling, and muscle contraction as examples of complex biological processes whose underlying mechanisms can be understood by identifying and analyzing the molecules responsible for these phenomena. After CHEM 125b, 220a, or 225b.

**MB&B 301bG, Principles of Biochemistry II.** Joan Steitz, Scott Strobel.

TTH 11.35-12.50; disc. 1 HTBA

A continuation of MB&B 300a that considers the chemistry and metabolism of nucleic acids, the mechanism and regulation of protein and nucleic acid synthesis, and selected topics in macromolecular biochemistry. Prerequisite: MB&B 300a or permission of instructor.

**MB&B 302b, Principles of Biophysics.** Yorgo Modis, Vinzenz Unger.

MWF 9.25-10.15

An introduction to the theoretical basis of biophysical concepts and approaches with selected examples and applications of these principles. Prerequisites: MB&B 300a and CHEM 328a.
MB&b 360LbG, Laboratory for Biochemistry and Biophysics.
Alan Garen, William Konigsberg, Aruna Pawashe.

Th 1-5 Sc (o)
An intensive introduction to the principles and applications of experimental techniques currently used in biochemistry, biophysics, and molecular biology. Recommended to be taken with or directly after MB&b 301b. Limited enrollment. Preregistration required; e-mail Alan Garen by the end of reading period in the fall term.

MB&b 405aG, Molecular Genetics of Prokaryotes. Nigel Grindley and staff.

MW 11.35-12.50 Sc Meets RP (34)
Molecular aspects of storage, replication, evolution, and expression of genetic material in prokaryotes. After MB&b 200a, or 300a and 301b, or with permission of instructor.

MB&b 420aG, Macromolecular Structure and Biophysical Analysis. Andrew Miranker, Lynne Regan, Yong Xiong.

Th 11.35-12.50 Sc (24)
Analysis of macromolecular architecture and its elucidation using modern methods of structural biology and biochemistry. Topics include architectural arrangements of proteins, RNA, and DNA; practical methods in structural analysis; and an introduction to diffraction and NMR. Prerequisites: MB&b 301b and 302b.

MB&b 421bG, Macromolecular Interactions and Dynamic Properties. Donald Engelman, A. Elizabeth Rhoades, Yong Xiong.

MW 11.35-12.50, 1 HTBA Sc (34)
Examination of the dynamic properties, interactions, and catalytic activities of macromolecules. Topics include macromolecular folding; binding interfaces; ligand interactions; the properties of membrane proteins, enzymes, ribozymes, and molecular motors; and modern methods for analysis of macromolecular associations and dynamic properties. Prerequisites: MB&b 301b and 302b.

MB&b 425aG/Mcdb 425aG, Basic Concepts of Genetic Analysis.
Tian Xu, Michael Koelle, Shirleen Roeder, and staff.

MW 11.35-12.50 Sc (o)
An examination of the universal principles of genetic analysis in eukaryotes. Reading and analysis of primary papers illustrating the best of genetic analysis in the study of a variety of biological issues. Focus on the concepts and logic underlying modern genetic analysis. Prerequisite: Mcdb 200a or equivalent.

[MB&b 435aG, Mathematical Methods in Biophysics]

MB&b 443bG, Advanced Eukaryotic Molecular Biology.
Mark Hochstrasser, Anthony Koleske, Patrick Sung.

Th 11.35-12.50 Sc Meets RP (24)
Selected topics in regulation of chromatin structure and remodeling, mRNA processing, mRNA stability, translation, protein degradation, DNA replication, DNA repair, site-specific DNA recombination, and somatic hypermutation. Prerequisites: MB&b 300a and 301b, or permission of instructor.

*MB&b 445b, Methods and Logic in Molecular Biology.
Anthony Koleske, Lynne Regan, Dieter Söll, Patrick Sung.

Th 7-8.50 p.m. Sc Meets RP (o)
An examination of fundamental concepts in molecular biology through analysis of landmark papers. Development of skills in reading the primary scientific literature and in critical thinking. Prerequisites: MB& B 300a and 301b.


TTh 1-2.15; disc. 1 HTBA Sc (26)

Examples of recent discoveries in basic science that have elucidated the molecular origins of disease or that have suggested new therapies for disease. Readings from the primary scientific and medical literature, with emphasis on developing the ability to read this literature critically. Prerequisites: MB& B 300a and 301b or equivalent, or permission of instructor.

MB& B 452bG/CPSC 452b/MCDB 452bG, Genomics and Bioinformatics. Mark Gerstein, Michael Snyder, and staff.

MW 1-2.15 Sc (0)

Genomics describes the determination of the nucleotide sequence as well as further analyses of the genes of an organism. Topics include the methods and results of analysis on a genome-wide scale as well as the implications of this research. Bioinformatics describes the computational analysis of gene sequences and protein structures on a large scale. Topics include sequence alignment, biological database design, geometric analysis of protein structure, and macro-molecular simulation. Prerequisites: MB& B 301b and MATH 115a or b, or permission of instructor.

[MB& B 465bG, Enzyme Mechanisms]

*MB& B 470a and 471b, Research in Biochemistry and Biophysics. Alan Garen and staff.

HTBA (0)

Individual laboratory projects under the supervision of a faculty member. Students must submit an enrollment form that specifies the research supervisor by the date that course schedules are due. A required organizational meeting will be held at the beginning of each term. Students are expected to commit at least ten hours per week to working in a laboratory. Written assignments include a research proposal, due near the beginning of the term, and a research report that summarizes experimental results, due before the beginning of the final examination period. No more than two course credits count as electives toward the B.S. degree. Enrollment limited to junior and senior MB& B majors. Prerequisite: MB& B 251La or 360Lb.


HTBA 2 C Credits per term (0)

Individual laboratory projects under the supervision of a faculty member. Students must submit an enrollment form that specifies the research supervisor by the day that course schedules are due. A required organizational meeting will be held at the beginning of each term. Students are expected to commit at least twenty hours per week to working in a laboratory. Written assignments include a research proposal, due near the beginning of the term, and a research report that summarizes experimental results, due before the beginning of the final examination period. No more than two course credits count as electives toward the B.S. degree. Enrollment limited to senior MB& B majors. Prerequisite: MB& B 251La or 360Lb.
**MB&B 490b, The Senior Project.** Patrick Sung, Andrew Miranker, Lynne Regan.

Colloquium for fulfillment of the senior requirement. The course involves a written and an oral presentation of a senior paper in an area of biochemistry or biophysics. The topic is selected in consultation with the faculty members in charge of the course.

**GRADUATE COURSES OF INTEREST TO UNDERGRADUATES**

Graduate courses in molecular biophysics and biochemistry, biology, and the biomedical sciences that may be of interest to undergraduates are listed in the bulletin of the Graduate School, and many are posted at [http://info.med.yale.edu/bbs](http://info.med.yale.edu/bbs). Additional information is available from the directors of undergraduate and graduate studies. Undergraduates with an appropriate background may enroll with the permission of the director of graduate studies and the instructor.

**MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY**

Director of undergraduate studies: Douglas Kankel, 754 KBT, 432-3839, catherine.blackmon@yale.edu, [www.biology.yale.edu](http://www.biology.yale.edu)

Students interested in the area of molecular, cellular, and developmental biology may find courses and major requirements listed under Biology, Area II. Students should consult an adviser from the appropriate list in that section.

The faculty roster for the Department of Molecular, Cellular, and Developmental Biology may be found under Biology. The department offers undergraduate courses in an area of concentration in the Biology major. See under Biology, Area II.

**MUSIC**

Director of undergraduate studies: Kathryn Alexander, 143 Elm St., 432-2986, dus.music@yale.edu

**FACULTY OF THE DEPARTMENT OF MUSIC**

**Professors**
- Richard Cohn
- Margot Fassler
- Allen Forte (Emeritus)
- Michael Friedmann (Adjunct)
- Daniel Harrison (Chair)
- James Hepokoski
- Richard Lalli (Adjunct)
- Patrick McCreless
- Leon Plantinga (Emeritus)
- Ellen Rosand
- Michael Veal
- Craig Wright

**Associate Professors**
- Kathryn Alexander (Adjunct)
- Shinik Hahm (Adjunct)
- Toshiyuki Shimada (Adjunct)
- Mark Spicer (Visiting)

**Assistant Professors**
- Seth Brodsky
- Brian Kane
- Michael Klingbeil
- Gundula Kreuzer
- Eve Poudrier
- Ian Quinn
- Sarah Weiss

**Lecturers**
- Daniel Egan
- Andrew Gerle
- Annette Jolles
- Sarah Kohane
- Sarita Kwok
- Judith Malafonté
- Robert Mealy
- Ilya Poliakov
- Joshua Rosenblum
- Wendy Sharp

The Department of Music offers introductory and advanced instruction in the history of music, the theory of music, composition, music technology,
and performance. Level I courses, which are introductory courses numbered below 200, are open to all undergraduates and require no previous experience in music. Level II courses, numbered in the 200s, require a familiarity with music notation. Intermediate courses, Level III, are numbered in the 300s; they require the ability to read music. Advanced courses, Level IV, are numbered in the 400s and are for seniors, juniors, and qualified sophomores. Level III and IV courses are intended primarily for students majoring in Music, but they may be elected by others who meet the stated prerequisites.

Qualified students, whether majoring in Music or not, may offer up to four terms of instruction in performance for academic credit toward the 36-course-credit requirement for the bachelor’s degree (MUSI 360a or b, 361a or b, 460a or b, and 461a or b). Of these four credits, only two may be applied to the major in Music. See “Individual Instruction in Performance” below for course descriptions.

The major. The Music major provides a general music program in the humanities, as well as preparation for graduate studies or for careers in music. The standard major consists of twelve term courses, eleven of which must be numbered 300 or above, excluding the prerequisites, MUSI 210a or b, 211a or b, 218a or b, and 219a or b. To gain a comprehensive familiarity with the history and theory of music, a student majoring in Music completes a survey of music history from the medieval period to the present as well as a two-course music theory requirement. The three survey courses in music history are MUSI 350b, 351a, and 352a. A fourth survey course in world music is required, MUSI 353b. Students choose two courses from the music theory series numbered 301 through 311 to satisfy the music theory requirement. Also required is one course designated “Senior sem” during the senior year. Five additional term courses in music chosen from Levels II, III, and IV (only one of which is from Level II) complete the major. Prospective majors are advised to begin the required courses by their sophomore year.

Students intending to go on to graduate work are advised to study German and French to achieve at least a reading knowledge of those languages. All Music majors are urged to undertake regular studies in musical performance.

The intensive major. The intensive major is for students of high standing who are qualified to do independent and original work in the history or theory of music or in composition. Those admitted to this major elect MUSI 490 as one of their courses for the senior year.

Senior requirement. Each student majoring in Music must satisfy a senior departmental requirement by electing a senior seminar (designated “Senior sem” in the course listing) during one of the final two terms. The final essay, composition, or other project completed for the senior seminar should provide an appropriate culmination to the student’s work in the major and in Yale College. In exceptional circumstances, a graduate seminar in the Music department may substitute for the senior seminar; this requires permission both from the director of graduate studies and from the director of undergraduate studies. Senior seminars are also open to interested juniors with the permission of the instructor and the director of undergraduate studies, but one seminar must be taken in the senior year to fulfill the senior requirement.

B.A./M.M. PROGRAM

Students in Yale College possessing outstanding ability in performance or composition may anticipate, through their undergraduate programs, one
year of the Master of Music program in the School of Music, provided they have completed four terms of performance (MUSI 360a or b, 361a or b, 460a or b, and 461a or b) and MUSI 210a or b and 211a or b by the end of the junior year.

The program is open to majors both in Music and in other subjects. Majors in subjects other than Music may present four courses toward the M.M. degree in addition to four terms of performance. These courses normally include two from the music theory sequence numbered 301–311 and two from MUSI 350b, 351a, 352a, and 353b, taken by the end of the junior year.

Candidates admitted to the B.A./M.M. program are expected to sit for placement examinations and juries in the School of Music at the beginning of their senior year. They must take lessons and MUSI 544, the School of Music Seminar in the Major, in that year and they are advised to take two terms of a performance ensemble if their schedules permit. Students seeking the B.A./M.M. degree in an orchestral instrument are required to participate in the Yale Symphony or the School of Music Philharmonia during their senior year. Composers, singers, and keyboard players should consult their principal teacher about requirements in the senior year beyond the lessons and seminar.

Interested students should consult their principal teacher at the beginning of the first term of their junior year and file an application in the Office of Student Affairs at the School of Music.

Students who have accelerated the undergraduate program are ineligible to apply for the B.A./M.M. program.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** MUSI 210a or b, 211a or b, 218a or b, and 219a or b, or equivalents

**Number of courses:** 12 term courses beyond prereqs, 11 numbered 300 or above

**Specific courses required:** MUSI 350b, 351a, 352a, 353b, and 2 from 301–311

**Distribution of courses:** 5 addtl courses from Levels II, III, IV, of which only 1 is from Level II

**Senior requirement:** 1 senior sem

**Intensive major:** Senior sem and senior essay or project (MUSI 490)

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*MUSI 001b, Exploring the Nature of Genius.* Craig Wright.

*2 HTRA WR, Hu (50) Fr sem*

Manifestations of genius explored in the works of selected creators: Hildegard von Bingen, Brunelleschi, Leonardo da Vinci, Shakespeare, Mozart, Picasso, and Stravinsky. A rudimentary introduction to medieval chant; Renaissance art, architecture, and drama; music of the classical period; and avant-garde painting and dance of the twentieth century. Introductory studies in cognitive psychology, focusing on the phenomenon of the prodigy and the nature of exceptional artistic creativity. Historical readings reveal the “what” of genius, while psychological studies may shed light on the “why” and the “how.” Recommended preparation: ability to read musical notation. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**LEVEL I**

MUSI 110a or b, Introduction to the Elements of Music.

Brian Kane and staff.

*TTh 11.35-12.50 (24)*
A practical and humanistic introduction to the fundamental principles of musical language (notation, rhythm, scales, keys, melodies, chords, cadences). Emphasis on writing, analysis, singing, and dictation. *Intended for students with no music reading ability.*

**MUSI 112a, Listening to Music.** Craig Wright.

**TH 10:30-11:20, 1 HTBA** Hu (23)

Development of aural skills that lead to an understanding of Western music. The musical novice is introduced to the ways in which music is put together and is taught how to listen to a wide variety of musical styles, from Bach and Mozart, to Gregorian chant, to the blues.

**MUSI 131b, Introduction to the History of Western Music: 1800 to the Present.** Gundula Kreuzer.

**MW 2:30-3:45** Hu (37)

A survey of nineteenth- and twentieth-century composers, genres, and styles of music in Europe and America, with an emphasis on ways of listening. *No prerequisites.*

**LEVEL II**

**MUSI 205a or b, Tonal Harmony and Form.** Patrick McCreless and staff.

**3 HTBA** For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) Hu (50)

A thorough review of musical rudiments—scales, keys, chords, rhythm, notation—followed by a study of the fundamentals of tonal harmony and form. Emphasis on listening skills—how to hear what is happening harmonically and formally in tonal pieces without following a score. Intended for non–music majors who have proficiency in reading music. *Students who have not taken MUSI 110a or b must take the music theory placement test at 3 P.M. on Monday, September 1, or 6 P.M. on Tuesday, September 2, 2008, in 119 WLH, or 6:30 P.M. on Monday, January 12, 2009, in 119 WLH. To be followed by MUSI 210a or b.*

**MUSI 210a or b, Elementary Studies in Analysis and Model Composition I.** Eve Poudrier and staff.

**3 HTBA** For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) Hu Meets RP (0)

Practical investigation of the basic principles of tonal harmony, counterpoint, and composition through exercises in analysis, motivic development, phrase rhythm, texture, form, performance, and model composition. *Recommended to be taken concurrently with MUSI 218a or b or 219a or b. Admission after MUSI 205a or b or by the music theory placement test, given at 3 P.M. on Monday, September 1, or 6 P.M. on Tuesday, September 2, 2008, in 119 WLH, or 6:30 P.M. on Monday, January 12, 2009, in 119 WLH. To be followed by MUSI 211a or b.*

**MUSI 211a or b, Elementary Studies in Analysis and Model Composition II.** Eve Poudrier and staff.

**3 HTBA** For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) Hu Meets RP (0)

Continuation of MUSI 210a or b. Investigation of further applications in tonal harmony, counterpoint, and composition through exercises in analysis, motivic development, phrase rhythm, texture, form, performance, and model composition. *Recommended to be taken concurrently with MUSI 218a or b or 219a or b. Admission after MUSI 210a or b or by the music theory placement test, given at 3 P.M. on Monday, September 1, or 6 P.M. on Tuesday, September 2, 2008, in 119 WLH, or 6:30 P.M. on Monday, January 12, 2009, in 119 WLH.*
\textbf{MUSI 213A, The Composition of Musical Theater I.} 
Andrew Gerle.

\textit{F 1.30-3.20} Hu Meets RP (0)
Introduction to elements of music- and lyric-writing for theater songs. Focus on the development of compositional proficiency in the musical theater idiom and on the refinement of each student's compositional voice. \textit{Prerequisite: MUSI 205A or b. Enrollment limited to 12.}

\textbf{MUSI 218A or b, Elementary Musicianship I.} Sarita Kwok.

\textit{MW or TTH 10.30-11.20, 1 HTBA} \textit{\frac{1}{2} C Credit Meets RP (30)}
Exercises in melodic and harmonic dictation, sight-singing, keyboard harmony, and aural analysis. \textit{Recommended to be taken concurrently with MUSI 210A or b or 211A or b.}

\textbf{MUSI 219A or b, Elementary Musicianship II.} Sarita Kwok.

\textit{MW or TTH 9.25-10.15, 1 HTBA} \textit{\frac{1}{2} C Credit Meets RP (30)}
Continuation of MUSI 218A or b. Exercises in melodic and harmonic dictation, sight-singing, keyboard harmony, and aural analysis. \textit{Prerequisite: MUSI 218A or b. Recommended to be taken concurrently with MUSI 210A or b or 211A or b.}

\textbf{MUSI 221, The Performance of Chamber Music.} Wendy Sharp.

\textit{3 HTBA 1 C Credit Meets RP (3)} \textit{Cr/Year only}
Coached chamber music emphasizing the development of ensemble skills, familiarization with the repertory, and musical analysis through performance. \textit{Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.}


\textit{T 6-8 P.M. Hu Meets RP (0)}
A course for singers and pianists that emphasizes the analysis and musical preparation of classical solo songs and operatic repertoire. Examination of structure (poetic, harmonic, motivic), discussion of style, exploration of vocal techniques, and introduction to the International Phonetic Alphabet. Staged performance of madrigals by Monteverdi in conjunction with the Yale Baroque Opera Project; performance of lieder by Schubert and Schumann. Students are strongly encouraged to supplement the course with individual voice instruction. \textit{Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.}


\textit{T 3.30-5.20 Hu Meets RP (0)}
A study of musical styles of the twelfth through early eighteenth centuries, including examination of manuscripts, musicological research, transcription and score preparation, and performance. Students in this class form the nucleus of the Yale Collegium Musicum. \textit{Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.}

\textbf{MUSI 226A or b, Continuo Realization and Performance.} Ilya Poletaev.

\textit{3 HTBA For sections see www.yale.edu/courseinfo Hu Meets RP (0)}
Acquisition of skills necessary for a competent and expressive performance from thorough-bass. Learning of figures, honing of voice-leading skills, and investigation of various historical and national styles of continuo playing. Regular class
performances, either independently or with an instrumentalist or singer. Open to pianists, harpsichordists, organists, guitarists, and lutenists, although instruction is primarily at the keyboard. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.

**MUSI 227a or b, Rhetoric and Early Instrumental Performance.**
Robert Mealy.

M 7-8.50 P.M.  Hu  Meets RP  (0)

Techniques and styles of historical instrumental performance, concentrating on virtuosic chamber music of the seventeenth and eighteenth centuries. Emphasis on fluency in various musical languages. Study of original musical sources and contemporary writing about performance. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.

**MUSI 228a or b, Performing and Directing Musical Theater.** Annette Jolles [F], Lonny Price [Sp].

F 1:30-3.20  Hu  Meets RP  (0)

The structure and meaning of traditional and contemporary musical theater repertoire. Focus on ways to “read” a work, decipher compositional cues for character and action, facilitate internalization of material, and elicit lucid interpretations. For singers, pianists, and directors. Prerequisites: MUSI 211a or b and 219a or b, or with permission of instructor. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.

**MUSI 243a, Opera.** Gundula Kreuzer.

TuTh 11:35-12.50  WR, Hu  (24)

A historical survey of the various subcategories of opera (opera seria, opera buffa, Singspiel, music-drama, epic opera, and others) through an analysis of representative works against the background of operatic conventions. May count toward the major as a Level III course with permission of the instructor.

**MUSI 266a/AFAM 238a, Funk: The Re-Africanization of American Popular Song.** Michael Veal.

TuTh 1-2.15  (0)

A survey of African American dance music of the late 1960s through the early 1980s, typified by artists such as James Brown, Earth, Wind & Fire, Parliament-Funkadelic, and Sly & the Family Stone. Examination of the music in the context of the period of African American cultural history during which it emerged. Enrollment limited to 45.

**MUSI 275a, Forms of Pop/Rock Music.** Daniel Harrison.

MW 10.30-11.20, 1 HTBA  Hu  (33)

A survey of various formal elements of pop/rock music and their combinations, deformations, and extensions. Focus on music from 1960 to 1990, though earlier and later repertories are included. Introduction to basic structures common to Western music (melody, harmony, rhythm) and specific to pop/rock (groove, hook, riff). No prerequisites. Enrollment limited to 45.

**MUSI 295a or b, Introduction to Electronic Music.** Staff.

MW 1-2.15  (36)

A survey of basic techniques in synthesis, sampling, MIDI sequencing, and digital mixing. Focus on popular genres of electronic music, including trance, hip-hop, ambient, house, techno, and trip-hop. Compositional exercises in creating electronic music. Prerequisite: familiarity with music notation. Enrollment limited to 30.
LEVEL III

All courses numbered 300 and above require the ability to read music.

**Musi 304b, Nineteenth-Century Music: Analysis and Model Composition.** Richard Cohn.

MW 9-10.15 Hu (32)

Studies in the theory, analysis, and composition of music of the nineteenth century. **Prerequisite: Musi 211a or b. Enrollment limited to 18. Preference to Music majors according to class.**

**Musi 305a, Twentieth-Century Music: Analysis and Model Composition.** Michael Friedmann.

MW 11.35-12.30 Hu (0)

Studies in the theory, analysis, and composition of music of the early and mid-twentieth century. **Prerequisite: Musi 211a or b. Enrollment limited to 18. Preference to Music majors according to class.** (Formerly Musi 410a)

**Musi 307a, Jazz Harmony.** Brian Kane.

TT 9-10.15 Hu (22)

An intensive study of the language of jazz, with a focus on jazz harmonies, scale-chord relationships, improvisational syntax, reharmonization, and transcription. Students analyze and transcribe solos, write model compositions, and acquire basic jazz piano skills. **Prerequisites: Musi 211a or b and 219a or b. Enrollment limited to 18. Preference to Music majors according to class.**

**Musi 308b, Rhythm and Temporality in Music of the Twentieth and Twenty-First Centuries.** Eve Poudrier.

TT 1-2.15 Hu (0)

A survey of compositional techniques dealing with rhythm, meter, and tempo in twentieth- and twenty-first-century music. Exploration of analytical tools that have been devised to investigate the resulting musical objects. Introduction of compositional and analytical approaches dealing with rhythm since the rise of modernism; critical thinking about musical temporality, analytical methods, and their practical applications. **Prerequisite: Musi 211a or b. Enrollment limited to 18. Preference to Music majors according to class.**

**Musi 312, Composition Seminar I.** Kathryn Alexander, Michael Klingbeil.

Th 2.30-4.20 (0)

Intermediate project-oriented studies in music composition, either acoustic or technological. **Prerequisite: Musi 211a or b or 295a or b. Admission by audition only. May be repeated for credit. Enrollment limited to 10. To audition, students should submit one or two scores and recordings to the Department of Music by September 10, 2008.**

**Musi 313b, The Composition of Musical Theater II.** Joshua Rosenblum.

F 1.30-3.20 Hu Meets RP (0)

Intermediate and advanced studies in composition of musical theater and opera. **Prerequisites: Musi 211a or b and 213a. Admission by audition only. Enrollment limited to 12. For audition information see www.yale.edu/courseinfo.**

**Musi 319b, Advanced Musicianship II.** Michael Friedmann.

Th 10.30-11.20, 1 HTBA (0)

Development of students’ ability to recognize and generate structures and processes particular to music of the twentieth century. Student composers and
advanced performers of post-tonal music expand their perceptive skills. Course activities include singing (and playing), dictation, identification, improvisation, and recognition. Musical examples from the works of Schoenberg, Bartók, Debussy, and Stravinsky.

*MUSI 322b/THST 318b, ANALYZING, DIRECTING, AND PERFORMING EARLY OPERA.* Richard Lalli.

T 6-8 P.M. Hu Meets RP (0)

A study of Monteverdi's *Orfeo* that includes structural analysis of text and music. Exploration of period performance practice, including rhetorical expression, musical style, gesture, dance, Italian elocution, and visual design. Production of the opera in conjunction with the Yale Baroque Opera Project. Open to all students, but designed especially for singers and directors. *Prerequisites: MUSI 211a or b and 219a or b. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo).*

*MUSI 323a or b, INTRODUCTION TO CONDUCTING.* Toshiyuki Shimada.

MW 11:35-12:50 (34)

An introduction to conducting through a detailed study of the problems of baton technique. Skills applied to selected excerpts from the standard literature, including concertos, recitatives, and contemporary music.

*MUSI 324a or b, INTERMEDIATE CONDUCTING.* Shinik Hahm.

TH 11:35-12:50 (24)

Intermediate studies in baton technique and score preparation. *After MUSI 323a or b.*

*MUSI 325a, FUNDAMENTALS OF MUSIC, MULTIMEDIA ART, AND TECHNOLOGY.* Michael Klingbeil.

T 1:30-3:20 Hu (26)

Fundamental principles of electroacoustic music and multimedia technology. Acoustics, psychoacoustics, sound recording and reproduction, digital audio, image processing, and computer graphics. Exercises in synthesis and signal processing, MIDI, animation, and digital video. *Prerequisite: MUSI 210a or b or equivalent. Enrollment limited to 20.*

*MUSI 331b, THE MUSIC AND LYRICS OF COLE PORTER.* Allen Forte.

T 1:30-3:20 (0)

Close analytical study of selected songs by Cole Porter, with attention to harmonic language, design of the lyrics, musical-cultural context, and performance practice.

*MUSI 334b, ANALYSIS AND PERFORMANCE OF EARLY MUSIC.*

Judith Malafronte.

T 3:30-5:20 Hu (0)

Continuation of MUSI 223a or b. Analytical techniques applied to interpretation and performance. Emphasis on the development of vocal technique and sight-reading skills. Students in this class form the nucleus of the Yale Collegium Musicum. *Prerequisite: MUSI 223a or b. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo).*

*MUSI 336a, AMERICAN MUSICAL THEATER: HISTORY AND CONTEXT.*

Daniel Egan.

M 1:30-3:20 Hu (0)

Critical examination of relevance and context in the history of the American musical theater. Historical survey combined with text and musical analysis;
nonmusical historical trends as they interacted with the musical theater of a given era. Enrollment limited to 45. Preference to Music and Theater Studies majors according to class.

[musi 343a, Music Cognition]

*musi 348a/*wgss 348a, Gender and Sexuality in Popular Music. Shana Goldin-Perschbacher. For description see under Women’s, Gender, & Sexuality Studies.

*musi 350b, History of Western Music: Middle Ages and Renaissance. Craig Wright. MW 11.35-12.30, TH 11.35-12.50 Hu (34) A detailed investigation of the history of musical style from A.D. 900 to 1600.

[musi 351a, History of Western Music: Baroque and Classical]

*musi 352a, History of Western Music: The Nineteenth and Twentieth Centuries. James Hepokoski. TH 11.35-12.50 Hu (24) A detailed investigation of the history of musical style from 1800 to the present.

[musi 353b/*afst 353b, Topics in World Music. Michael Veal. TH 11.35-12.50 Hu (0) A critical introduction to selected cultures of world music. Specific cultures vary from year to year but generally include those of Native America, South Asia, Southeast Asia, sub-Saharan Africa, the Middle East, and the Caribbean. Preference to Music majors according to class.

[musi 395a, Compositional Applications in Music, Multimedia Art, and Technology]


*[musi 399a, Analysis of Rock and Pop Music. Mark Spicer. W 1.30-3.20 Hu (0) An intensive study of stylistic trends in pop and rock music that have emerged in the post-Beatles era of the past forty years. Emphasis on analyses of the music itself. Prerequisite: musi 211a or b. Enrollment limited to 45. Preference to Music majors according to class.

LEVEL IV

*musi 412, Composition Seminar II. Kathryn Alexander, Michael Klingbeil. TH 2.30-4.20 (0) Advanced project-oriented studies in music composition, either acoustic or technological. Prerequisite: musi 312 or <390b>. Admission by audition only. May be repeated for credit. Enrollment limited to 8. To audition, students should submit one or two scores and recordings of work completed in musi 312 or <390b> to the Department of Music by September 10, 2008.
**MUSI 413a, Composition of Musical Theater III.** Andrew Gerle.

F 3.30–5.20 Hu (o)

Advanced studies in composition of musical theater and opera. Prerequisite: MUSI 313b. Admission by audition only. May be repeated for course credit, but not for distributional credit. Enrollment limited to 6. For audition information see www.yale.edu/courseinfo.

**MUSI 420b/WGSS 420b, Gendering Musical Performance.**

Sarah Weiss.

T 9.25–11.15 WR, Hu (o)

A critical examination of discourses on gender, sexuality, and music, grounded in the cross-cultural details of specific musical genres and performers. An exploration of ways in which issues of race, class, ethnicity, spirituality, and embodiment intersect with gender in shaping musical cultures and aesthetics. Prerequisite: familiarity with music notation.

**MUSI 425a, Sonata Theory.** James Hepokoski.

W 1.30–3.20 Hu (o)

Close analysis of instrumental “sonata-form” movements from sonatas, chamber works, symphonies, and concertos. Focus on works by Mozart, with additional examples from Haydn and Beethoven. Acquisition of a dynamic method (“Sonata Theory”) of hearing, analyzing, and interpreting complete movements or works. Enrollment limited to senior Music majors.

**MUSI 435a/HUMS 231a, Music in European Thought: Three Moments in the Modern Era.** Leon Plantinga.

For description see under Humanities.

[MUSI 450b, Special Topics in Music, Multimedia Art, and Technology]

**MUSI 458b, Ives, Blues, Porter.** James Hepokoski.

TTh 9.25–11.15 Hu (o) Senior sem

Diverse and competing concepts of musical style and purpose in the United States in the early and mid-twentieth century, as represented by the art music of Charles Ives, the rise and dissemination of recorded blues, and the popular song of early and classic New York theater (with special emphasis on Cole Porter and Anything Goes). Stylistic and cultural bases of both art and popular music communities and their often uneasy interrelationships. Significant individual research grounded in Yale’s archival collections.

**MUSI 459a, History and Theory of Performance.**

Gundula Kreuzer.

W 3.30–5.20 Hu (o) Senior sem

The phenomenon of musical performance from historical, aesthetic, and theoretical perspectives. Emphasis on the concept of the musical work since the late eighteenth century. Issues range from virtuosity and the physicality of the performing body to the influence of recording and the historical performance movement.

**MUSI 464a, Baroque Opera.** Ellen Rosand.

TTh 9.25–11.15 Hu (o) Senior sem

A chronological investigation of baroque opera in the main centers of Europe, moving from Italy through France, Germany, Spain, and England. Consideration of such issues as literary sources, genre, text-music relationships, the role of singers, operatic patronage, and changes in the reception of the genre from the
period of its origins to today. Study of six operas, ranging from Cavalli’s *Giasone* (1650) to Handel’s *Giulio Cesare* (1724). (Formerly MUSI 364)

**MUSI 465b** Wagner’s *Tristan und Isolde.* Patrick McCreless.  
M 1.30-3.20  Hu (O) Senior sem  
A study of the nineteenth-century work most often credited with initiating radical and permanent changes in harmonic and tonal usage in Western art music. Form on the large and small scale, leitmotif, harmony, tonal structure, and dramatic-musical interaction. Enrollment limited to senior Music majors.

**MUSI 466b** Music and Multimedia Art. Michael Klingbeil.  
T 1.30-3.20 (O)  
A study of the creative interaction among music, multimedia, and technology; the research, performance, and pedagogical impact of that interaction. Topics include acousmatics, experimentalism, ambient music, interactivity, quotation and appropriation, acoustic ecology, and sound art.

**INDIVIDUAL STUDY COURSES**

**MUSI 471a and 472b, Individual Study.** Consult the director of undergraduate studies.

HTBA (O)  
Original essay in ethnomusicology, music history, music theory, or music technology and/or multimedia art under the direction of a faculty adviser. Admission to the course upon submission to the department of the essay proposal by the registration deadline, and approval of the director of undergraduate studies.

**MUSI 490, Senior Essay for Intensive Majors in the History, Theory, or Composition of Music.** Consult the director of undergraduate studies.

HTBA (O)  
Preparation of an original composition or essay under the direction of a faculty adviser. Admission to the course upon submission to the department of the senior essay proposal by the fall registration deadline of the senior year, and approval of the director of undergraduate studies. Original composition project proposals also require an audition. Students intending to fulfill the requirements of the intensive major are urged to consult the director of undergraduate studies toward the end of the junior year.

Students in Yale College are eligible to take certain courses in the School of Music and are advised to consult its bulletin.

**INDIVIDUAL INSTRUCTION IN PERFORMANCE**

**MUSI 360a or b, Performance: First Term.** Staff.  
1 HTBA (O)  
Individual instruction in the study and interpretation of musical literature. Academic credit is granted to students who demonstrate an appropriate level of proficiency in audition. Enrollment requires previous completion of or concurrent registration in a required music theory course. Students must take the Music department’s music theory placement test to determine their placement in the 200-level music theory sequence. A score of 4 or 5 on the Advanced Placement test in Music Theory does not satisfy the music theory prerequisites for performance instruction. After or concurrently with MUSI 205a or b or MUSI 210a or b, as determined by the music theory placement test.
Students register for the section specific to their instrument: Bass (01), Bassoon (02), Cello (03), Clarinet (05), Flute (07), Guitar (09), Harp (10), Harpsichord (11), Horn (08), Oboe (12), Organ (31), Percussion (15), Piano (60), Trombone (17), Trumpet (18), Tuba (19), Viola (20), Violin (70), Voice (80).

Although the faculty of the School of Music attempts to accommodate those who qualify for credit instruction, it cannot guarantee they will be enrolled with the teacher of their choice.

Students who do not qualify for academic credit may also receive lessons. Students accepted for noncredit instruction are charged $500 for twelve hour lessons per term; $300 is charged for twelve half-hour lessons per term. The fees are added to the Student Financial Services bill and are not refundable after the first two weeks of lessons in each term. The half-hour fee is waived for juniors and seniors who are majors in Music.

Auditions (both for credit and not for credit) for assignment to instructors for freshmen and returning students will be held at the beginning of the fall term. To arrange for an audition, students must sign up at http://apply.music.yale.edu/lessons.

**MUSI 361a or b, Performance: Second Term.** Staff.
1 HTBA (o)
Continuation of MUSI 360a or b. Enrollment requires previous completion of or concurrent registration in an additional required music theory course. Prerequisite: MUSI 360a or b; after or concurrently with MUSI 210a or b or MUSI 211a or b, as determined by the music theory placement test.

**MUSI 460a or b, Performance: Third Term.** Staff.
1 HTBA (o)
Continuation of MUSI 361a or b. Prerequisite: MUSI 361a or b.

**MUSI 461a or b, Performance: Fourth Term.** Staff.
1 HTBA (o)
Continuation of MUSI 460a or b. Prerequisite: MUSI 460a or b.

Students beyond their fourth term of performance instruction register first in MUS 540 in the School of Music, and then in MUS 640. No Yale College degree credit is offered for these courses.

**NEAR EASTERN LANGUAGES AND CIVILIZATIONS**

Director of undergraduate studies: Colleen Manassa, 321 HGS, 436-8181, colleen.manassa@yale.edu

**FACULTY OF THE DEPARTMENT OF NEAR EASTERN LANGUAGES AND CIVILIZATIONS**

Professors
John Darnell, Benjamin Foster, Eckart Frahm, Beatrice Gruendler, Dimitri Gutas, Bentley Layton, Harvey Weiss

Assistant Professors
Colleen Manassa, Hala Khamis Nassar

Lecturers
Adel Allouche, Elitzur Bar-Asher (Visiting), Karen Foster, Kathryn Slanski

Senior Lector II
Ayala Dworetzky
The major in Near Eastern Languages and Civilizations is a liberal arts major that gives students a sound competence in a Near Eastern language and a broad knowledge of the literatures, civilizations, history, and archaeology of the Near East. The major also provides essential preparation for graduate or professional work in which a knowledge of Near Eastern languages, history, and archaeology is required.

Depending on the student's interests, the major is built around study of one or more Near Eastern languages leading to a concentration in the ancient Near East (Mesopotamia, Egypt, or Syria-Palestine), in Hebrew language and literature, or in Arabic and Islamic studies.

Requirements of the major. Twelve term courses in the department, or their equivalent, are required for the major. No more than six term course credits from other institutions will be accepted toward this requirement. The course work includes at least two years of study of a Near Eastern language and no fewer than three term courses in the history and civilizations of the Near East, at least one term of which must be in the ancient and one in the Islamic Near East. Students should develop coherent programs of study in one of three areas of concentration:

1. Ancient Near Eastern languages and civilizations, with emphasis on Mesopotamia, Egypt, or Syria-Palestine. Students interested in Mesopotamia take at least two years of Akkadian, as well as courses in the history and civilizations of the ancient Near East. Students interested in Egypt take at least two years of Egyptian, as well as courses in the history and civilizations of ancient Egypt and, in some cases, Coptic. Students interested in Syria-Palestine take at least two years of biblical Hebrew, as well as courses in the history and civilizations of the ancient Near East.

2. Hebrew language and literature. Students take two years or more of Hebrew (ancient or modern, but in any case at least two years of one period of the language), and courses in Hebrew literature, the history and civilizations of the ancient Near East, and Near Eastern Judaism.

3. Arabic and Islamic studies. ARBC 120b is a prerequisite for this area and counts as one term course toward the twelve required. Students take at least two years of Arabic beyond the prerequisite, and courses selected from Arabic literature, Arab civilization, Islamic religion, Near Eastern history, and Persian or Turkish language. If taken, ARBC 107a and 108b may not be counted toward the major. In their senior year, students take one of the two seminars for the major in Arabic and Islamic studies: either NELC 490a, Introduction to Classical Arabic and Islamic Studies, or 491b, Introduction to Modern Middle Eastern Studies. In exceptional cases, students may take both seminars. Majors in this area of concentration are strongly advised to begin their language training as early as possible, and certainly not later than the sophomore year. Students should consult Dimitri Gutas, 316 HGS, 432-2947.

Students whose native tongue is a Near Eastern language must take a second Near Eastern language to meet the language requirement of the major. Exceptions can be made by arrangement with the department.
Well-qualified students who have acquired the requisite background in undergraduate courses may, with the permission of the instructor, the director of undergraduate studies, and the director of graduate studies, be admitted to graduate courses where no suitable undergraduate courses exist. In addition, courses from such other departments and programs as Archaeological Studies, History, History of Art, Judaic Studies, Political Science, and Religious Studies, as well as college seminars, are routinely accepted for credit toward the major if they deal with Near Eastern topics.

All course schedules must be approved by the director of undergraduate studies.

Senior essay. To derive full benefit from the major, students should acquire practical experience in using Near Eastern languages for research purposes. Therefore all students in the major undertake a senior essay that involves substantial use of materials in one or more Near Eastern languages. The senior essay is a research paper of at least thirty pages prepared under the supervision of a departmental faculty member. It may be written under the rubric of NELC 492A and/or 493B, or as an extended seminar paper in a departmental seminar course, in which case the instructor serves as the essay adviser. The topic and a prospectus signed by an adviser are to be submitted to the director of undergraduate studies by the end of the fourth week of classes in either term of the senior year. The particular subject matter and theoretical approach of the essay are decided by the student after consultation with the faculty adviser.

In cases in which students demonstrably need more time for an extensive essay, the senior essay may be approved as a year course after consultation with the adviser and the director of undergraduate studies. Only those students who have advanced language skills and whose project is considered to be of exceptional promise are eligible. The requirements for the two-term essay are the same as for the one-term essay, except that the essay should be at least sixty pages.

Languages currently offered by the Department of Near Eastern Languages and Civilizations include Akkadian, Arabic, Coptic, Egyptian, Hebrew, Persian, Syriac, and Turkish. Students who take a foreign language during a term, year, or summer abroad must complete a departmental placement examination after they return to Yale; there are no exceptions to this requirement.

Th 11.35-12.30 Hu (24) Tr Fr sem
Thematic exploration of the major genres of classical Arabic literature from the sixth through the fifteenth centuries C.E. Readings from both prose and poetry, with some attention to the historical, sociological, and literary backgrounds of the texts. The agendas authors pursued through their writings; fictional and historical perspectives on characters portrayed in the literature. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

NELC 100a/ANTH 150a/ARC G 100a/HUMS 376a, The Genesis and Collapse of Old World Civilizations. Harvey Weiss.

For description see under Humanities.


For description see under Humanities.

NELC 102a/HUMS 383a/MMES 102a, Introduction to the Middle East. Benjamin Foster.

MW 9-10.15; disc. F 9.25-10.15 Hu (32)
Introduction to the history and cultures of the Middle East, from the rise of Islam to the present, including the Arab world, Iran, Turkey, and Israel. Emphasis on factors important for understanding the Middle East today.

[NELC 124bG/HUMS 397b/LITR 151b, Egyptian Literature through the Ages]


Th 2.30-4.20 Hu, So (o)
Comparative study of origins, structures, efficiencies, and limitations of imperialism, ancient and modern, in the Old and New Worlds, from Akkad to "Indochine" and from Wari to Aztec. The contrast between ancient and modern empires examined from the perspectives of nineteenth- and twentieth-century archaeology and political economy.

Ancient, Classical, and Medieval


For description see under History of Art.

NELC 104b/ARC G 239b/HSAR 239bG/HUMS 104b, Art of the Ancient Near East and Aegean. Karen Foster.

For description see under History of Art.

*NELC 112bG/ARC G 222b/BLST 141b, Egyptian Religion through the Ages. John Darnell.

MW 2.30-3.45 Hu (37)
Topics in Egyptian religion including religious architecture; evidence for proto-dynastic cults; foreigners in Egyptian religious celebrations; music and vocal expression in Egyptian religion; Re and Osiris; the Amarna interlude and the Ramesside solar religion; and the goddess of the eye of the sun. The approach is diachronic. Readings in translation of primary and secondary sources.
Eckart Frahm.

TH 2.30–3.45 Hu (o)
History of the Assyrian, Babylonian, and Persian empires of the first millennium B.C.E.; how their rise and fall influenced the politics, religion, and literary traditions of biblical Israel. Topics include the role of prophecy and (divine) law, political and religious justifications of violence, the birth of monotheism, and the historical reliability of the Hebrew Bible.

NELC 116bG, Myth and Ritual in the Ancient Near East

NELC 119aG, Religion and Politics in the Ancient Near East

NELC 121a/hums 384a, The Hero in the Ancient Near East.
Kathryn Slanski.

MW 10.30–11.20, 1 HTBA Hu (o)
Exploration of the interaction of religion, history, and literature in the ancient Near East through study of its heroes, including comparison with heroes, heroic narratives, and hero cults in the Bible and from classical Greece.

*NELC 122b/hums 398b, Reimagining the Ancient Near East.
Kathryn Slanski.
For description see under Humanities.

*NELC 188aG/ANTH 473aG/ARCG 473aG/EVST 473a, Civilizations and Collapse.
Harvey Weiss.
For description see under Anthropology.

*NELC 315b/CLCV 312b/hums 390b, Translating the Hero.
Corinne Pache, Kathryn Slanski.
For description see under Humanities.

Bentley Layton.
For description see under Religious Studies.

NELC 402a/HIST 360a, The Islamic Near East from Muhammad to the Mongol Invasion.
Adel Allouche.

TH 11.35–12.50, 1 HTBA Hu (24)
The shaping of society and polity from the rise of Islam to the Mongol conquest of Baghdad in 1258. The origins of Islamic society; conquests and social and political assimilation under the Ummayyads and Abbasids; the changing nature of political legitimacy and sovereignty under the caliphate; provincial decentralization and new sources of social and religious power.

*NELC 403b/HIST 384Jb, The Middle East between Crusaders and Mongols.
Adel Allouche.
For description see under History.

Modern

NELC 151bG/MMES 151b, Drama and Theater in the Arab World.
Hala Khamis Nassar.

TH 1–2.15 Hu (26)
Introduction to the mutual cultural and theatrical influences between postcolonial Arab drama and avant-garde European theater. Focus on the rise and development of theater in the Arab world from the middle of the nineteenth century to the present. Readings and discussion in English.
**NELC 152a**, **MMES 152a**, **Gender and Nationalism in Arab Women’s Writing**. Hala Khamis Nassar.

T 2.30-4.20 Hu (o) Tr

An introduction to modern and contemporary Arab women writers, with a focus on women’s novels from Egypt, Jordan, Lebanon, Syria, Iraq, and Palestine. Issues of gender and sexuality; the continuity of patriarchal relations within Arab society, influenced by Islam, Christianity, and modern nationalism. Readings and discussion in English.

**NELC 407a**, **MMES 407a**, **Modern Arab Thought**. Hala Khamis Nassar.

Th 2.30-4.20 Hu (o)

Major trends of twentieth-century Arab thought, critically examined through readings in translation from a wide range of thinkers. Issues are analyzed in the context of the historical-colonial, postcolonial, and neocolonial background from which they emerged.

**Languages and Literatures of the Ancient Near East**

**Akkadian**

**AKKD 110a**, **Elementary Akkadian I**. Eckart Frahm.

Th 9-10.15 L1 Meets RP (22)

An introduction to the language of ancient Babylonia and its cuneiform writing system, with exercises in reading, translation, and composition. Credit only on completion of **AKKD 120b**. (Formerly the first term of **AKKD 101**)

**AKKD 120b**, **Elementary Akkadian II**. Eckart Frahm.

Th 9-10.15 L2 Meets RP (22)

Continuation of **AKKD 110a**. Prerequisite: **AKKD 110a**. (Formerly the second term of **AKKD 101**)

**AKKD 130b**, **Intermediate Akkadian I**. Staff.

M 2.30-4.20 L3 Meets RP (37)

Close reading of selected Akkadian texts; introduction to Akkadian dialects, cuneiform epigraphy, and research techniques of Assyriology. Prerequisite: **AKKD 120b**. (Formerly the first term of **AKKD 102**)

**Egyptian**

**EGYP 110a**, **Introduction to Classical Hieroglyphic Egyptian I**. Colleen Manassa.

Th 9-10.15, 1 HTBA L1 Meets RP (o)

An introduction to the language of ancient pharaonic Egypt (Middle Egyptian) and its hieroglyphic writing system, with short historical, literary, and religious texts. Grammatical analysis with exercises in reading, translation, and composition. Credit only on completion of **EGYP 120b**. (Formerly the first term of **EGYP 101**)

[**EGYP 117a**, **Elementary Biblical Coptic I**]

**EGYP 120b**, **Introduction to Classical Hieroglyphic Egyptian II**. Colleen Manassa.

Th 9-10.15, 1 HTBA L2 Meets RP (o)

Continuation of **EGYP 110a**. Prerequisite: **EGYP 110a**. (Formerly the second term of **EGYP 101**)

[**EGYP 127b**, **Elementary Biblical Coptic II**]
**EGYP 131aG, Intermediate Egyptian I: Literary Texts.**
Colleen Manassa.
W 2.30-4.30 L3 Meets RP (o)
Close reading of Middle Egyptian literary texts; introduction to the hieratic (cursive) Egyptian script. Readings include the Middle Kingdom stories of Sinuhe and the Eloquent Peasant and excerpts from Wisdom Literature. **Prerequisite:** EGYP 120b. **Counts as L4 if taken after EGYP 141b.** (Formerly EGYP 102b)

[EGYP 137bG, Introduction to Gnostic Texts in Coptic]

**EGYP 141bG, Intermediate Egyptian II: Historical Texts.**
Colleen Manassa.
W 2.30-4.30 L3 Meets RP (o)
Close reading of Middle Egyptian historical texts in original hieroglyphic and hieratic script. Initial survey of ancient Egyptian historiography and grammatical forms peculiar to this genre of text. **Prerequisite:** EGYP 120b. **Counts as L4 if taken after EGYP 131a.** (Formerly EGYP 103a)

**EGYP 147bG, Egyptian Monastic Literature in Coptic.**
Stephen Davis.
MW 2.30-3.45 L3 (37)
Readings in the early Egyptian classics of Christian asceticism in Sahidic Coptic, including the desert Fathers and Shenute. **Prerequisite:** EGYP 127b or equivalent. **Counts as L4 if taken after EGYP 137b or equivalent.** (Formerly EGYP 112b)

**Syriac**

Students wishing to study Syriac should consult the director of undergraduate studies.

**Hebrew Language and Literature**

**HEBR 110aG, Elementary Modern Hebrew I.**
L1 1 ½ C Credits Meets RP (61)
110a–1: MTWThF 9.25-10.15 Ayala Dvoretzky
110a–2: MTWThF 4.30-5.20 Staff
Introduction to the language of contemporary Israel, both spoken and written. Fundamentals of grammar; extensive practice in speaking, reading, and writing under the guidance of a native speaker. **Section 1 is for students with some knowledge of modern Hebrew; section 2 is for beginners. Credit only on completion of HEBR 120b.** (Formerly the first term of HEBR 101)

**HEBR 120bG, Elementary Modern Hebrew II.**
L2 1 ½ C Credits Meets RP (61)
120b–1: MTWThF 9.25-10.15 Ayala Dvoretzky
120b–2: MTWThF 4.30-5.20 Staff
Continuation of HEBR 110a. **Prerequisite:** HEBR 110a or equivalent. (Formerly the second term of HEBR 101)

**HEBR 130aG, Intermediate Modern Hebrew I.**
L3 Meets RP (61)
130a–1: MW 1-2.15; practice 1 HREB 1 Shiri Goren
130a–2: TH 2.30-3.45; practice 1 HREB 1 Ayala Dvoretzky
Review and continuation of grammatical study, leading to a deeper comprehension of style and usage. Focus on selected readings, writing, comprehension, and
speaking skills. **Prerequisite:** HEBR 120b or equivalent. (Formerly the first term of HEBR 102)

**HEBR 140b G,** **INTERMEDIATE MODERN HEBREW II.**

L4 Meets RP (61)
140b–1: MW 1-2.15; *practice* 1 HTBA Ayala Dvoretzky
140b–2: TTh 2.30-3.45; *practice* 1 HTBA Shiri Goren

Continuation of HEBR 130a. **Prerequisite:** HEBR 130a or equivalent. (Formerly the second term of HEBR 102)

**HEBR 150b G/ DJST 150b,** **ADVANCED MODERN HEBREW: ISRAELI SOCIETY.** Shiri Goren.

TTh 4-5.15 L5 Meets RP (27)
An examination of major controversies in Israeli society. Readings include newspaper editorials and academic articles as well as documentary and history-related material. Advanced grammatical structures are introduced and practiced. **Conducted in Hebrew. Prerequisite:** HEBR 140b or equivalent. (Formerly HEBR 103a)

**HEBR 151b G/ DJST 151b,** **INTRODUCTION TO MODERN ISRAELI LITERATURE.** Ayala Dvoretzky.

MW 11.35-12.50 L5 (O)
Reading, discussion, and analysis of fiction, poetry, films, drama, and magazine articles representative of contemporary cultural, social, and political issues in Israeli life. **Conducted in Hebrew. Prerequisite:** HEBR 140b or equivalent. (Formerly HEBR 104b)

**HEBR 156b G/ DJST 405b,** **DYNAMICS OF ISRAELI CULTURE.** Shiri Goren.

TTh 11.35-12.50 L5, Hu Meets RP (O)
Contemporary controversies in Israeli society as revealed in novels, films, poetry, newspaper articles, Web sites, art, advertisements, and television shows. Themes include migration and the construction of the Sabra character; ethnicity and race; the emergence of the Mizrahi voice; women in Israeli society; private and collective memory; minority discourse of the Druze and Russian Jews; and Israeli masculinity and queer culture. **Conducted in Hebrew. Papers may be written in English or Hebrew. Prerequisite:** HEBR 140b or permission of instructor. (Formerly HEBR 106a)

**HEBR 158a G/ DJST 305a,** **CONTEMPORARY ISRAELI SOCIETY IN FILM.** Shiri Goren.

TTh 11.35-12.50 L5, Hu Meets RP (O)
Examination of major themes in Israeli society through film, with emphasis on language study. Topics include migration, gender and sexuality, Jewish/Israeli identity, and private and collective memory. Readings in Hebrew and English provide a sociohistorical background and bases for class discussion. **Prerequisite:** HEBR 140b or permission of instructor. (Formerly HEBR 105a)

**HEBR 471a or b,** **DIRECTED READING AND RESEARCH.** Consult the director of undergraduate studies.

HTBA (O)
For students who wish to pursue a topic or body of texts not available in the department’s regular curriculum. Approval of the plan of study by both the director of undergraduate studies and a member of the department who agrees to serve as instructor is required. Student and instructor meet regularly throughout the term. The course culminates in either a piece of written work or a final examination.
Biblical Hebrew

HEBR 117a, ELEMENTARY BIBLICAL HEBREW I. Joshua Burns.
MW 9-10.15 L1 Meets RP (32)
An introduction to biblical Hebrew. Intensive instruction in grammar and vocabulary, supplemented by readings from the Bible. Credit only on completion of HEBR 127b. No prior knowledge of Hebrew required. (Formerly the first term of HEBR 111)

HEBR 127b, ELEMENTARY BIBLICAL HEBREW II. Joshua Burns.
MW 9-10.15 L2 Meets RP (32)
Continuation of HEBR 117a. Prerequisite: HEBR 117a. (Formerly the second term of HEBR 111)

[HEBR 137a, INTERMEDIATE BIBLICAL HEBREW I]

[HEBR 147b, INTERMEDIATE BIBLICAL HEBREW II]

ARABIC AND ISLAMIC STUDIES

Arabic

ARBC 107aG, SPOKEN STANDARD ARABIC I.
\( \frac{1}{2} \) C Credit Meets RP (61)
107a–1: MW 2.30-3.45 Muhammad Aziz
107a–2: MF 11.35-12.50 Muhammad Aziz
107a–3: TTh 4-5.15 Ghassan Husseinali
A supplement to ARBC 110a, emphasizing oral skills. After or concurrently with ARBC 110a, or with permission of instructor. Credit only on completion of ARBC 108b. (Formerly the first term of ARBC 102)

ARBC 108bG, SPOKEN STANDARD ARABIC II.
\( \frac{1}{2} \) C Credit Meets RP (61)
108b–1: MW 2.30-3.45 Muhammad Aziz
108b–2: MF 11.35-12.50 Muhammad Aziz
108b–3: TTh 4-5.15 Ghassan Husseinali
Continuation of ARBC 107a. After ARBC 107a or with permission of instructor. (Formerly the second term of ARBC 102)

ARBC 110aG, ELEMENTARY MODERN STANDARD ARABIC I.
L1 1\( \frac{1}{2} \) C Credits Meets RP (61)
110a–1: MTWTHF 9.25-10.15 Staff
110a–2: MTWTHF 11.35-12.25 Bouteina Khaldi
110a–3: MTWTHF 1.30-2.20 Muhammad Aziz
110a–4: MTWTHF 3.30-4.20 Ghassan Husseinali
Development of a basic knowledge of Modern Standard Arabic. Emphasis on grammatical analysis, vocabulary acquisition, and the growth of speaking, listening, reading, and writing skills. Credit only on completion of ARBC 120b. (Formerly the first term of ARBC 101)

ARBC 120bG, ELEMENTARY MODERN STANDARD ARABIC II.
L2 1\( \frac{1}{2} \) C Credits Meets RP (61)
120b–1: MTWTHF 9.25-10.15 Staff
120b–2: MTWTHF 11.35-12.25 Bouteina Khaldi
120b–3: MTWTHF 1.30-2.20 Muhammad Aziz
120b–4: MTWTHF 3.30-4.20 Ghassan Husseinali
Continuation of ARBC 110a. Prerequisite: ARBC 110a or equivalent. (Formerly the second term of ARBC 101)
ARBC 130aG, INTERMEDIATE MODERN STANDARD ARABIC I.
L3 13 C Credits Meets RP (61)
130a-1: MTWTHF 9.25-10.15; practice 1 HTBA Bouthchina Khaldi
130a-2: MTWTHF 2.30-3.20; practice 1 HTBA Muhammad Aziz
Intensive review of grammar; readings from contemporary and classical Arab authors with emphasis on serial reading of unvoweled Arabic texts, prose composition, and formal conversation. Prerequisite: ARBC 120b or permission of instructor. (Formerly the first term of ARBC 103)

ARBC 136a, INTERMEDIATE CLASSICAL ARABIC I. Staff.
MW 11.35-12.30 L3 Meets RP (34)
Introduction to classical Arabic, with emphasis on analytical reading skills, grammar, and prose composition. Readings from the Qur'an, Islamic theology, and literature and history of the Middle East, as well as Jewish and Christian religious texts in Arabic. Prerequisite: ARBC 120b or permission of instructor. May be taken concurrently with ARBC 130a or 150a. (Formerly the first term of ARBC 110)

ARBC 140bG, INTERMEDIATE MODERN STANDARD ARABIC II.
L4 13 C Credits Meets RP (61)
140b-1: MTWTHF 9.25-10.15; practice 1 HTBA Bouthchina Khaldi
140b-2: MTWTHF 2.30-3.20; practice 1 HTBA Muhammad Aziz
Continuation of ARBC 130a. Prerequisite: ARBC 130a or equivalent. (Formerly the second term of ARBC 103)

ARBC 146b, INTERMEDIATE CLASSICAL ARABIC II. Staff.
MW 11.35-12.30 L4 Meets RP (34)
Continuation of ARBC 136a. Prerequisite: ARBC 136a or permission of instructor. May be taken concurrently with ARBC 140b or 151b. (Formerly the second term of ARBC 103)

*ARBC 150aG, ADVANCED MODERN STANDARD ARABIC I.
Ghassan Husseinali.
MWF 1.30-2.20; practice 1 HTBA L5 Meets RP (36)
Further development of listening, writing, and speaking skills of students who already have a substantial background in the study of Modern Standard Arabic. Prerequisite: ARBC 140b or permission of instructor. (Formerly the first term of ARBC 104)

*ARBC 151bG, ADVANCED MODERN STANDARD ARABIC II.
Ghassan Husseinali.
MWF 1.30-2.20; practice 1 HTBA L5 Meets RP (36)
Continuation of ARBC 150a. Prerequisite: ARBC 150a or permission of instructor. (Formerly the second term of ARBC 104)

*ARBC 157a and 158b, TRANSLATION METHODS: ARABIC TO ENGLISH.
Ghassan Husseinali.
TH 1.30-3.20 (26) Cr/Year only
The practical issues that arise in translating Arabic texts into English. Students translate and discuss readings from a variety of genres, including legal documents, consumer-oriented materials, popular media, and literature. Focus on developing professional competence in Arabic-to-English translation. Prerequisite: ARBC 151b. Discussion in English.

*ARBC 165aG or bG, ARABIC SEMINAR. Beatrice Gruendler [F], Dimitri Gutas [Sp].
T 3.30-5.20 L5 Meets RP (0)
Study and interpretation of classical Arabic texts for advanced students. *Prerequisite:* ARBC 146b, 151b, or permission of instructor. May be repeated for credit. (Formerly ARBC 105a or b)

**ARBC 166bG, Modern Arabic Seminar.** Staff.

MF 1-2.15  L5  Meets RP  (0)

Study and interpretation of modern Arabic prose and poetry for advanced students. *Prerequisite:* ARBC 140b. (Formerly ARBC 106b)

[ARBC 167aG, Advanced Spoken Media Arabic I]

[ARBC 168bG, Advanced Spoken Media Arabic II]

[ARBC 169b, Layla and Majnun]

**ARBC 471a or b, Directed Reading and Research.** Consult the director of undergraduate studies. HTBA  (0)

For students who wish to pursue a topic or body of texts not available in the department’s regular curriculum. Approval of the plan of study by both the director of undergraduate studies and a member of the department who agrees to serve as instructor is required. Student and instructor meet regularly throughout the term. The course culminates in either a piece of written work or a final examination.

**Persian**

**PERS 110aG, Elementary Persian I.** Fereshteh Amanat-Kowssar.

MWTThF 9.25-10.15  L1  1 ½ C Credits  Meets RP  (32)

An introduction to modern Persian, with emphasis on grammar and syntax as well as writing and reading simple prose. Students are introduced to colloquial Persian and are encouraged to speak the language from the outset. *Credit only on completion of PERS 120b.* (Formerly the first term of PERS 101)

**PERS 120bG, Elementary Persian II.** Fereshteh Amanat-Kowssar.

MWTThF 9.25-10.15  L2  1 ½ C Credits  Meets RP  (32)

Continuation of PERS 110a. *Prerequisite:* PERS 110a. (Formerly the second term of PERS 101)

**PERS 130aG, Intermediate Persian I.** Fereshteh Amanat-Kowssar.

MWTThF 10.30-11.20  L3  1 ½ C Credits  Meets RP  (0)

Intermediate study of grammar and readings in Persian, emphasizing rules and usage of colloquial Persian. *Prerequisite:* PERS 120b. (Formerly the first term of PERS 102)

**PERS 140bG, Intermediate Persian II.** Fereshteh Amanat-Kowssar.

MWTThF 10.30-11.20  L4  1 ½ C Credits  Meets RP  (0)

Continuation of PERS 130a. *Prerequisite:* PERS 130a. (Formerly the second term of PERS 102)


MW 11.35-12.50  L5  Meets RP  (34)

An advanced reading course concentrating on primary sources in Persian, with emphasis on nineteenth- and twentieth-century ideas of identity and change. Some religious and Sufi material is studied as background. *Prerequisite:* PERS 140b or equivalent. (Formerly PERS 103a)
Turkish

**TKSH 110a**, Elementary Modern Turkish I. Staff.

MTWThF 10.30-11.20 L1 1 C Credits Meets RP (33)

Development of a basic knowledge of modern Turkish, with emphasis on grammatical analysis, vocabulary acquisition, and the training of reading and writing skills. *Credit only on completion of TKSH 120b.* (Formerly the first term of TKSH 101)

**TKSH 120b**, Elementary Modern Turkish II. Staff.

MTWThF 10.30-11.20 L2 1 C Credits Meets RP (33)

Continuation of TKSH 110a. Prerequisite: TKSH 110a or permission of instructor. (Formerly the second term of TKSH 101)

**TKSH 130a**, Intermediate Turkish I. Staff.

TTh 11.35-12.50 L3 Meets RP (24)

Continued study of modern Turkish, with emphasis on advanced syntax, vocabulary acquisition, and the beginnings of free oral and written expression. Prerequisite: TKSH 120b or permission of instructor. (Formerly the first term of TKSH 102)

**TKSH 140b**, Intermediate Turkish II. Staff.

TTh 11.35-12.50 L4 Meets RP (24)

Continuation of TKSH 130a. Prerequisite: TKSH 130a. (Formerly the second term of TKSH 102)

**TKSH 150a**, Advanced Turkish. Fatma-Nihan Ketrez.

MW 11.35-12.25, 1 HTBA L5 Meets RP (0)

An advanced language course focused on improving students’ reading, writing, listening, and speaking skills in modern Turkish. Extensive study of vocabulary and idiomatic expressions. Readings from a variety of genres, including academic articles, critical essays, literature, newspaper articles, and formal business writing. Screening of films, documentaries, and news broadcasts. Prerequisite: TKSH 140b.

**Courses for Majors**

**NELC 471a or b**, Directed Reading and Research. Consult the director of undergraduate studies.

HTBA (0)

For students who wish to pursue a topic or body of texts not available in the department’s regular curriculum. Approval of the plan of study by both the director of undergraduate studies and a member of the department who agrees to serve as instructor is required. Student and instructor meet regularly throughout the term. The course culminates in either a piece of written work or a final examination.

**NELC 490a/G**/**MMES 490a**, Introduction to Classical Arabic and Islamic Studies. Dimitri Gutas.

W 2.30-4.20 (0)

Comprehensive survey of the various subjects treated in Arabic and Islamic studies, with representative readings from each. Detailed investigation into the methods and techniques of scholarship in the field, with emphasis on acquiring familiarity with bibliographical and other research tools. *Enrollment limited to senior majors in Near Eastern Languages and Civilizations, except by permission of instructor.*
Survey of debates in the modern and contemporary Arab world concerning heritage, secularism, religion, language, gender equality, modernization, and tradition. Resources in translation include a cross section of Arab and Western writings from the late nineteenth century to the present. Focus on gender identities in relation to nationalism, Islamism, and the West, and how they are reflected in different genres.

The senior essay is a research paper of at least thirty pages (sixty pages for a two-term essay) prepared under the supervision of a departmental faculty member. The senior essay is prepared in accordance with the following schedule:

1. By the end of the second week of classes of the first term, students meet with advisers to discuss the topic, approach, sources, and bibliography of the essay. Note: students planning to write the essay in the second term (NELC 493b) should also meet with their prospective advisers by this deadline.

2. By the end of the fourth week of classes a prospectus with outline, including an annotated bibliography of materials in one or more Near Eastern languages and of secondary sources, is signed by the adviser and submitted to the director of undergraduate studies. The prospectus should indicate the formal title, scope, and focus of the essay, as well as the proposed research method, including detailed indications of the nature and extent of materials in a Near Eastern language that will be used.

3. At the end of the tenth week of classes (end of February for yearlong essays), a rough draft of the complete essay is submitted to the adviser.

4. Two copies of the finished paper must be submitted to the director of undergraduate studies, 314 HGS, by 4 P.M. on the last day of reading period. Failure to comply with the deadline will be penalized by a lower grade. Senior essays will be graded by departmental faculty unless, for exceptional reasons, different arrangements for an outside reader are made in advance with the director of undergraduate studies and the departmental adviser.

Some Graduate School courses are open to qualified undergraduates with permission of the instructor and of the director of graduate studies. For course descriptions see the Graduate School bulletin. (Also see “Courses in the Yale Graduate and Professional Schools” in chapter III, section K, of this bulletin.)

OPERATIONS RESEARCH

Coordinator: Eric Denardo, 502 DL, 432-7276, eric.denardo@yale.edu

Professors
Eric Denardo, Edward Kaplan, Herbert Scarf, Arthur Swersey

Operations research is concerned with the organization and management of productive activities. Operations research includes mathematical analysis of techniques of optimization, efficient organization of production,
calculation of operating characteristics of complex systems, and application of these and other techniques to operating problems throughout business and government. The subject, also known as management science, is closely related to computer science, economics, statistics, engineering, and pure and applied mathematics.

To practice operations research, one must identify the objectives of the operation under study, describe alternative actions, define measures of effectiveness for them, create a model of the system under study, and select the action that best meets the stated objectives.

Operations research has four major subfields. Mathematical programming concerns the optimal operation of systems with many variables that are linked by simple relationships. Stochastic processes describes the evolution over time of systems whose “laws of motion” are affected by chance. Game theory describes models of cooperation and competition between members of an organization or participants in a market. Production and inventory control is a family of models that applies to manufacturing and service systems. Operations research can prepare the mathematically inclined student for a career in the management of technology or in administration, for graduate study in the mathematical sciences, or for graduate study in management. Yale College offers no major in this subject.

[oprs 125b/amth 125b/math 125b, Introduction to Management Science: Probabilistic Models]

oprs 235a/amth 235a, Optimization I. Eric Denardo.

Linear programming, a resource-allocation method widely used by engineers, managers, economists, and social scientists. The theory of linear programming (the simplex method, sensitivity analysis, prices, duality, and geometry) is coupled with a survey of its principal uses. Prerequisite: math 222a or b or 225a or b or equivalent.

PEKING UNIVERSITY–YALE UNIVERSITY JOINT UNDERGRADUATE PROGRAM

The Peking University–Yale University Joint Undergraduate Program in Beijing is open to Yale College sophomores, juniors, and, in some cases, first-term seniors, and to students in the Peking University Yuanpei Honors College. Yale students from all majors who are in good academic standing may apply for a fall term, a spring term, or an academic year. The program carries full Yale course credit and counts as a term of enrollment. No prior Chinese language knowledge is required for Yale participants, although each student must take an appropriate level language course while enrolled in the program. All other courses are taught in English by Yale and Peking University faculty members. Further information about the program, the courses offered, and the application process can be found on the Web at www.yale.edu/iefp/pku-yale or in the Office of International Education and Fellowship Programs, 55 Whitney Avenue, third floor.


For description see under American Studies.
CGSC 150a, Brain and Culture. Bruce Wexler.

CGSC 409a, Language and the Brain. Bruce Wexler.

CHNS 110a, Elementary Modern Chinese I. William Zhou, Jianhua Shen, and staff. For description see under East Asian Languages & Literatures.

CHNS 120b, Elementary Modern Chinese II. William Zhou, John Montanaro, Jianhua Shen, and staff. For description see under East Asian Languages & Literatures.

CHNS 125b, Intensive Elementary Modern Chinese. Staff. For description see under East Asian Languages & Literatures.

CHNS 130a, Intermediate Modern Chinese I. Ling Mu, Rongzhen Li, and staff. For description see under East Asian Languages & Literatures.

CHNS 140b, Intermediate Modern Chinese II. Ling Mu, Rongzhen Li, and staff. For description see under East Asian Languages & Literatures.

CHNS 150a, Advanced Modern Chinese I. Rongzhen Li, Haiwen Wang, and staff. For description see under East Asian Languages & Literatures.

CHNS 151b, Advanced Modern Chinese II. Rongzhen Li, Haiwen Wang, and staff. For description see under East Asian Languages & Literatures.

ECON 120a or b, Introduction to the Chinese Economy. Dong Chen.

EENG 235a and 236b, Special Projects. Kumpati Narendra, Tso-Ping Ma.


INTS 365a/*PLSC 196a, Foreign Policy Analysis. Qingmin Zhang. For description see under International Studies.

MCDB 470a or b, Tutorial. Douglas Kankel. For description see under Biology.

MCDB 473a or b, Research. Mark Mooseker, L. Nicholas Ornston. For description see under Biology.

WGSS 340a, History of Feminist Thought. Margaret Homans, Laura Wexler.

YPKU 470a and 471b, Direct Enrollment in Peking University. Consult the program coordinator.

HTBA (50) Direct enrollment in a course offered by Peking University.
PERSIAN
(See under Near Eastern Languages and Civilizations.)

PERSPECTIVES ON SCIENCE
(See under Science.)

PHILOSOPHY

Director of undergraduate studies: Kenneth Winkler, 406A C, 432-1679, kenneth.winkler@yale.edu

FACULTY OF THE DEPARTMENT OF PHILOSOPHY

Professors
George Bealer, Seyla Benhabib, Susanne Bobzien, Jules Coleman, Stephen Darwall, Michael Della Rocca (Chair), Maurizio d’Entreves (Visiting), Keith DeRose, Tamar Gendler, John Hare, Karsten Harries, Verity Harte, Daniel Hausman, Laurence Horn, Shelly Kagan, Rae Langton (Visiting), Thomas McCarthy (Visiting), Thomas Pogge, Sun-Joo Shin, Lorenzo Simpson (Visiting), Steven Smith, Zoltán Szabó, Kenneth Winkler

Associate Professor
Katalin Balog

Assistant Professors
Troy Cross, Jonathan Gilmore, Jill North, Daniel Rothschild (Visiting), Barbara Sattler, Matthew Smith

Lecturers
Mihaela Fistioc, Itamar Francez, Gregory Ganssle

Courses numbered 100 through 199 are introductory. They are open to all students and have no prerequisites. Courses numbered 200 through 399 are intermediate. Some have prerequisites; others do not, and may be taken as a student’s first course in philosophy, though such a student should consult the instructor first. In general, it is a good idea to take a broadly based course in any area of philosophy before taking a specialized course.

Courses numbered 400 through 479 are seminars. These advanced courses are intended primarily for juniors and seniors, though other students may be admitted with the instructor’s permission. Undergraduates should be sure they have enough background to take such a course, including previous work in the same area of philosophy. Students with questions should consult the instructor.

THE PHILOSOPHY MAJOR

The Philosophy major requires twelve courses (including the prerequisites and the senior requirement) that collectively expose students to a wide range of philosophy and philosophers. The Philosophy curriculum is divided into three large groups: history of philosophy, metaphysics and epistemology, and ethics and value theory. In history of philosophy, majors are required to take (1) either the introductory sequence in philosophy (PHIL 125a and 126b) or both terms of Directed Studies, and (2) an additional, third course in history of philosophy. Majors must take two courses in metaphysics and epistemology and two courses in ethics and value theory. Majors must also take two seminars and satisfy the senior requirement as described below. Prerequisite to the major are two introductory or intermediate philosophy courses.
All courses in Philosophy count toward the twelve-course requirement. With approval from the director of undergraduate studies, courses offered by other departments may be counted toward the major requirements, though no more than two such courses will normally be allowed.

Specific regulations for the group requirements are as follows:
(a) Some introductory courses, including PHIL 115a, First-Order Logic, do not count toward a group requirement. Other courses count toward a group requirement unless they are otherwise designated.

(b) Courses automatically count toward the group under which they are listed in this bulletin. In rare cases, a course will be designated as counting toward a second group (though no single course can be counted by the same student toward two group requirements). In addition, students may petition to have a course count toward a group other than the one it is listed under in this bulletin, though the presumption will be against such petitions.

(c) Courses taken in other departments and applied to the major will not normally count toward a group requirement. Students may petition for credit toward a group requirement, though the presumption will be against such petitions.

Although it is not required, majors are strongly encouraged to take a course in logic, for example, PHIL 115a, and to do so before the end of the sophomore year. Logic is one of the essential tools in philosophy, and competence is assumed in intermediate and advanced classes, some of which require a background in logic as a prerequisite.

The senior requirement. The senior requirement is normally satisfied by completing a third philosophy seminar. Students taking a seminar to satisfy the senior requirement are expected to produce work superior in argument and articulation to that of a standard seminar paper. To this end, students taking a seminar for the senior requirement must satisfy additional requirements that are delineated in the syllabus or during the first class session, and that may include (1) additional readings, (2) submission of a complete draft of the final paper by the eighth week of the term that will then be significantly revised, and (3) one-on-one or small-group meetings with the instructor to discuss class material, the additional readings, and drafts in preparation. In special cases, students may meet the senior requirement through either a one-term or two-term independent project supervised by an instructor (PHIL 490). Students must petition to fulfill the senior requirement through an independent project, and approval is not guaranteed. Applicants must submit a proposal to the director of undergraduate studies, in consultation with an appropriate supervisor, by the end of the term prior to beginning the independent study.

Each major should, by October 1 of the junior year, secure the agreement of a member of the Philosophy department to serve as adviser for the year. The adviser aids the student in choosing courses and in planning for the senior year. All senior majors must have their schedules signed by the director of undergraduate studies.

PSYCHOLOGY TRACK IN PHILOSOPHY

The psychology track is designed for students interested in both philosophy and psychology. Prerequisite to the major in the psychology track are two courses in philosophy or psychology. Majors in the track must take seven courses in philosophy and five in psychology, for a total of twelve, including the prerequisites and senior requirement. The seven philosophy courses
must include (1) two courses in the history of philosophy, usually PHIL 125a and 126b or DRST 002, (2) two seminars, only one of which may be in the Psychology department, and (3) at least two courses at the intermediate or advanced level that bear on the intersection of philosophy and psychology, at least one of which must be a philosophy seminar. Courses satisfying (3) must be approved by the director of undergraduate studies. The five psychology courses must include PSYC 110a or b or its equivalent. Each major must also satisfy the senior requirement as described above for the standard major.

Students interested in philosophy and psychology should also consider the philosophy track in the Psychology department and the major in Cognitive Science.

OTHER MAJORS INVOLVING PHILOSOPHY

Majors in Mathematics and Philosophy and in Physics and Philosophy are also available. For information, see under those headings.

REQUIREMENTS OF THE MAJOR

Prerequisites:  
Standard track—any 2 intro or intermediate phil courses; Psychology track—any 2 courses in phil or psych

Number of courses: Both tracks—12 term courses, incl prereqs and senior req

Distribution of courses:  
Standard track—3 courses in hist of phil (incl DRST 002, or PHIL 125a and 126b), 2 in metaphysics and epistemology, and 2 in ethics and value theory; 2 phil sems; Psychology track—7 courses in phil, as specified; 5 in psych

Specific courses required:  
Standard track—PHIL 125a and 126b, or DRST 002; Psychology track—PSYC 110a or b or equivalent

Senior requirement: Both tracks—a third sem in phil, or substantial written work in a tutorial (PHIL 490)


INTRODUCTORY COURSES

PHIL 112b, Problems of Philosophy. Zoltán Szabó.  
MW 2.30-3.20, 1 HTBA  Hu (37)  
An introduction to philosophy, based on a reading of Bertrand Russell's Problems of Philosophy. Fundamental questions include the existence of matter, induction, a priori knowledge, universals, truth and falsehood, and the limits of inquiry. The aim of the course is to give a taste of philosophy and to show how one might approach its questions systematically.

PHIL 115a, First-Order Logic. Sun-Joo Shin.  
TTTh 10.30-11.20, 1 HTBA  QR (23)  
An introduction to formal logic. Study of the formal deductive systems and semantics for both propositional and predicate logic. Some discussion of metatheory.

History of Philosophy

TTTh 2.30-3.20, 1 HTBA  Hu (0)
An introduction to the main developments in ancient philosophy, beginning with the earliest pre-Socratics, concentrating on Plato and Aristotle, and including a brief foray into Hellenistic philosophy. *Intended to be taken in conjunction with PHIL 126b.*

**PHIL 126b, INTRODUCTION: MODERN PHILOSOPHY FROM DESCARTES TO KANT.** Keith DeRose.

*TTH 1.30-2.20, 1 HTBA Hu (26)*

An introduction to major figures in the history of modern philosophy, with critical readings of Descartes, Reid, Leibniz, Locke, Berkeley, Hume, and Kant. *Intended to be taken in conjunction with PHIL 125a although PHIL 125a is not a prerequisite.*

**Ethics and Value Theory**

**PHIL 175b, INTRODUCTION TO ETHICS.** Shelly Kagan.

*MW 10.30-11.20, 1 HTBA Hu (0)*

What makes one act right, and another wrong? What am I morally required to do for others? These are some of the questions raised in moral philosophy. The course examines four important attempts to answer them—the theories of Plato, Aristotle, John Stuart Mill, and Immanuel Kant. Consideration of the problem of free will, questions about moral education, and theories of practical reason.

**PHIL 176a, DEATH.** Shelly Kagan.

*MW 10.30-11.20, 1 HTBA Hu (0)*

There is one thing I can be sure of: I am going to die. But what am I to make of that fact? An examination of a number of issues that arise once we begin to reflect on our mortality. Consideration of the possibility that death may not actually be the end. Are we, in some sense, immortal? Would immortality be desirable? An attempt to get a clearer notion of what it is to die. And, finally, an evaluation of different attitudes to death. Is death an evil? Is suicide morally permissible? Is it rational? In short: how should the knowledge that I am going to die affect the way I live my life? Authors include Fischer, Perry, Plato, and Tolstoy.

**PHIL 178b, INTRODUCTION: POLITICAL PHILOSOPHY.** Thomas Pogge.

*TTH 10.30-11.20, 1 HTBA Hu (0)*

A survey of social and political theory, beginning with Plato and continuing through modern philosophers such as Rawls, Nozick, and Cohen. Emphasis on tracing the development of political ideas; challenges to political theories.

**PHIL 180a/PLSC 191A, ETHICS AND INTERNATIONAL AFFAIRS.**

Thomas Pogge.

*TTH 10.30-11.20, 1 HTBA Hu (0)*

Traditional questions about state conduct and international relations; more recent questions about intergovernmental agencies, nongovernmental organizations, and the design of global institutional arrangements.

**Intermediate Courses**

**History of Philosophy**

**PHIL 204b, KANT’S CRITIQUE OF PURE REASON.** Kenneth Winkler.

*TTH 1.30-2.20, 1 HTBA Hu (26)*

An examination of the metaphysical and epistemological doctrines of Kant’s *Critique of Pure Reason.*
Philosophy 509

**Phil 260a, American Philosophy.** Kenneth Winkler.  
**TH 1-2.15 Hu (0)**  
A survey of American philosophy from colonial times to the middle of the twentieth century. Topics include European justifications of colonization and conquest; the spiritualist metaphysics of Berkeley and Jonathan Edwards; slavery and abolition; and transcendentalism (Emerson, Thoreau). Particular attention to classical pragmatism, with readings in Peirce, James, Dewey, and their critics. Some discussion of recent reinterpretations of pragmatism by such writers as Quine, Richard Rorty, and Cornel West.

*Metaphysics and Epistemology*

**Phil 267aG, Mathematical Logic I.** Sun-Joo Shin.  
**TH 11.35-12.50 QR (0)**  
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Basic concepts of set theory are introduced. *Prerequisite: Phil 115a or permission of instructor.*

**Phil 268bG, Mathematical Logic II.** Sun-Joo Shin.  
**TH 11.35-12.50 QR (24)**  
A technical exposition of Gödel’s first and second incompleteness theorems and of some of their main consequences in proof theory and model theory, such as Löb’s theorem, Tarski’s undefinability of truth, provability logic, and nonstandard models of arithmetic. *Prerequisite: Phil 267a or permission of instructor.*

**Phil 270a, Epistemology.** Troy Cross.  
**MW 2.30-3.45 Hu (37)**  
A survey of historical and contemporary approaches to central questions in epistemology. Topics include skepticism, certainty, the nature of belief, justification, and knowledge.

**Phil 272b, Philosophy of Mind.** Katalin Balog.  
**TH 11.35-12.50 Hu (0)**  
A survey of contemporary issues in the philosophy of mind. Topics include arguments for dualism and physicalist responses, mental causation, the nature of intentional states, and the nature of qualitative states.

**Phil 276b, Metaphysics.** George Bealer.  
**TH 2.30-3.45 Hu (0)**  
An examination of central questions in metaphysics from historical and contemporary perspectives. Particular attention to ultimate ontological categories; the nature and existence of universals; the fundamental types of particulars and how they can remain identical in spite of undergoing change; and the realism or antirealism debate. *Prerequisite: Phil 115a or 267a or 268b.*

**Phil 278b, Scientific Explanation.** Daniel Hausman.  
**TH 1-2.15 Hu (26)**  
An attempt to define what a scientific explanation is. The history of scientific explanation and the main contemporary alternatives.

*Ethics and Value Theory*

**Phil 326a, The Philosophy of Religion.** Gregory Ganssle.  
**TH 9.25-10.15, 1 HTBA Hu (22)**  
A study of the relation between religion and ethics, traditional arguments for the existence of God, religious experience, the problem of evil, miracles, immortality, science and religion, and faith and reason.
PHIL 328b/G/EP&E 368b/G/PLSC 293b, European Political Thought from Weber to Derrida. Maurizio d'Entreves.
For description see under Political Science.

PHIL 334a/HUMS 265a, Philosophy of Architecture.
Karsten Harries.
MW 11.35-12.25, I HTBA Hu (o)
Architecture’s uneasy placement between art and everydayness. Topics include architecture and building, building and body, the architectural theory of the Enlightenment, the architectural sublime, ornament, modernism, and postmodernism. Authors include Vitruvius, Alberti, Laugier, Boullée, Goethe, Schopenhauer, Hegel, Semper, Ruskin, Nietzsche, Loos, and Heidegger.

PHIL 343b/HUMS 260b, Philosophy of Art.
Jonathan Gilmore.
MW 2.30-3.20, I HTBA Hu (o)
A broadly focused investigation into philosophical questions raised by art and literature. Topics include art and politics, the concept of art, censorship, expression, metaphor, autonomy, art and knowledge, museum display, audiences, high vs. low art, formalism, interpretation, evaluation, narrative, and style.

SEMINARS

History of Philosophy

★PHIL 400a/G/GREK 437a, Plato’s Parmenides. Verity Harte, Barbara Sattler.
W 3.30-5.20 Hu (o)
Reading and discussion of Plato’s Parmenides, in which a young Socrates faces challenges to his Theory of Forms by an older Parmenides, followed by a dialectical exercise that has attracted the interest of philosophers as diverse as Hegel and Ryle. Discussion of Plato’s thought and of Theories of Universals in general. Prerequisites: PHIL 125a or equivalent and intermediate Greek, or permission of instructor.

★PHIL 401b/G/CLCV 447b, Pleasure in Plato and Aristotle.
Verity Harte.
W 3.30-5.20 Hu (o)
Examination of Plato’s and Aristotle’s treatments of pleasure, including their opposition to hedonist identifications of pleasure as the good and their eventual concession that some pleasure has a place in the best human life. Consideration of the nature of pleasure, its value, and its place in moral theorizing. Readings in translation.

★PHIL 402b/G/CLCV 449b, Philosophy of Mathematics in Ancient Greece. Barbara Sattler.
T 3.30-5.20 Hu (o)
The status of mathematical knowledge and its basic notions and methods of demonstration in ancient Greek thought. Topics include reasons why geometry rose to a paradigmatic example of a scientific theory and of rationality in general; the relation of geometry and arithmetic; mathematical problems such as incommensurability; and mathematical notions such as infinity and continuity and their influence on the philosophy of the time. Texts from the Pythagoreans, Plato, Aristotle, and Euclid.

T 3.30-5.20 Hu (o)
A study of Hume’s epistemology and metaphysics and his science of human nature. Topics include our knowledge of space and time; inductive reasoning; the nature and representation of causation; the origin and justification of belief in an external world; personal identity; the normative bearing of naturalized epistemology; the explanation and justification of religious belief; and the attractions and limits of skepticism. Readings in Book I of *A Treatise of Human Nature, An Enquiry concerning Human Understanding*, and *Dialogues concerning Natural Religion*.

**PHIL 4044, KANT’S DOCTRINE OF ILLUSION.** Omri Boehm.

Th 3:30-5:20 Hu (o)
Kant’s *Critique of Pure Reason* culminates in the argument that human reason constantly deceives itself through “necessary illusions.” Evaluation of that argument through a close reading of the Critique’s Dialectic. Focus on Kant’s critique of Descartes’ *Cogito*; on the antinomies; and on Kant’s refutation of the proofs of the existence of God.

**PHIL 4058G/PLSC 2992G, HEGEL’S POLITICAL PHILOSOPHY.**

Steven Smith.
For description see under Political Science.

**METAPHYSICS AND EPISTEMOLOGY**

**PHIL 425bG, TOPICS IN PHILOSOPHY OF MIND.** Katalin Balog.

T 1:30-3:20 Hu (o)
Discussion of the explanatory gap, inverted spectrum, and conceivability arguments; different kinds of consciousness; the relationship between consciousness and attention; and physicalist and dualist accounts of consciousness.

**PHIL 426aG, APPEARANCE AND REALITY.** Troy Cross.

T 3:30-5:20 Hu (o)
An investigation of the nature of ultimate reality and the relations between the fundamental and the derivative. Theories of ultimate reality include physicalism, idealism, atomism, and monism. Dependence relations between the fundamental and the derivative include mereological composition, reduction, supervenience, and emergence.

**PHIL 427bG, PERSISTENCE AND POSSIBILITY.** Michael Della Rocca.

Th 1:30-3:20 (o)
An examination of what it is for an object to persist through time and to have certain properties necessarily or contingently. Attention to the application of these issues to the identity of persons. Other topics include temporal parts vs. spatial parts, the identity of indiscernibles, the nature of time, counterpart theory, essentialism. Readings drawn from classical sources (particularly Leibniz and Hume) and from contemporary sources including Kripke, Lewis, Parfit, van Inwagen, Adams, and Unger.

**PHIL 428bG, INTENSIONAL LOGIC.** Sun-Joo Shin.

T 3:30-5:20 (o)
Logical treatment of intensional constructions, particularly necessity and possibility. Various propositional and quantified modal systems and possible worlds semantics. Philosophical issues involved in modality, e.g., the identity puzzle, free logic, and modal skepticism.

**PHIL 429aG, PROBLEMS IN SEMANTICS: QUANTIFICATION.**

Itamar Francez, Zoltán Szabó.
W 1:30-3:20 Hu (o)
Problems of generality, using work on quantification from linguistics and philosophy. Analysis of generalizations such as *some*, *every*, *no*, *many*, *always*, *never*, and *occasionally*. Differences from the quantifiers employed in first-order logic; philosophical implications with respect to the problems of reference and existence. Topics include adverbial quantifying expressions not associated with particular nominals; constructional resources of various substitutional quantification; plurals, pronouns, unselective binding, domains of quantification, absolute generality, descriptions, and existentials.

**PHIL 430aG, PERSONAL IDENTITY.** Kenneth Winkler.
T 3:30-5:20 Hu (0)
The nature of persons, their unity, and the conditions of their identity over time. Readings in classical and contemporary sources, among them Locke, Hume, Shaftesbury, Butler, Reid, Bernard Williams, Derek Parfit, Charles Taylor, Sally Haslanger, and David Lewis. Consideration of the metaphysics of kinds; social construction; philosophical methodology; and the bearing of ethics on metaphysics.

**PHIL 431aG, MODALS AND CONDITIONALS.** Daniel Rothschild.
M 3:30-5:20 Hu (0)
The semantics and pragmatics of modals and conditionals. Topics include possible-world analysis of modality, different kinds of modality, Lewis-Stalnaker analysis of counterfactuals, indicative conditionals, non-truth-conditional analyses of modals and conditionals, Sobel sequences and reverse-Sobel sequences, and scope interactions with modals and conditionals.

**PHIL 432a, THE METAPHYSICS OF FICTION.** Mary Beth Willard.
T 1:30-3:20 Hu (0)
A systematic investigation into the philosophical issues at the intersection of metaphysics and aesthetics. Problems include, for example, the paradoxical statements that Sherlock Holmes is more famous than any living detective and Sherlock Holmes does not exist. The ontological status of fictional works, the role of the author and audience in the production of fiction, and the role of the imagination in the development of fiction. Readings from both historical and contemporary literature.

**Ethics and Value Theory**

**PHIL 450aG/EP&E 375a/PLSC 326aG, POLITICAL THEORY AND MEMBERSHIP.** Seyla Benhabib.
For description see under Political Science.

**PHIL 451bG, MORAL OBLIGATION.** Stephen Darwall.
T 7-8:30 P.M. Hu (0)
The concept, nature, and grounds of moral obligation. Focus on contemporary debates about the normativity of morality; some attention to historically important discussions, especially concerning Kant. Contemporary writings from Strawson, Nagel, Korsgaard, and Darwall.

**PHIL 452aG/HUMS 338a, BIOLOGY, EVOLUTION, AND CULTURE.** Jonathan Gilmore.
W 3:30-5:20 Hu (0)
A broad investigation into purported evolutionary and biological explanations for such cultural phenomena as language, morals, politics, and art.

M 1:30-3:20 Hu (0)
A case study that explores the relationship of architecture, reason, and the sacred. Focus on the epochal threshold that divides the theatrical culture of the baroque from our modern world picture.

**PHIL 454bG, THE MORAL THEORIES OF MOORE AND ROSS.**
    Shelly Kagan.
    W 1:30-3:20 (O)
    Most moral philosophers ground their accounts of ethics and value in matters “external” to ethics—theories of human nature, the human condition, or divine will, or general claims about the nature of reason and rationality. But in the early twentieth century a more “autonomous” approach to ethics was common—the appeal to moral intuition was primary—and this approach remains important today. A study of two great classics from this period: G. E. Moore’s *Principia Ethica* and W. D. Ross’s *The Right and the Good*. Prerequisite: a previous class in moral philosophy, or permission of the instructor.

**PHIL 455aG/EP&E 334a, NORMATIVE ETHICS.** Shelly Kagan.
    For description see under Ethics, Politics, & Economics.

**PHIL 456bG/EP&E 378b, TOPICS IN FEMINIST PHILOSOPHY.**
    Rae Langton.
    M 1:30-3:20 Hu (O)
    Selected contributions of feminist thinking to the topics of pornography and objectification. Main approaches from moral and political philosophy, with references to speech act theory and epistemology.

**PHIL 457aG/PLSC 283aG, RECENT WORK ON JUSTICE.** Thomas Pogge.
    T 7-8:50 P.M. Hu (O)
    In-depth study of one contemporary book, author, or debate in political philosophy, political theory, or normative economics.

    W 3:30-5:20 Hu (O)
    The globalization of a uniform monopoly patent regime through the TRIPS Agreement illustrates how strongly the design of global institutional arrangements affects the still vast mortality and morbidity among the poor. Exploration of the problem, and of ideas for improving access by the poor to essential medicines. Expert visitors from relevant disciplines.

**PHIL 459bG/PLSC 296bG, POLITICAL PHILOSOPHY AS EDUCATION.**
    Steven Smith.
    For description see under Political Science.

**PHIL 460aG, HERMENEUTICS, MULTICULTURALISM, AND COSMOPOLITAN CRITIQUE.** Lorenzo Simpson.
    Th 1:30-3:20 Hu (O)
    Affinities and conflicts between the philosophical traditions of hermeneutics and critical theory. The dispute between these traditions and that of postmodernism with respect to humanism and the possibility of cross-cultural dialogue, understanding, and critique.

**PHIL 461b/EP&E 372b, NORMATIVE ECONOMICS AND MORAL PHILOSOPHY.** Daniel Hausman.
    For description see under Ethics, Politics, & Economics.
TUTORIAL AND SENIOR ESSAY COURSES

**PHIL 480a or b, Tutorial.** Consult the director of undergraduate studies.

A reading course supervised by a member of the department and satisfying the following conditions: (1) the work of the course must not be possible to do in an already existing course; (2) the course must involve a substantial amount of writing, i.e., a term essay or a series of short essays; (3) the student must meet with the instructor regularly, normally for at least an hour a week; (4) the proposed course of study must be approved by both the director of undergraduate studies and the instructor.

**PHIL 490, The Senior Essay.** Consult the director of undergraduate studies.

The essay, written under the supervision of a member of the department, should be a substantial paper; a suggested length is between 12,500 and 15,000 words. It must be submitted by April 13 of the senior year.

GRADUATE, DIVINITY, AND LAW SCHOOL COURSES THAT COUNT TOWARD THE MAJOR

Some Graduate, Divinity, and Law School courses are open to qualified undergraduates with permission of the instructor and the director of graduate studies or the dean or registrar of the Divinity or the Law School. (See “Courses in the Yale Graduate and Professional Schools” in chapter III, section K.) With permission of the director of undergraduate studies, relevant Graduate, Divinity, and Law School courses may count toward the major. Course descriptions appear in the Graduate, Divinity, and Law School bulletins.

PHILOSOPHY AND MATHEMATICS

*(See under Mathematics and Philosophy.)*

PHILOSOPHY AND PHYSICS

*(See under Physics and Philosophy.)*

PHYSICS

Director of undergraduate studies: Peter Parker, 206B WNSL, 432-3601, dus.physics@yale.edu, www.yale.edu/physics, www.yale.edu/physics/undergrad

FACULTY OF THE DEPARTMENT OF PHYSICS

Professors

†Charles Ahn, Yoram Alhassid, Thomas Appelquist, †Charles Bailyn, O. Keith Baker, Charles Baltay, Scan Barrett, Cornelius Beausang (Adjunct), †Hui Cao, Richard Casten, †Richard Chang, †Paolo Coppi, David DeMille, †Michel Devoret, †Paul Fleury, Moshe Gai (Adjunct), Steven Girvin, Leonid Glazman, †Robert Grober, Martin Gutzwiller (Adjunct), John Harris, †Victor Henrich, Jay Hirshfield (Adjunct), Francesco Iachello, Dmitry Kharzeev (Adjunct), Steven Lamoreaux, William Marciano (Adjunct), Simon Mochrie, Vincent Moncrief, Peter Parker, †Daniel Prober, Nicholas Read, †Vladimir Rokhlin, Jack Sandweiss, †Robert Schoelkopf, Ramamurti Shankar, †A. Douglas Stone, Paul Tipton, †John Tully, Thomas Ullrich (Adjunct), C. Megan Urry (Chair), †Pieter van Dokkum, †John Wettlaufer, Michael Zeller
Physics forms a foundation for all other sciences. The various undergraduate courses and degree programs offered by the Physics department provide students with a thorough preparation in physics for any career. To satisfy the needs of science students and to provide the general background in physics that should be part of a liberal education, the department offers five different introductory sequences and two different degree programs for Physics majors. Combined majors are also available in mathematics and physics (see Mathematics and Physics), astronomy and physics (see Astronomy), and philosophy and physics (see Physics and Philosophy). Applied Physics is a closely related major (see Applied Physics).

**Introductory lecture courses with no calculus prerequisite.**

1. PHYS 110a or b (one term) is for students with little or no previous experience in physics who do not plan to major in the natural sciences. There is no mathematics requirement. PHYS 110a or b does not satisfy the medical school requirement.

2. PHYS 150a, 151b (two terms) is for students with little background in physics and mathematics who will probably not major in the physical sciences but who may be interested in the medical and biological sciences. There is no mathematics prerequisite other than high school mathematics, but MATH 112a and 115b should be taken concurrently.

**Introductory calculus-based lecture courses.**

1. PHYS 180a, 181b (two terms) is for students with some previous background in physics and mathematics who plan to major in the physical sciences. Calculus at the level of MATH 112a or b is a prerequisite; MATH 115a should be taken concurrently. It is suggested that MATH 120b be taken concurrently with PHYS 181b.

2. PHYS 200a, 201b (two terms) is for students with a strong background in mathematics and physics who plan to major in the physical sciences. Calculus at the level of MATH 115a or b is presumed. MATH 120a should be taken concurrently. It is suggested that MATH 222b or 225b be taken concurrently with PHYS 201b.

3. PHYS 260a, 261b (two terms) is intended for students who have had excellent training in and have a flair for mathematical methods and quantitative analysis; a solid foundation in physics is required. MATH 230 or the equivalent should be taken concurrently with PHYS 260a, 261b.

If students have the appropriate mathematics background, they are advised to take a calculus-based physics course. Sir Isaac Newton developed calculus while trying to describe the world around him; it is the natural language of physics. Students enrolled in one of the calculus-based introductory courses will be invited to a series of Chairman's Teas, which provide an opportunity to discuss topics on the frontiers of physics with faculty and peers.
Completion of a calculus-based course also prepares students for the 340-level series of advanced physics electives, which cover special topics of interest to both majors and nonmajors.

**Phys 150a, 180a, 200a, and 260a** meet at the same time so that students are easily able to change levels if necessary. Questions about placement should be addressed to the director of undergraduate studies.

*Introductory laboratories.* Two different introductory laboratory sequences are offered: **Phys 165La, 166Lb**, and the **Phys 205La or Lb, 206La or Lb** sequence. Each of these laboratory courses earns one-half course credit. Students normally take the laboratory courses associated with the introductory physics sequence in which they are enrolled. Students should register for a section of the appropriate laboratory course during the first week of classes by logging onto classesv2.yale.edu.

1. **Phys 165La, 166Lb** (two terms) is an introductory laboratory for students without a strong high school physics laboratory preparation. Related lecture courses are **Phys 150a, 151b**, and **Phys 180a, 181b**.

2. **Phys 205La or Lb, 206La or Lb** (two terms) is for students who plan to major in the physical sciences. Related lecture courses are **Phys 180a, 181b, Phys 200a, 201b**, and **Phys 260a, 261b**. Students who take the lecture courses in freshman year are advised to start this laboratory sequence with **Phys 205Lb** in the spring of freshman year, or with **205La** in the fall of sophomore year.

*Advanced electives.* A series of 340-level electives explores special topics of interest to both majors and nonmajors. The electives are open to any student in Yale College who has completed a year of introductory calculus-based physics (**Phys 180a, 181b**, or **200a, 201b**, or **260a, 261b**). The offerings for 2008–2009 include **Phys 342a**, Introduction to Earth and Environmental Physics, and **344b**, Quantum and Nanoscale Physics. Offerings anticipated for 2009–2010 include **Phys 341a**, Biological Physics, and **343b**, Gravity, Astrophysics, and Cosmology.

*Major degree programs.* Two different majors are offered in Physics: the B.S. and the intensive B.S. Students pursuing either degree acquire advanced training in physics, math, and related topics through the core courses. They use electives to design individualized programs with more depth or breadth, depending on their needs and interests. Both programs are excellent preparation for a wide variety of postgraduate activities, including professional school in business, law, or medicine; graduate school in engineering or other sciences; or careers in business, consulting, financial services, government service, or teaching.

The intensive B.S. program prepares students to study physics in graduate school. The intensive program is distinguished by depth of study in advanced physics courses; a research experience is expected. The director of undergraduate studies can help students in the B.S. program prepare for graduate school in physics by recommending appropriate electives to supplement the core courses.

Courses taken on a Credit/D/Fail basis may not be counted toward the requirements of the major.

*B.S. degree program.* The prerequisites are a calculus-based introductory lecture course sequence with a mathematics sequence equivalent to, or more advanced than, the corequisite of the physics sequence. The following three options are appropriate: **Phys 180a, 181b** with **Math 115a, 120b**; or **Phys 200a, 201b** with **Math 120a, 225b or 222b**; or **Phys 260a, 261b** with **Math...
230 or equivalent. In addition, the laboratory sequence PHYS 205La or Lb, 206La or Lb is required. Students who take these physics and mathematics courses starting in their freshman year may satisfy the prerequisites by the middle of their sophomore year. Students who begin taking physics courses in their sophomore year may also complete either the standard or the intensive B.S. Students are advised to take mathematics courses throughout their freshman year at the appropriate level.

Eight courses are required beyond the prerequisites. Students must take a mathematics course at the level of, or more advanced than, PHYS 301a. Three courses at the core of the major involve advanced study of fundamental topics common to all branches of physics, and must be taken in order. The first two, PHYS 401a and 402b, pertain to advanced classical physics (mechanics, statistical physics and thermodynamics, and electromagnetism), and the third, APHY 439a or PHYS 440b, covers quantum mechanics. Four additional advanced courses are required. Suitable advanced courses include the PHYS 340-level electives, advanced laboratories (PHYS 381La or 382Lb), and 400-level courses in Physics. Students with a strong background in course work are encouraged to complete a research project (PHYS 471a, 472b or equivalent). Students may also find suitable advanced courses in other departments in the sciences, engineering, and mathematics. Courses taken to satisfy these requirements must be approved by the director of undergraduate studies. In order to pursue their individual interests in sufficient depth, many students choose to take more than eight advanced courses.

**Intensive B.S. degree program.** The prerequisites for the intensive B.S. are the same as for the standard program. Ten courses are required beyond the prerequisites. Students must take a mathematics course at the level of, or more advanced than, PHYS 301a. Five courses at the core of the major involve advanced study of fundamental topics common to all branches of physics. Three of the courses pertain to advanced classical physics: mechanics (PHYS 410a), statistical physics and thermodynamics (PHYS 420a), and electromagnetism (PHYS 430b). Two other courses incorporate quantum mechanics (PHYS 440b and 441a). These courses must be taken in order because the ideas build progressively: PHYS 410a precedes 440b, which precedes 441a, 420a, and 430b.

Because experiment is at the heart of the discipline, the intensive B.S. program requires at least one term of advanced laboratory (PHYS 381La or 382Lb) and at least two terms of independent research (PHYS 471a, 472b or equivalent). One advanced elective course is required to complete the program. Suitable advanced courses include the PHYS 340-level electives, advanced laboratories (PHYS 381La or 382Lb), 400-level courses in Physics, and graduate courses in Physics. Students may also find suitable advanced courses in other departments in the sciences, engineering, and mathematics. Courses taken to satisfy these requirements must be approved by the director of undergraduate studies. In order to pursue their individual interests in sufficient depth, many students choose to take more than ten advanced courses.

**Senior requirement.** The senior requirement for both degree programs is fulfilled by receiving a passing grade on a research project in PHYS 471a, 472b (or equivalent) or on a senior essay. Students should consult the director of undergraduate studies for further information.

**Sequence of courses.** For both the B.S. and the intensive B.S. degrees, students are advised to begin the program in their freshman year to allow the greatest
amount of flexibility in course selection. It is possible, however, to complete either program in a total of six terms, as illustrated below.

A program for a student completing the Physics B.S. in three years might be:

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<thead>
<tr>
<th>Freshman or Sophomore</th>
<th>Sophomore or Junior</th>
<th>Senior</th>
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<tr>
<td>PHYS 180a, 181b, or 200a, 201b, or 260a, 261b PHYS 205Lb</td>
<td>PHYS 206La</td>
<td>APHY 439a or PHYS 440b</td>
</tr>
<tr>
<td>Mathematics corequisites</td>
<td>PHYS 301a</td>
<td>Three advanced electives</td>
</tr>
<tr>
<td></td>
<td>PHYS 401a</td>
<td></td>
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<td></td>
<td>PHYS 402b</td>
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<td></td>
<td>One advanced elective</td>
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</table>

A program for a student completing the intensive B.S. in three years might be:

<table>
<thead>
<tr>
<th>Freshman or Sophomore</th>
<th>Sophomore or Junior</th>
<th>Senior</th>
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</thead>
<tbody>
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<td>PHYS 206La</td>
<td>PHYS 441a</td>
</tr>
<tr>
<td>Mathematics corequisites</td>
<td>PHYS 301a</td>
<td>PHYS 420a</td>
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<td>PHYS 410a</td>
<td>PHYS 430b</td>
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<td>PHYS 440b</td>
<td>PHYS 471a</td>
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<td>PHYS 430b</td>
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<td></td>
<td>PHYS 472b</td>
<td>One advanced elective</td>
</tr>
</tbody>
</table>

Approval of programs. All Physics majors in the sophomore, junior, and senior classes must have their programs approved by the director of undergraduate studies. Freshmen and undeclared sophomores who are interested in Physics or related majors are encouraged to meet with the director of undergraduate studies to discuss their questions and proposed programs.

REQUIREMENTS OF THE MAJOR

B.S. DEGREE

Prerequisites: PHYS 180a, 181b, or 200a, 201b, or 260a, 261b, with appropriate math coreqs; PHYS 205Lb or Lb
Number of courses: 8 term courses beyond prereqs (not incl senior essay, if chosen)
Distribution of courses: 4 advanced electives approved by DUS
Specific courses required: PHYS 301a or other advanced math course; PHYS 401a, 402b, and either APHY 439a or PHYS 440b, in sequence
Senior requirement: Senior essay, or PHYS 471a, 472b or equivalent

INTENSIVE B.S. DEGREE

Prerequisites: PHYS 180a, 181b, or 200a, 201b, or 260a, 261b, with appropriate math coreqs; PHYS 205Lb or Lb
Number of courses: 10 term courses beyond prereqs (not incl senior essay, if chosen)
Distribution of courses: 1 advanced elective approved by DUS
Specific courses required: PHYS 301a or other advanced math course; PHYS 410a, 440b, 441a, 420a, 430b, in sequence; PHYS 381Lb or 382Lb; PHYS 471a, 472b or equivalent
Senior requirement: PHYS 471a, 472b or equivalent or, with DUS approval, senior essay

*PHYS 060b/APHY 060b/ENAS 060b, Energy Technology and Society. Paul Fleury.
For description see under Engineering & Applied Science.
PHYS 095a, RADIATION AND THE UNIVERSE. Peter Parker.

An exploration of nuclear physics in the cosmos and on Earth, without intense mathematics. Nuclei as the heart of matter and the cores of stars; nuclear reactions as they power the stars and are responsible for the existence of every element; the role of radioactivity in our lives, including nuclear medicine, X rays, nuclear power, nuclear weapons, and terrorism. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

PHYS 110a or b, DEVELOPMENTS IN MODERN PHYSICS.

110a: MW 2.30-3.45 QR, Sc (37) Daniel McKinsey
110b: MW 1-2.15 QR, Sc (36) Bonnie Fleming

An introduction to modern physics and quantitative reasoning. Topics include subatomic particles, electromagnetic waves, black holes, galaxies, and the fate of the universe. Study of the stages of descriptive modeling, with examples ranging from Newtonian physics to Einstein’s theory of relativity. See comparison of introductory sequences and laboratories in the text above.

PHYS 150a and 151b, GENERAL PHYSICS.

Lect. MWF 11.35-12.25; disc. HTBA QR, Sc (34)

An introduction to classical physics and to selected topics in modern physics. Emphasis on fundamental principles, with examples of practical applications to medicine and other fields. Fall-term topics include mechanics, thermodynamics, and wave motion. Spring-term topics include electricity and magnetism, optics, and modern physics. See comparison of introductory sequences and laboratories in the text above.

PHYS 165La and 166Lb, GENERAL PHYSICS LABORATORY.

Lect. MWF 11.35-12.25; disc. HTBA QR, Sc (34) O. Keith Baker [Sp]

A variety of individually self-contained experiments are roughly coordinated with the lectures in PHYS 150a, 151b, and 180a, 181b and illustrate and develop physical principles covered in those lectures.

PHYS 180a and 181b, ADVANCED GENERAL PHYSICS. Stephen Irons, C. Megan Urry [F], Sohrab Ismail-Beigi [Sp].

Lect. MWF 11.35-12.25; disc. 1 HTBA QR, Sc (34)

A broad introduction to classical and modern physics for students who have some previous preparation in physics and mathematics. Fall-term topics include Newtonian mechanics, gravitation, waves, and thermodynamics. Spring-term topics include electromagnetism, optics, special relativity, and quantum physics. Concurrently with MATH 115a or 120b or equivalents. See comparison of introductory sequences and laboratories in the text above. May not be taken for credit after PHYS 150a, 151b.

PHYS 200a and 201b, FUNDAMENTALS OF PHYSICS. Paul Tipton.

Lect. MW 11.35-12.50; disc. 2 HTBA QR, Sc (34)

A thorough introduction to the principles and methods of physics for students who have good preparation in physics and mathematics. Emphasis on problem solving and quantitative reasoning. Fall-term topics include Newtonian mechanics, special relativity, gravitation, thermodynamics, and waves. Spring-term topics include electromagnetism, geometrical and physical optics, and elements of quantum mechanics. Prerequisite: MATH 115a or b or equivalent. See comparison of introductory sequences and laboratories in the text above.
phys 205La or Lb and 206La or Lb, Modern Physical Measurement.
Volker Werner [F], John Harris [Sp].
3 HTBA For sections see classes.v2.yale.edu Sc 3 C Credit per term
Meets RP (0)
A two-term sequence of experiments in classical and modern physics for students who plan to major in Physics. In the first term, the basic principles of mechanics, electricity, and magnetism are illustrated in experiments designed to make use of computer data handling and teach error analysis. In the second term, students plan and carry out experiments illustrating aspects of wave and quantum phenomena and of atomic, solid state, and nuclear physics using modern instrumentation. May be begun in either term.

*phys 260a and 261b, Intensive Introductory Physics.
Charles Baltay.
MW 11.35-12.50 QR, Sc (34)
The major branches of physics—classical and relativistic dynamics, gravitation, electromagnetism, heat and thermodynamics, statistical mechanics, quantum physics—at a sophisticated level. For students majoring in the physical sciences, Mathematics, and Philosophy who have excellent training in and a flair for methodical methods and quantitative analysis. Concurrently with MATH 230, PHYS 301a, or equivalent.


phys 295a/ast 255a, Research Methods in Astrophysics.
Charles Bailyn.
For description see under Astronomy.

phys 301a, Introduction to Mathematical Methods of Physics.
Sean Barrett.
TTh 11.35-12.50 QR (24)
Topics include multivariable calculus, linear algebra, complex variables, vector calculus, and differential equations. Designed to give accelerated access to 400-level courses by providing, in one term, the essential background in mathematical methods. Recommended to be taken concurrently with phys 401a or 410a. Prerequisite: phys 180a, 181b, or 200a, 201b, or 260a, 261b, or permission of instructor.

[phys 341a, Biological Physics]

phys 342a/g&g 342a, Introduction to Earth and Environmental Physics.
Steven Lamoreaux.
TTh 2.30-3.45 QR, Sc (27)
An introduction to the basic physical processes that have shaped the Earth’s environment over time. Topics include the accretion of the nascent Earth, the evolution of the inner core, and the fundamental atmospheric, oceanic, and cryospheric dynamics that determine the state of the climate. Prerequisite: phys 180a, 181b, or 200a, 201b, or 260a, 261b, or permission of instructor.

[phys 343b/ast 343b, Gravity, Astrophysics, and Cosmology]

phys 344b, Quantum and Nanoscale Physics. David DeMille.
TTh 11.35-12.50 QR, Sc (24)
An introduction to cutting-edge developments in physics involving quantum information and/or nanotechnology. Background concepts in quantum mechanics, electromagnetism, and optics are introduced as necessary. Prerequisite: phys 180a, 181b, or 200a, 201b, or 260a, 261b, or permission of instructor. phys 301a or other advanced mathematics course recommended.
phys 381La, Experimental Research Studies I.  Andreas Heinz.
  Lab  MW 1.30-4.20  Sc  (0)
Laboratory experiments with some discussion of theory and techniques. An
advanced course focusing on modern experimental methods and concepts in
condensed matter physics. Intended to prepare students for independent
research. For majors in the physical sciences. Prerequisite: Phys 206La or Lb.
After or concurrently with phys 439a or 440b, or with permission of instructor.

phys 382Lb, Experimental Research Studies II.
  Richard Casten.
  Lab  MW 1.30-4.20  Sc  (0)
Laboratory experiments with some discussion of theory and techniques. An
advanced course focusing on modern experimental methods and concepts in
atomic and optical physics. Intended to prepare students for independent
research. For majors in the physical sciences. Prerequisite: Phys 206La or Lb.
After or concurrently with phys 439a or 440b, or with permission of instructor. Phys
381La is not a prerequisite.

phys 401a, Advanced Classical Physics: From Newton to
Einstein I.  Ramamurti Shankar.
  MW 11.35-12.50  QR, Sc  (34)
The first term of a two-term sequence in advanced physics as the field devel-
oped from the time of Newton to the age of Einstein. Topics include mecha-
nics, electricity and magnetism, statistical physics, and thermodynamics. The
development of classical physics into a “mature” scientific discipline, an idea
that was subsequently shaken to the core by the revolutionary discoveries of
quantum physics and relativity. Prerequisite: Phys 180a, 181b, or 200a, 201b,
or 260a, 261b. Concurrently with Phys 301a or other advanced mathematics course.

phys 402b, Advanced Classical Physics: From Newton to
Einstein II.  Ramamurti Shankar.
  MW 11.35-12.50  QR, Sc  (34)
Continuation of Phys 401a. Prerequisite: Phys 401a.

  MW 11.35-12.50  QR, Sc  (34)
An advanced treatment of mechanics, with a focus on the methods of Lagrange
and Hamilton. Lectures and problems address the mechanics of particles, sys-
tems of particles, and rigid bodies, as well as free and forced oscillations. Intro-
duction to chaos and special relativity. Prerequisite: Phys 180a, 181b, or 200a,
or 260a, 261b. Concurrently with Phys 301a or other advanced mathematics course.

phys 420a, Statistical Thermodynamics.  Simon Mochrie.
  MWF 10.30-11.20  QR, Sc  (33)
An introduction to the laws of thermodynamics and their theoretical explanation
by statistical mechanics. Applications to gases, solids, phase equilibrium, chem-
ical equilibrium, and boson and fermion systems. Prerequisites: Phys 301a and
410a or equivalents.

phys 430b, Electromagnetic Fields and Optics.
  Andreas Heinz.
  MWF 11.35-12.25  QR, Sc  (34)
Electrostatics, magnetic fields of steady currents, electromagnetic waves, and rela-
tivistic dynamics. Provides a working knowledge of electrodynamics. Prerequisites:
Phys 301a and 410a or equivalents.
Phys 439a/Phy 439dG, Basic Quantum Mechanics.
Sohrab Ismail-Beigi.
For description see under Applied Physics.

Phys 440b, Quantum Mechanics and Natural Phenomena I.
Karyn Le Hur.
MWF 10.30-11.20 QR, Sc (33)
The first term of a two-term sequence covering principles of quantum mechanics with examples of applications to atomic physics. The solution of bound-state eigenvalue problems, free scattering states, barrier penetration, the hydrogen-atom problem, perturbation theory, transition amplitudes, scattering, and approximation techniques. Prerequisites: Phys 410a or 401a, 402b.

Phys 441a, Quantum Mechanics and Natural Phenomena II.
Karyn Le Hur.
MWF 11.35-12.25 QR, Sc (34)
Continuation of Phys 440b. Prerequisite: Phys 440b.

Phys 448a/Phy 448aG, Solid-State Physics I.
Victor Henrich.
For description see under Applied Physics.

Phys 449b/Phy 449bG, Solid-State Physics II.
Charles Ahn.
For description see under Applied Physics.

Phys 460aG, Mathematical Methods of Physics.
Nicholas Read.
MW 9-10.15 QR (32)
Survey of mathematical techniques useful in physics. Physical examples illustrate vector and tensor analysis, group theory, complex analysis (residue calculus, method of steepest descent), differential equations and Green’s functions, and selected advanced topics. Prerequisite: Phys 301a or other advanced mathematics course.

Jack Sandweiss.
TTh 11.35-12.50 QR, Sc (24)
Basic theory of general relativity and the modern experiments that verify the theory. Experiments include lunar ranging, relativistic time delay (Cassini mission), deflection of light, and gravitational waves. Prerequisite: Phys 410a or equivalent.

*Phys 471a and 472b, Independent Projects in Physics.
Sean Barrett.
HTBA Meets RP (0)
Each student works on an independent project under the supervision of a member of the faculty or research staff. Students participate in a series of seminar meetings in which they present a talk on their project or research related to it. A written report is also submitted. For students with a strong background in Physics course work.

Physics and Astronomy
(See under Astronomy.)

Physics and Mathematics
(See under Mathematics and Physics.)
PHYSICS AND PHILOSOPHY

Prospective majors in Physics and Philosophy are advised to begin taking the prerequisites during their freshman year, and to take at least two of the required Philosophy courses by the end of their sophomore year. Prerequisites for this major are as follows: mathematics through calculus; any introductory Physics lecture sequence (except PHYS 110a or b), including PHYS 260a, 261b; PHYS 165La, 166Lb or the PHYS 205La or Lb, 206La or Lb laboratory sequence; one introductory Philosophy course.

Beyond the prerequisites, students take seven courses in Physics approved by the director of undergraduate studies and numbered 301 or higher, including (1) PHYS 301a or the equivalent, (2) PHYS 439a or 440b, and (3) PHYS 381La or 382Lb; and six courses in Philosophy or in History of Science, History of Medicine, including PHIL 125a and 126b, one course in logic above the introductory level, and a Philosophy seminar selected with the approval of the directors of undergraduate studies. Seniors must complete one of the following: (1) Physics senior essay; (2) PHYS 471a, 472b; (3) PHIL 490 (senior essay); (4) PHIL 480a or b (tutorial) in an appropriate subject; (5) an appropriate Philosophy seminar with the approval of the director of undergraduate studies in Philosophy.

Majors should consult Peter Parker (Physics), 206B WNSL, 432-3601, dusphysics@yale.edu, and Kenneth Winkler (Philosophy), 406A C, 432-1679, kenneth.winkler@yale.edu.

REQUIREMENTS OF THE MAJOR

Prerequisites: MATH 120a or b; PHYS 150a, 151b, or 180a, 181b, or 200a, 201b, or 260a, 261b; PHYS 165La, 166Lb, or 205La or Lb, 206La or Lb; 1 course in intro phil

Number of courses: 13 term courses beyond prereqs, not incl senior req

Distribution of courses: 7 Physics courses at level 301 or higher approved by DUS; 6 courses in Philosophy or History of Science, History of Medicine, incl 1 in logic above intro level and a Philosophy sem as specified

Specific courses required: PHYS 301a (or equivalent); 439a or 440b; 381La or 382Lb; PHIL 125a, 126b

Senior requirement: 1 from Physics senior essay, PHYS 471a and 472b, PHIL 490, PHIL 480a or b on appropriate topic, or approved Philosophy sem

POLISH

(See under Slavic Languages and Literatures.)

POLITICAL SCIENCE

Director of undergraduate studies: Susan Stokes, 124 Prospect St., 432-5236, susan.stokes@yale.edu

FACULTY OF THE DEPARTMENT OF POLITICAL SCIENCE

Professors
Bruce Ackerman, Akhil Amar, Seyla Benhabib, Paul Bracken, David Cameron, Fred Chernoff (Visiting), John Gaddis, Alan Gerber, Donald Green, Jolyon Howorth (Visiting), Statthys Kalyvas, Boris Kapustun (Visiting), Joseph LaPalombara (Emeritus), Jack Levy (Visiting), Roy Licklider (Visiting), David Mayhew, Barry Nalebuff, William Odom (Adjunct), Thomas Ogge, Douglas Rae, John Roemer, Susan Rose-Ackerman, Frances Rosenbluth (Chair), Bruce Russett, Nicholas Sambanis, Austin Sarat (Visiting), Kenneth Scheve, James Scott, Ian Shapiro, Stephen Skowronek, Steven Smith, Susan Stokes, Alec Stone Sweet, Peter Swenson, Ivan Szelényi, John Wargo, Elisabeth Wood
Associate Professors
Keith Darden, Bryan Garsten, Gregory Huber, Pierre Landry, Humberto Llavador (Visiting), Ellen Lust-Okar, James Vreeland

Assistant Professors
Christopher Blattman, Khalilah Brown-Dean, John Bullock, Daniel Butler, Seok-ju Cho, Ana De La O, Thad Dunning, Justin Fox, Susan Hyde, Sigrun Kahl, Adria Lawrence, Karuna Mantena, Andrew March, Nikolay Marinov, Paulina Ochoa Espejo, Ato Kwamena Onoma, Jun Saito, Vivek Sharma, Ebonya Washington

Senior Lecturer
David Smith

Lecturers
Ana Arjona, Graeme Auld, Paul Bass, Sarah Bermeo, Harry Blair, Alexandra Dufresne, Katja Favretto, Stanley Flink, Michael Fotos, Elizabeth Hanson, Cynthia Horan, Allison Kingsley, William Kissick, Matthew Kocher, Jean Krasno, Stephen Latham, Nomi Lazar, Colin Moore, Michael Murakami, Mark Oppenheimer, Danilo Petranovich, Arnd Plagge, Michael Shenkman, David Simon, John Bryan Starr, Daniel Tauss, Robin Theurkauf, Harry Wexler, Justin Zaremby

Students majoring in Political Science are expected to choose a member of the Political Science faculty as an adviser. Students are also encouraged to seek advice from other members of the department working in their particular field of interest. Majors must secure written approval of course selections each term from the adviser or another member of the department faculty. All subsequent changes in a student’s major program must also be approved. Seniors’ schedules must be approved by the director of undergraduate studies.

Students are urged to take the initiative in shaping a coherent program suited to their interests. If they intend to write a senior essay requiring substantial empirical analysis, students should plan to acquire sufficient training in statistics or other methods, as appropriate. Students should consult with their advisers frequently. The director of undergraduate studies and other members of the department can give advice about special programs or problems. Opportunities for two majors, study abroad, and work-and-study arrangements are normally discussed with the director of undergraduate studies.

The standard major. Eleven term courses of political science are required. (One term of DRST 003 may count as a political science course.) To fulfill the standard major’s distributional requirement, students must take two courses each in three of the five fields of political science—international relations, American government, political philosophy, analytical political theory, and comparative government. Students expecting to major in Political Science should take several introductory-level courses in the department early in their college careers. This allows a student to make an informed choice of a field for specialization. Introductory courses count toward the overall course requirement and toward the distributional requirement. Students are also urged to take related offerings in other departments. They may petition to have appropriate courses in other departments count toward the requirements for the major. College seminars count only when taught by a member of the Political Science faculty.

Senior requirement. Students majoring in Political Science are required to take at least two seminars taught by members of the Political Science department. One seminar must be taken in the senior year. Admission to seminars is at the instructor’s discretion. Students must complete a substantial paper,
as described in “Senior essays” below, in at least one class taken during the senior year, either a seminar or a course specifically designated for that purpose (PLSC 480a or b). Senior essays are due on the last day of classes in the term in which the essay is written. In order to graduate from Yale College, a student majoring in Political Science must achieve a passing grade on the senior essay by the end of the senior year.

**Seminar preregistration.** Political Science majors are given first preference for admission to department seminars. The department has instituted a preregistration system that allows instructors of seminars to preregister up to twelve majors prior to the start of each term. The system is administered by the office of the director of undergraduate studies. All majors are eligible to participate in the preregistration system.

**Senior essays.** The senior essay provides an appropriate intellectual culmination to the student’s work in the major and in Yale College. It should ordinarily be written on a topic in an area in which the student has previously done course work. It should rest on extensive research that is appropriate to the subject matter. The suggested length is approximately twenty-five double-spaced pages. Students must have their senior essay topic approved by a faculty member who has agreed to advise the essay at the beginning of the term in which the essay is written. The student should consult regularly with the seminar instructor or adviser.

**The yearlong senior essay.** Students who wish to undertake a more extensive research project than is possible in a single term may fulfill the senior requirement by enrolling in the two-term course sequence PLSC 490a, The Senior Colloquium, and 491b, The Senior Essay. In PLSC 490a students develop a research prospectus for the senior essay and begin their research. PLSC 490a counts as a seminar in the major. In PLSC 491b students write the essay under the supervision of a member of the faculty who specializes in the area being investigated by the student. Yearlong senior essays are expected to be substantially longer than a regular term paper. While there is no fixed length, yearlong essays are normally expected to be fifty to sixty pages in length. Yearlong senior essays are due on the last day of classes in the spring term.

**Admission to the yearlong senior essay.** Majors who wish to enroll in the yearlong senior essay apply for admission in the spring of their junior year. The deadline for the Class of 2010 is April 3, 2009. Students should submit to the office of the director of undergraduate studies: (1) a two-page statement of project, signed by a faculty adviser who has agreed to supervise the student’s essay, and (2) an up-to-date transcript. Normally a successful candidate will have at least an A– average in political science courses and a B+ average outside the major. It is expected that no more than fifteen students will be admitted.

**The major with an interdisciplinary concentration.** Students majoring in Political Science may choose an interdisciplinary concentration, which allows them to pursue an area of study that crosses conventional disciplinary and department boundaries. Examples of interdisciplinary concentrations are international studies, urban studies, health politics and policy, and political economy. Students choosing such a concentration are required to take twelve term courses toward the major, at least seven of which must be in the field of concentration. As many as three courses in the concentration may be taken in other departments. The courses selected from other departments must be
approved by the director of undergraduate studies. In addition to taking seven courses in their field of concentration, interdisciplinary concentration majors must take two courses in each of two other fields in the department. The senior requirement is the same as for the standard major, with the proviso that the essay must be written on a subject that falls within the field of concentration.

The intensive major. The intensive major gives students an opportunity to undertake extensive research on a topic of interest. To carry out this research, the student takes independent research courses in each of the last three terms. These include PLSC 474b, a directed reading and research course taken in the junior year, and PLSC 493, the yearlong senior essay course for intensive majors. All other requirements for the intensive major are identical to those for the standard major or interdisciplinary concentration major.

Admission to the intensive major. Juniors wishing to pursue an intensive major must apply to the director of undergraduate studies by November 21, 2008. Admission is based on performance and promise. The director of undergraduate studies and the prospective senior essay adviser serve as advisers to candidates for the intensive major in the junior year.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: Standard major—11 term courses; Interdisciplinary concentration—12 term courses
Distribution of courses: Standard major—2 courses in each of 3 fields; Interdisciplinary concentration—2 courses in each of 2 fields in addition to 7 in field of concentration
Substitution permitted: Standard major—relevant courses by petition to DUS; Interdisciplinary concentration—up to 3 courses in other depts with DUS approval; other courses by petition to DUS
Intensive major: 11 term courses; 2 courses in each of 3 fields; PLSC 474b; PLSC 493; Intensive major with interdisciplinary concentration—12 term courses as specified, up to 3 of which may be from other depts; PLSC 474b; PLSC 493
Senior requirement: 2 sems, 1 in senior year, and senior essay

INTRODUCTORY COURSES

PLSC 111a, Introduction to International Relations. Jolyon Howorth.
TH 11.35-12.25, 1 HTBA So (24)
World affairs in the unsettled aftermath of a half-century of Cold War traumas. The relative positions of the United States, Japan and Germany, Russia, China, and the Third World. The spread of capitalistic markets and democratic forms; nongovernmental activity across nation-state boundaries; and the precariousness of the status quo.

PLSC 113b, Introduction to American Politics. Daniel Butler.
TH 2.30-3.20, 1 HTBA So (27)
An introduction to American national government. Topics include the Constitution, American political culture, civil rights, Congress, the executive, political parties, public opinion, interest groups, the media, social movements, and the policy-making process.

PLSC 114a, Introduction to Political Philosophy. Steven Smith.
MW 11.35-12.25, 1 HTBA So (34)
A study of the first and most fundamental of all political concepts: the regime or constitution. Definitions of regime; how many kinds of regimes exist and which is best; what kinds of citizens different regimes produce; the major differences between ancient and modern conceptions of constitutional government. Readings from the works of Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, and Tocqueville.

**PLSC 116b, INTRODUCTION TO COMPARATIVE POLITICS.**  
Adria Lawrence.  
**MW 3:30-4:20, 1 HTBA  So (37)**  
Introduction to comparative political analysis. The state and its role in economic development, democracy and dictatorship, differences among democratic institutions, political parties, interest groups, social policy, political economy, economic reforms, and political participation and revolutions.

**PLSC 118b, THE MORAL FOUNDATIONS OF POLITICS.**  
Paulina Ochoa Espejo.  
**MW 10:30-11:20, 1 HTBA  So (33)**  
An introduction to contemporary discussions about the foundations of political argument. Emphasis on the relations between political theory and policy debate (e.g., social welfare provision and affirmative action). Readings from the works of Bentham, Mill, Marx, Rawls, Nozick, Rorty, MacIntyre, and others.

**INTERNATIONAL RELATIONS**

**PLSC 130b, RELATIONS BETWEEN INDUSTRIALIZED AND DEVELOPING COUNTRIES.** Sarah Bermeo.  
**MW 2:30-3:45  So (37)**  
The evolving nature of relations between industrialized and developing countries, beginning with the colonial era. Issues include trade, security, and the environment.

**PLSC 131bG, PHILOSOPHY OF THE SOCIAL SCIENCES AND INTERNATIONAL RELATIONS THEORY.** Fred Chernoff.  
**W 1:30-3:20  So (0)**  
A survey of foundational problems in the philosophy of the social sciences. The relationship of international relations theory to theories in the natural sciences, the humanities, and other social sciences; the nature of knowledge in international relations; the relationship of theory to policy, causation, and prediction.

**PLSC 132aG, THIRD PARTIES IN INTERNATIONAL CONFLICT MANAGEMENT.** Katja Favretto.  
**Th 3:30-5:30  So (0)**  
Issues related to third-party involvement in international conflicts: mediation, military coercion, economic coercion, military intervention, peacekeeping, and inaction. Assessment of why some interventions produce peaceful outcomes and others do not.

**PLSC 133bG, USE OF MILITARY FORCE IN INTERNATIONAL POLITICS.** Arnd Plagge.  
**M 1:30-3:20  So (0)**  
The use of military force in international relations, with emphasis on selected theoretical aspects of interstate wars and the historical development of warfare between nations.

**PLSC 134aG, AMERICA AT WAR.** Arnd Plagge.  
**M 1:30-3:20  So (0)**
Recent international conflicts in which the United States has played a major role: Afghanistan, Iraq, Iran, North Korea, Rwanda, Sudan, the “war on terror” (al-Qaeda), and the “war on drugs” (Colombia). Special attention to the historical context of these conflicts and their place in U.S. foreign policy.

**PLSC 139a/INTS 362a, Perspectives on International Law.**

Robin Theurkauf.

M 3.30-5.20 So (0)

The phenomenon of international law examined from the perspective of both international legal scholars and international relations theorists. Schools of thought include the New Haven school, legal positivism, and critical legal studies as well as classical realism, neorealism, and institutional and constructivist theories of international relations.

**PLSC 141a/EP&E 326a/INTS 360a, Ethics of Humanitarian Intervention.**

Robin Theurkauf.

W 3.30-5.20 So (0)

Exploration of key ethical dilemmas accompanying the practice of humanitarian intervention. Topics include ethical and political obligations of states to protect citizens of other states, justifications for “killing in order to save,” who can legitimately make the decision to intervene, and what criteria should guide humanitarian interventions in the twenty-first century.

**PLSC 147b, The United Nations and Collective Security.**

Jean Krasno.

W 3.30-5.20 So (0)

The role of the United Nations in global politics. Analysis of the workings of the UN Security Council, the General Assembly, the International Court of Justice, and other UN agencies, funds, and programs. Topics include the International Criminal Court, cases of UN peacekeeping, and the imposition of sanctions.

**PLSC 148a/INTS 376a, Central Issues in American Foreign Policy.**

Stuart Gottlieb.

For description see under International Studies.

**PLSC 152b/EP&E 366b, Global Firms and National Governments.**

Joseph LaPalombara.

M 1.30-3.20 So (0)

Challenges raised for political policy makers and governmental regulators and for managers of global corporations when the latter intend to make direct investments in foreign countries. Special attention to emergent exclusionary measures in advanced industrial countries.

**PLSC 157b/EP&E 379b/PHIL 458bG, Philosophy and Politics: Global Health.**

Thomas Pogge.

For description see under Philosophy.

**PLSC 159a, Africa in International Relations.**

David Simon.

MW 1-2.15 So (36)

The interactions of sub-Saharan African countries examined in the international sphere. Patterns of interactions within the continent, as well as those between Africa and the rest of the world. Topics include both political and economic relations, with special attention to relations between the United States and African peoples and countries.
M 3:30-5:20 So (0)
An investigation of U.S. national security policy making, the institutions for implementation of security policy, and the politics of providing capabilities for U.S. strategy in the contemporary epoch.

M 9:25-11:15 So (0)
The nature of Japan’s international relations and its foreign policy. The historical development of Japan’s international relations since the late Tokugawa period, World War II and its legacy, domestic institutions and foreign policy, implications for the United States, and interactions between nationalism and regionalism.

Th 1-2:15 So (26)
An introduction to international security. General theories of state interests and behavior; the causes, conduct, and regulation of violence among nations.

PLSC 166a, The New Europe. David Cameron.
Th 1-2:15 So (26)
The causes and possible consequences of several recent changes in Europe—the collapse of communist regimes and the end of the Cold War, the creation of market economies and democratic polities in central and eastern Europe, and development of the European Union.

MW 10:30-11:20, 1 HTRA So (33)
The relationship between globalization (primarily economic activity across national borders) and national, international, supernational, and transnational legal systems. Topics include global trade and the WTO, European integration, the new lex mercatoria, and corporate responsibility for violations of human rights and environmental law.

PLSC 170b/AFST 170b/ECON 327b, African Poverty and Western Aid. Christopher Blattman.
Th 9:25-10:15, 1 HTRA WR, So (22)
Assessment of reasons for Africa’s persistent poverty and violence. Theories of an African renaissance led by Western aid versus the inevitability of repeating the mistakes of the past. The politics and economics of poverty, aid, and growth in Africa.

MW 11:35-12:50 So (34)
The interrelationship of strategy, foreign policy, and technology as it has shaped international relations from Napoleon to the global information grid. Transformations arising from political change and technological advance. Topics include the role of “big” military organizations in the United States, Europe, and Asia; organizing for defense and intelligence; arms control; and the challenge of a second nuclear age.

PLSC 176a/HIST 261a, The Cold War. John Gaddis.
For description see under History.

PLSC 181b, South Asia in World Politics. Elizabeth Hanson.
Th 2:30-3:45 So (27)
Relations of the countries of South Asia—Afghanistan, Bangladesh, Bhutan, India, Pakistan, Nepal, and Sri Lanka—with each other and with the rest of the world. Broad issues of world politics, including problems of development and security that confront developing countries.

**PLSC 183bG, Europe, the United States, and the Iraq Crisis.**  
Jolyon Howorth.  
T 1.30-3.20 So (0)
Examination of the contrasting relations between the main European powers and the United States in their approaches to Iraq, in order to understand the divisions attending the 2003 war and the subsequent transfer of sovereignty. Topics include the Iran-Iraq War (1980–88), the first Persian Gulf crisis (1990–91), the sanctions regime (1991–2002), and the problems of peacekeeping and nation building.

W 3.30-5.20 So (0)
The evolution of the United Nations and its role in a post–Cold War international system both in preventive diplomacy, with its use of force for peacekeeping and peace enforcement, and in peace building.

**PLSC 186b/INTS 356b, International Political Economy.**  
Allison Kingsley.  
F 1.30-3.20 So (36)
Central theoretical perspectives and empirical debates in international political economy. Trade, monetary and financial systems, regional integration, multinational institutions, domestic political institutions, investment and capital markets, development, and globalization.

**PLSC 187b/INTS 373b, Terrorism and Counterterrorism.**  
Stuart Gottlieb.  
For description see under International Studies.

**PLSC 188a/INTS 361a, International Human Rights.**  
Elizabeth Brundige.  
For description see under International Studies.

**PLSC 191a/PHIL 180a, Ethics and International Affairs.**  
Thomas Pogge.  
For description see under Philosophy.

**PLSC 192b/INTS 314bG, Development of the International Human Rights Regime.** Robin Theurkauf.  
For description see under International Studies.

**PLSC 194b/INTS 320b, Religion in International Relations.**  
Robin Theurkauf.  
W 3.30-5.30 So (0)
Religion as a backdrop to international relations. Inter-religious tensions that have fueled conflict by inspiring terrorists; assumptions about modernization and secularization; alternative ways to model religious identity; theological categories such as sin and forgiveness, hospitality, salvation, and eschatology in religious traditions. Case studies include the end of the Cold War, the abolition of slavery, and the buildup to the Iraq War.

**PLSC 196a/INTS 365a, Foreign Policy Analysis.** Qingmin Zhang.  
For description see under International Studies.
**PLSC 197b, Formulation of American Foreign Policy.**
Roy Licklider.

W 1:30-3:20  So (36)
Analysis of how the U.S. government formulates and executes foreign policy, stressing roles of institutions and bureaucratic politics. The role of democracy in establishing policy.

**American Government**

**PLSC 201b, Psychology for the Study of Politics.**  John Bullock.

Th 11:35-12:25, 1 HTBA  So (24)
Examination of mental processes that underpin political judgments. The origins of political views, the influence of political parties and other groups, reactions to political news, common decision-making heuristics and biases, and causes and effects of political ignorance. Emphasis on the political thinking of ordinary citizens, with some attention to political elites.

**PLSC 204A/EP&E 211A, Ethics and the Media.**  Stanley Flink.

Th 1:30-3:20  So (0)
Critical thinking about the history, theory, and practice of responsible journalism. The New York Times, the Wall Street Journal, major news magazines, and network newscasts used as sources of ethical issues for discussion. Students act as an editorial board—informing themselves and each other about the challenges of ethical journalism, among them the role of the news media in the age of terrorism. The independence and competence of generic newsrooms are central issues.


Th 10:30-11:20, 1 HTBA  So (23)
The development and operations of the American presidency. Special attention to the political and constitutional evolution of the office, the modern executive establishment, and the politics of presidential leadership.

**PLSC 209B, The U.S. Congress.**  Michael Murakami.

Th 4-5:15  So (0)
Development of a detailed and critical understanding of the U.S. Congress, the primary democratic institution in the American political system. Focus on individual members of Congress, institutional features, the role of Congress within the larger separation-of-powers system, congressional elections, and the shaping of legislation.

**PLSC 211B, War and Trade in American Political Development.**  Colin Moore.

W 2:30-4:20  So (0)
War and trade as they have shaped American political institutions and domestic politics. Domestic consequences of war mobilization, sectional conflicts over trade policy, and international influences on welfare, race, and immigration policies.

**PLSC 212A, Democracy and Sustainability.**  Michael Fotos.

Th 1:30-3:20  So (0)
Democracy, liberty, and the sustainable use of natural resources. Concepts include institutional analysis, democratic consent, property rights, market failure, and common pool resources. Topics of policy substance are related to human use of the environment and to U.S. and global political institutions.

For description see under Environmental Studies.
**PLSC 217b, U.S. National Elections.** David Mayhew.

W 1:30-3:20 So (0)

An investigation of electoral realignments, voting for president and Congress, voter turnout, incumbency advantage, nominations, and campaign finance.

**PLSC 218b/ECON 275b, Public Economics.** Ebonya Washington.

For description see under Economics.

**PLSC 220b, Punishment, Politics, and Culture.** Austin Sarat.

M 1:30-3:20 So (0)

Connections between punishment and politics in the contemporary United States. Severity vs. leniency in punishment; justice vs. vengeance; the politization and racialization of punishment; responses to the pain of the victims of crime; forgiveness; expressions of punishment in popular culture.

**PLSC 221b, U.S. Immigration Law and Policy.** Alexandra Dufresne.

Th 3:30-5:20 So (27)

Major themes and controversies in American immigration law and policy, including admission and deportation of noncitizens, protection of asylum-seekers and refugees, illegal immigration, strategies of immigration law enforcement, constitutional limits on executive power, the role of administrative agencies and federal courts, and civil rights of noncitizens before and after 9/11. Emphasis on legal reasoning and analysis. Recommended preparation: PLSC 113b and 233a.

**PLSC 223b/AFAM 332b, Ethnic Politics in the United States.** Khalilah Brown-Dean.

Th 10:30-11:20, 1 HTBA So (0)

The impact of ethnic and racial group identity on political behavior in the United States. Political experiences of major ethnic and racial groups, including Irish, Italian, Asian, Jewish, Native, African American, Latino, and Muslim. Policy issues include immigration, education, and housing.

**PLSC 224b, Political Leadership.** Stephen Skowronek.

T 1:30-3:20 So (0)

Political leadership as a concept and as a practice. Survey of classic works by Machiavelli, Carlyle, Weber, Lenin, and Schumpeter. Party leadership distinguished from executive, revolutionary, and reform leadership. Issues include the conundrum of “democratic leadership” and the role of narrative in leadership.

**PLSC 226b, Parties and Elections.** David Mayhew.

Th 10:30-11:20, 1 HTBA So (23)

A survey of electoral history, party ideologies, party competition, campaigns, turnout, voter coalitions, congressional and presidential elections, Southern politics, and policy making.

**PLSC 228b, Perspectives on the City.** Harry Wexler.

T 5:30-7:20 So (0)

Introduction to the range of disciplines and methods appropriate to exploring the character and evolution of cities. Each week a scholar from a different field discusses that discipline’s approach and methodology in its study of urban life. Enrollment limited to sophomores.

**PLSC 233a, Constitutional Law.** Akhil Amar.

MW 9-10:15 So (32)
An introduction to the main themes of the American Constitution—popular sovereignty, separation of powers, federalism, and rights—and to basic techniques of constitutional interpretation. Special emphasis on the interplay of constitutional text, judicial doctrine, and constitutional decision making outside the judiciary.

**plsc 236a/ep&e 306a/socy 337a**, Urban Poverty and Policy. Ivan Szelenyi.
For description see under Sociology.

F 1.30-3.20 So (0)
Americans’ views on political issues and the extent to which their views influence, and are influenced by, elected officials. Special attention to opinion polarization, the roles of political knowledge and partisanship, and the effects of public opinion on legislators. Online datasets help answer questions about politics and public opinion.

**plsc 240b**, Public Schools and Public Policy. John Bryan Starr.
T 3.30-5.20 So Meets RP (0)
Exploration of policy options on controversial education issues. Case studies from both districts and states. Preference to students with training and experience in national, state, and local public policy.

Th 1.30-3.20 So (0)
Alternative approaches to urban politics and political economy. Application of theories to contemporary policy issues such as policing, metropolitan disparities, and inner-city revitalization.

Th 1.30-3.20 So (0)
Economic and political forces in systems for financing and delivering health care from the early twentieth century to the present. Topics include the failure of the universal health security legislation of the 1990s, managed care, the quality of health care delivery, rising costs, and declining health insurance coverage. Particular attention to the distinctive economics of health care and insurance markets and how they illuminate the politics of medicine.

MW 9.35-10.15, 1 HTBA So (32)
The theory and practice of crime and punishment in contemporary America from the standpoint of politics and political theory and in light of debates about empirical evidence, the politicization of crime, civil rights issues, abortion, psychiatry and the law, and arguments about punishment and prison reform.

Th 1.30-3.20 So (0)
The origins and development of American political institutions, especially in relation to how institutions shape the policy process. Issues of temporality, policy feedback, and policy substance.

TTh 9-10.15, 1 HTBA WR, So (22)
The treatment by American law of major issues in contemporary biomedical ethics: informed consent, assisted reproduction, abortion, end-of-life care, research on human subjects, stem cell research, and public health law. Readings include legal cases, statutes, and regulations. No background in law assumed.

**plsc 260a, PUBLIC SCHOOLS AND POLITICS.** John Bryan Starr.

T 3.30-5.20 So Meets RP (o)

Investigation of how political decisions that affect public schools are made at local, state, and federal levels. Case studies from both districts and states. Preference to students with training and experience in national, state, and local politics.

**plsc 264b, BIG CITY POLITICS IN AMERICA: NEW YORK, LOS ANGELES, CHICAGO.** Cynthia Horan.

Th 3.30-5.20 So (o)

A theoretical and empirical examination of how globalization and responses to globalization are changing the politics of New York, Los Angeles, and Chicago. Topics include economic restructuring, government reorganization, transformations of urban space, immigration, racial conflicts, and grassroots mobilizations.

**plsc 266b, CLASSICS OF POLITICAL JOURNALISM.** Mark Oppenheimer.

W 2.30-4.20 So (o)

The history of political writing by American journalists, with emphasis on lasting works of literature. Ways that journalists have represented the political process; narratives that have come and gone over time. Authors include H. L. Mencken, Murray Kempton, Walter Lippmann, David Halberstam, Hunter S. Thompson, Garry Wills, Rick Perlstein, and Timothy Crouse.

**plsc 269a, EXECUTIVE STAFF IN AMERICAN GOVERNMENT.** Michael Shenkman.

M 1.30-3.20 So (o)

The invisible government behind elected officials and high appointees. Staff structures in the White House, congressional offices, and judicial chambers. What these staffs do, how they work, and what lessons can be drawn from them about useful staff structures.


For description see under International Studies.

**plsc 276bG/AMST 433b, AMERICAN POLITICAL THOUGHT.**

Stephen Skowronek.

W 3.30-5.20 So (o)

American political thought examined through the ideas of people actively engaged in U.S. government and politics. The development of ideas about the uses of power and the proper distribution of authority. How new ideas about American government are generated in response to changing political conditions; how a tradition of thought emerges out of the appropriation and redeployment of ideas from the past.

**plsc 277b, POLITICS AND THE NEW MEDIA.** Paul Bass.

M 1.30-3.20 So (o)
A study of changes taking place in contemporary American journalism. The impact of these changes on government and political campaigns.


TTH 10.30-11.20, 1 HTBA  So (23)

POLITICAL PHILOSOPHY

*PLSC 280b, POVERTY, POLITICS, AND POLICY IN THE AMERICAN CITY.
Cynthia Horan.
W 1.30-3.20  So (o)
Examination of how politics, especially local politics, informs the formulation and implementation of policies to address urban poverty. Alternative explanations for poverty and alternative government strategies; successful and unsuccessful interventions. Focus on efforts of local organizations and communities to improve their situations within the context of government actions.

PLSC 281a/RLST 273a, MORAL, RELIGIOUS, AND SOCIAL ISSUES IN BIOETHICS. David Smith.
TTH 10.30-11.20, 1 HTBA  So (23)
A selective survey of issues in biomedical ethics. Comparison of different points of view from which the issues are approached, including religious vs. secular and liberal vs. conservative. Special attention to issues in research and at the beginning and end of life.

*PLSC 283a/PHIL 437a, RECENT WORK ON JUSTICE. Thomas Pogge.
For description see under Philosophy.

PLSC 284a/HUMS 341a, DEMOCRATIC RHETORIC: DEMAGOGY, PERSUASION, AND DELIBERATION. Bryan Garsten.
TTH 10.30-11.20, 1 HTBA  So (o)
Political problems surrounding the democratic practice of persuasion. Readings from classic texts of political thought, recent writings on deliberative democracy, and reflections on contemporary rhetoric, including rhetoric of the ongoing presidential campaign.

TTH 2.30-3.45  So (o)
Study of ways in which freedom, justice, and religious convictions may conflict with or reinforce each other. Fundamental issues of political philosophy viewed within the context of policy and philosophical arguments in bioethics.

*PLSC 287b/EP&E 411b, DEMOCRACY AND DISTRIBUTION. Ian Shapiro, Michael Graetz.
T 3.30-5.20  So (o)
An examination of relations between democracy and the distribution of income and wealth. Particular attention to the ways in which different classes and coalitions affect, and are affected by, democratic distributive politics. Open to juniors and seniors.
PLSC 288a/G/EP&E 338a/HUMS 373a, Postcolonial Political Thought. Karuna Mantena.
T 7-8:30 P.M. Hu, So (O)
Study of the writings of Mahatma Gandhi and Frantz Fanon, with some attention to more recent postcolonial theory. Consideration of how Gandhi and Fanon conceived of politics in the aftermath of colonialism; examination of their critical engagement with central questions of political theory, such as universality and freedom, revolution and history, progress, and emancipation. The relationship of European politics and ideas to the aspirations for and experience of freedom in the non-Western world.

PLSC 290a/HUMS 302a/SCY 151a, Foundations of Modern Social Theory. Ivan Szelenyi.
For description see under Sociology.

PLSC 291a, Nationalism and Patriotism. Danilo Petranovich.
Th 1:30-3:20 So (O)
The philosophical foundations of the modern doctrine of nationalism, and its relationship with the older sentiment known as patriotism. The intellectual underpinnings of nationalism and patriotism.

PLSC 292b, Chinese Political Philosophy. Daniel Tauss.
Th 1-2:15 So (O)
The foundations of Chinese thought as political discourse. Emphasis on the “Hundred Schools” thinkers of the Warring States period. Discussion of the issues in their initial historical context, later use in imperial China, and potential application in contemporary circumstances. Readings include texts of the Confucian, Mohist, Daoist, Legalist, and Militarist canons. No knowledge of Chinese required.

For description see under Ethics, Politics, & Economics.

PLSC 295a, Democracy, Statesmanship, and Greatness. Danilo Petranovich.
Th 3:30-5:20 So (O)
A study of great democratic statesmen as a means to explore the possibility of individual human flourishing in modern democracy. Examples of modern democratic leadership in response to the charge that mass democratic societies can breed uniformity, timid souls, and average ambitions.

PLSC 296b/G/PHIL 459b/G, Political Philosophy as Education. Steven Smith.
M 1:30-3:20 WR, So (O)

For description see under Ethics, Politics, & Economics.

PLSC 299a/G/PHIL 405a/G, Hegel’s Political Philosophy. Steven Smith.
T 9:25-11:15 WR, So (O)
A close reading of Hegel’s principal work of political philosophy, *Elements of the Philosophy of Right*, with special attention to his theory of the state, war, and international relations. Hegel’s legacy and interpretations of his thought by Marx, Kojève, and Pippin.

**PLSC 301a, Authority and Legitimacy.** Paulina Ochoa Espejo.

MW 9-10.15 So (0)

Examination of the concept of legitimate authority, focusing on how the writings of important political philosophers relate to both historical and contemporary political problems.

*PLSC 303a/INTS 312a, Limiting Rights.** Nomi Lazar.

For description see under International Studies.

*PLSC 305b/EP&E 353b/INTS 363b, Critique of Political Violence.** Boris Kapustin.

For description see under Ethics, Politics, & Economics.

**PLSC 306a, Sovereignty.** Paulina Ochoa Espejo.

M 2.30-4.20 So (0)

The history of the concept of sovereignty, including current debates over its meaning in political philosophy, international relations, and jurisprudence. Discussion of how these debates relate to both historical and contemporary political problems.

*PLSC 308a/INTS 322a, Multiculturalism: Theory and Practice.** Nomi Lazar.

For description see under International Studies.

*PLSC 312a/INTS 369a/RSEE 385a, Moral Values in Civil Society.** Boris Kapustin.

For description see under International Studies.


For description see under Ethics, Politics, & Economics.

**PLSC 315a, Analyzing Political Concepts.** Andrew March.

MW 2.30-3.45, 1 HTBA So (37)

An introduction to the study of political concepts, beginning with the problem of using language and ideas in political discourse. Theoretical discussions of the “essential contestability” thesis and the critical response to it. Detailed analysis of ways in which core political concepts have been defined, used, and mobilized for philosophical and ideological purposes. Introduction to schools, trends, genres, and discourses within political theory.


For description see under Ethics, Politics, & Economics.

*PLSC 324a/G/EP&E 339a/HUMS 348a, Representation.** Bryan Garsten.

T 1.30-2.20 So (0)

A historical survey of political thought about the principles of representative government. Topics include the prehistory of representation in ancient Athens and Rome; medieval, early modern, and Enlightenment theories, including those debated after the American and French revolutions; and recent debates on representation in the United States and the European Union.
PLSC 326a/G/PHIL 450a/G, POLITICAL THEORY AND MEMBERSHIP. Seyla Benhabib.
W 2:30-4:20 So (0)
Political membership, such as citizenship and migration, under conditions of deep transformations in nation-states. The meaning of citizenship today; the rights of citizens compared with those of migrants; gender as an aspect of citizenship and migration.

PLSC 328b/HUMS 331b, THE INTELLECTUAL IN POLITICS. Justin Zaremby.
Th 1:30-3:20 So (0)
The evolving place of the intellectual in political life. Survey of various ideas about what intellectuals do; examination of the roles that intellectuals have played in politics throughout history. Topics include recent lamentations over the death of the so-called public intellectual and the responsibility of the intellectual in American political life today. Readings include works by Plato, Foucault, Arnold, Emerson, Zola, and Said.

PLSC 329a/G/RLST 197a/G, ISLAMIC LAW AND ETHICS. Andrew March.
Th 2:30-4:30 So (0)
Introduction to Islamic legal and ethical thought for advanced students of ethics, law, or political philosophy. The history of (Sunni) Islamic jurisprudence and positive law; doctrines and debates on the epistemic status of legal-ethical knowledge and the hermeneutical and analytic methods for deriving it; study of a substantive problem in Islamic legal and ethical thought.

ANALYTICAL POLITICAL THEORY

PLSC 341b/EPE 328b, POSITIVE POLITICAL THEORY. Humberto Llavador.
M 9:25-11:15 So (32)
Introduction to rational choice theory and game theory in political science. Exploration of game theoretic analysis of political outcomes and citizen welfare under alternative institutions. Topics include campaign strategies and voting behavior in elections, legislative politics, representation and distribution, and international bargaining.

PLSC 343b/ECON 473b/EPE 352b, EQUALITY. John Roemer.
For description see under Ethics, Politics, & Economics.

PLSC 345b/EPE 345b, WELFARE ECONOMICS, SOCIAL CHOICE, AND POLITICAL PHILOSOPHY. Susan Rose-Ackerman.
For description see under Ethics, Politics, & Economics.

PLSC 346b, DEVELOPMENT AND DEMOCRACY: RESEARCH COLLOQUIUM. Susan Stokes.
W 1:30-3:20 So (0)
Students design and carry out research on development, democracy, and other topics. Focus on the developing world. Priority to students who have completed PLSC 421b and related summer research.

PLSC 347b/AFST 347b, POST-CONFLICT POLITICS. David Simon.
MW 1-2:15 So (36)
Case studies of countries emerging from domestic conflict. Challenges such as demobilizing ex-combatants, attaining balance between punishment and reconciliation, reintegrating refugees, fighting poverty, reconstructing the economic
infrastructure, and establishing a political process that minimizes the risk of a relapse into conflict.

**PLSC 348b/SOCY 148b, Varieties of Capitalism.**  Ivan Szelenyi.
For description see under Sociology.

**PLSC 349b, Political Economy of Civil War and Terrorism.**  Christopher Blattman.
F 9.25-11.15 So (O)
Economic tools and logic that can be applied to the study of conflict and terror. The prevalence of civil war in the world; the logic of government repression and terrorist attacks; the long-term consequences of war, violence, and terror.

**Comparative Government**

**PLSC 350b/G, The Dynamics of Russian Politics.**  William Odom.
T 2.30-4.20 So (O)
Consideration of the question, whither Russia? with emphasis on comparative analytic concepts. Issues of political stability, constitutionalism, and institutions for political participation and governing examined in light of contemporary events and of the Soviet legacy.

**PLSC 352b/FILM 318b, Politics and Film.**  Stathis Kalyvas.
MW 2.30-3.45; screenings HTBA Hu, So (O)
A study of political development combining three types of material: films, historical case studies, and theoretical studies. Topics include nation and state formation, democracy and authoritarianism, decolonization and state building in the periphery, distributional conflicts, revolution, civil war, and genocide. Films include The Leopard, The Grand Illusion, The Battle of Algiers, and The City of God. Attention to the historical background of events depicted in the films and to theories that attempt to explain the general class of events depicted. Recommended preparation: PLSC 116b.

**PLSC 354b*/EP&E 342b, The European Union.**  David Cameron.
M 1.30-3.20 So (O)
An examination of the history, institutions, and policy-making processes of the European Union. Topics include theories of European integration, the creation of the single market and the euro, the eastward enlargement of the European Union, and the so-called democratic deficit.

**PLSC 356a/AFST 356a/INTS 326a, Collective Action and Social Movements.**  Elisabeth Wood.
TTH 2.30-3.20, I HTBA So (O)
The emergence and evolution of various forms of protest, including strikes, demonstrations, and revolutions. Case studies include the civil rights movement, the women’s movement in the United States, and social movements in Central America, South Africa, and elsewhere. Theoretical approaches range from ethnographic to mathematical models.

**PLSC 359a/INTS 324a, Violence and Civil Strife.**  Stathis Kalyvas.
MW 2.30-3.45 So (37)
An examination of political violence with an emphasis on civil wars, presently the dominant form of war.

**PLSC 365b/SLAV 207b/G, Languages and Politics.**  Robert Greenberg.
For description see under Slavic Languages & Literatures.
∗PLSC 366b, European Politics. David Cameron.
        W 1:30-3:20  So  (0)
Comparison of the political systems of the major European countries. Topics
include political institutions, electoral politics and political parties, public poli-
cies, and contemporary problems.

∗PLSC 368b/∗EPE 344b, Global Politics. Stathis Kalyvas.
        T 1:30-3:20  So  (0)
Topics in international politics, political sociology, contemporary history, secu-
rity studies, and political economy. Development of broad analytic and synthetic
skills by studying the politics of international aid, food production, environ-
mental management, global governance, state failure, or terrorist threats.

        M 9:25-11:15  So  (0)
Japan’s political institutions and their effect on the policy-making process. Japan’s
emerging role in the world political economy.

PLSC 380a, Paradigms of Political Economy. Ana De La O.
        TTh 1-2:15  So  (26)
The relationships between individuals and society and between markets and the
state. Analysis of liberal, neoclassical, Marxist, sociological, institutional, and new
institutional perspectives on these relationships.

PLSC 385b/AFST 385b, Introduction to African Politics.
        Ato Kwamena Onoma.
        WF 4-5:15  So  (37)
Themes in contemporary African politics, focusing on Botswana, Kenya, and
Ghana. Analysis of social scientific and literary texts as well as films.

∗PLSC 387b, Rebels in Civil Wars. Ana Arjona.
        T 9:25-11:15  So  (0)
The origins and behavior of rebel groups from Latin America, Africa, the Middle
East, and Asia, focusing on insurgent groups and militias fighting in civil wars.
Internal organization of rebel groups; recruitment of new members; behavior
toward civilian populations; the dynamics of armed conflict. Readings include
case studies, comparative analyses, and human rights reports.

        W 7-8:50 P.M.  So  (0)
Evaluation of research on public opinion in China since the 1990s. Substantive
and theoretical debates that survey-based literature has generated; practical use of
these data sources in students’ work.

PLSC 394a, Introduction to Middle East Politics.
        Ellen Lust-Okar.
        MW 10:30-11:20, 1 HTBA  So  (33)
An overview of politics in the Middle East and North Africa, with particular
attention to state formation, Islam, oil, and the Arab-Israeli conflict as they influ-
ence regime type, political stability, and economic development.

∗PLSC 401b/∗EPE 321b, Promoting Democracy in Developing
        Countries. Harry Blair.
        T 1:30-3:20  So  (0)
Western efforts to promote democratization in developing countries in the past
fifteen years through foreign aid programs. Emphasis on “applied democracy”—
putting theory into action.

**TTh 1-2.15  So  (0)**

Various forms of electoral contestation and their consequences, both in established democracies and in newly democratizing regimes. Theory and practice of representation, development of party organizations and campaign styles, prevention of corruption and electoral frauds, and methods of translating popular votes into seats.


Ato Kwamena Onoma.

**M 3:30-5:20  So  (0)**


*PLSC 404b/*INTS 313b, Order and Disorder in Politics.

Matthew Kocher.

**T 3:30-5:20  So  (0)**

An interdisciplinary approach to the problem of order, drawing on texts from political theory, international relations, sociology, comparative politics, history, and economics. Inquiry into both constitutive and causal questions, addressing what order is as well as what causes, sustains, and degrades it.

*PLSC 405a/*ANTH 389a/*EVST 389a/*F&ES 389a, Agriculture, Farmers, Food: Foundational Matters.  James Scott.*

**TTh 3:30-5:20  So  (0)**

A foundational introduction to the study of agriculture, food, and farming. Background knowledge in preparation for work along more specialized lines.

*PLSC 407a/*INTS 387a, The Politics of Nationalism and Ethnicity.  Matthew Kocher.*

For description see under International Studies.

*PLSC 411a, Politics and the Postcolonial State in South Asia.

Karuna Mantena.

**TTh 2:30-3:45  So  (27)**

Introduction to politics and state formation in postcolonial South Asia (India, Pakistan, Sri Lanka, Bangladesh, and Nepal). Questions include the legacy of partition and colonial experience in shaping state formation; why states in the region have been prone to democracy and/or authoritarianism; sources of political instability in the region (e.g., secession, ethnonationalist or religious conflict, economic inequality, agrarian unrest).

*PLSC 415b/INTS 389b/SOCY 188b, Religion and Politics.

Sigrun Kahl.

**MW 11:35-12:50  So  (34)**

Challenges to the view of religion as an archaic force destined to dwindle away in a secularized society. A historical and comparative investigation of the relationship between religion and politics in Europe and the United States, with comparisons to the Muslim world.

*PLSC 423b/*EP&E 374b, Political Economy of Poverty Alleviation.  Ana De La O.*

**T 1:30-3:20  So  (0)**

Overview of classic and contemporary approaches to the question of why some countries have done better than others at reducing poverty. Emphasis on the role of politics.
plsc 427a/ints 318a, Sex, Markets, and Power. Frances Rosenbluth.
MW 10:30-11:20, 1 HTBA  So (33)
Consideration of how women’s socioeconomic status and political power have varied across time and place. Three analytical lenses are used: biology, markets, and power.

M 3:30-5:20  So (0)
A study of development assistance, the dominant feature of the political economies of some of the world’s poorest countries. The political and economic impact of aid in developing countries. The potential of a series of proposals to make aid a more effective instrument of development.

For description see under African Studies.

plsc 435b/rlst 290b, Islam Today: Jihad and Fundamentalism. Frank Griffel.
For description see under Religious Studies.

Th 9:25-11:15  So (0)
Different societal solutions for dealing with social inequality and protecting citizens against the risks of old age, sickness, disability, unemployment, and poverty. Typologies of welfare state regimes, the politics of the welfare state, and the moral concepts that shape the welfare state.

M 3:30-5:20  So (0)
An examination of the 1994 Rwandan genocide, addressing historical sources of the conflict, the motivations of the killers, the impact of the actions and reactions of outside actors, efforts to reconstruct a post-genocide society, and continuation of the genocidal dynamic within the Great Lakes region. Consideration of other countries in similar situations, as well as other genocides in recent decades.

STATISTICAL AND MATHEMATICAL METHODS

For description see under Statistics.

For description see under Statistics.

ADVANCED COURSES

plsc 471a and 472b, Individual Reading for Majors. Members of the department.
HTBA  (0)
Special reading courses may be established with individual members of the department. They must satisfy the following conditions: (1) a prospectus describing
the nature of the program and the readings to be covered must be approved by both the instructor and the director of undergraduate studies; (2) the student must meet regularly with the instructor for an average of at least two hours per week; (3) the course must include a term essay, several short essays, or a final examination; (4) the topic and/or content must not be substantially encompassed by an existing undergraduate or graduate course.

*Xplsc 474b, Directed Reading and Research for Junior Intensive Majors. Members of the department.

HTBA (0)

For juniors preparing to write senior essays as intensive majors. The student acquires the methodological skills necessary in research, identifies a basic reading list pertinent to the research, and prepares a research design for the project.

*Xplsc 480a or b, One-Term Senior Essay. Members of the department.

HTBA (0)

For seniors writing the senior essay who do not wish, or are unable, to write the essay in a department seminar. Students must receive the prior agreement of a member of the department who will serve as the senior essay adviser, and must arrange to meet with that adviser on a regular basis throughout the term.

*Xplsc 490a, The Senior Colloquium. David Cameron.

T 3:30-5:20 (0)

Students present versions of their senior project research proposals for discussion by fellow students and faculty. Initial work on the first draft of the senior project. Enrollment limited to Political Science majors writing a yearlong senior essay.

*Xplsc 491b, The Senior Essay. Members of the department.

HTBA (0)

Each student writing a yearlong senior essay establishes a regular consultation schedule with a department member who, working from the prospectus prepared in plsc 490a, advises the student about preparation of the essay and changes to successive drafts. The final essay is submitted in April. Enrollment limited to Political Science majors writing a yearlong senior essay.

*Xplsc 493, Senior Essay for Intensive Majors. Members of the department.

HTBA (0)

Each student writing a senior essay establishes a regular consultation schedule with a department member who, working initially from the student's previously approved prospectus, advises the student about preparation of the essay and changes to successive drafts, as well as reporting the student's progress until submission of the final essay in April.

PORTUGUESE

Director of undergraduate studies: K. David Jackson, 82–90 Wall St., 432-1158, k.jackson@yale.edu

Portuguese is taught at Yale as part of the Department of Spanish and Portuguese; the names of departmental faculty members teaching Portuguese courses appear in the faculty list under “Spanish.”

The major in Portuguese is a liberal arts major intended to develop competence in the Portuguese language and to provide students with a
Students begin the study of Portuguese with PORT 110a or 125b, elementary courses without prerequisites, or with PORT 112a, an elementary course for students who are proficient in a Romance language. After two years of Portuguese language study, students have sufficient proficiency to take advanced courses in Luso-Brazilian literature and culture.

The standard major, for which the prerequisite is PORT 140b or the equivalent, consists of twelve term courses. Students must take at least two term courses each in the literatures of Portugal and of Brazil. In completing their programs, students may elect up to four courses in other languages and literatures, anthropology, history, or history of art, or from study abroad, that are related to their field of study and approved by the director of undergraduate studies. Juniors and seniors majoring in Portuguese may, with the permission of the instructor and the director of graduate studies, enroll in graduate courses in Portuguese.

**Senior requirement.** All majors must either present a senior essay or take the departmental examination. The essay is written in PORT 491a or b or 492a or b. A maximum of two credits counts toward the major. The examination is both written and oral and covers three periods of Portuguese and Brazilian literatures.

**Placement.** All students who have not yet taken Portuguese at Yale are expected to take the departmental placement test, with the exception of students who have no previous knowledge of Portuguese whatsoever. The departmental placement test covers reading, writing, speaking, and listening skills. The examination will be given on Sunday, August 31, from 2 to 4 p.m. and from 4.30 to 6.30 p.m., and in the spring term on Sunday, January 11, at 6 p.m.

**REQUIREMENTS OF THE MAJOR**

- **Prerequisite:** PORT 140b or equivalent
- **Number of courses:** 12 term courses beyond prereq (incl senior essay course, if elected)
- **Distribution of courses:** At least 2 courses in lit of Portugal, 2 in lit of Brazil
- **Substitution permitted:** With DUS permission, up to 4 relevant courses from other depts or from study abroad
- **Senior requirement:** Senior essay (PORT 491a or b or 492a or b) or dept exam

**PORT 001b, LATIN AMERICAN SHORT FICTION.** Paulo Moreira.

TTh 9-10.15 Hu (c) Tr Fr sem
Introduction to Latin American literature through one of its highest achievements: the short narrative from Brazil and Spanish America. Works of Brazilian authors (Machado de Assis, Guimarães Rosa, Graciliano Ramos, Clarice Lispector) compared with short stories from Spanish America ( Quiroga, Rulfo, Carpentier, Borges) and the United States (Faulkner, Ellison, Chopin). Narrative structure and expressive qualities of the texts; literary currents; and social, psychological, and existential themes. Readings and discussion in English; texts available in the original languages. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**PORT 110a, ELEMENTARY PORTUGUESE I.** Tania Martuscelli.

MTWTh 10.30-11.20 Li 1/3 C Credits Meets RP (61)
Basic vocabulary and fundamentals of grammar through practice in speaking, reading, and writing, with stress on audiolingual proficiency. Introduces
Brazilian and Portuguese culture and civilization. Credit only on completion of PORT 120b. (Formerly the first term of PORT 115)

**PORT 112a, ELEMENTARY PORTUGUESE FOR ROMANCE LANGUAGE SPEAKERS I.** Tania Martuscelli.

L1 1 1/3 C Credits Meets RP (61)

112a–1: MTWThF 11.35–12.25
112a–2: MTWThF 4.30–5.20

A comprehensive Portuguese course for students proficient in Spanish or another Romance language. Basic vocabulary and fundamentals of grammar through practice in speaking, reading, and writing. Includes laboratory practice. Conducted in Portuguese. Credit only on completion of PORT 122b. (Formerly the first term of PORT 118)

**PORT 120b, ELEMENTARY PORTUGUESE II.** Tania Martuscelli.

MTWThF 10.30–11.20 L2 1 1/3 C Credits Meets RP (61)

Continuation of PORT 110a. To be followed by PORT 130a. Prerequisite: PORT 110a. Qualifies students for summer study abroad. (Formerly the second term of PORT 115)

**PORT 122b, ELEMENTARY PORTUGUESE FOR ROMANCE LANGUAGE SPEAKERS II.** Tania Martuscelli.

L2 1 1/3 C Credits Meets RP (61)

122b–1: MTWThF 11.35–12.25
122b–2: MTWThF 4.30–5.20

Continuation of PORT 112a. Normally prepares for PORT 130a. Prerequisite: PORT 112a. Qualifies students for summer study abroad. (Formerly the second term of PORT 118)

**PORT 125b, INTENSIVE ELEMENTARY PORTUGUESE.** Marta Almeida.

MTWThF 2.30–4.30 L1–L2 2 C Credits Meets RP (61)

An intensive beginning course in Portuguese that covers in one term the material taught in PORT 110a and 120b. Admits to PORT 130a. Qualifies students for summer study abroad. (Formerly PORT 119b)

**PORT 130a, INTERMEDIATE PORTUGUESE I.** Marta Almeida.

MTWThF 11.35–12.25 L3 1 1/3 C Credits Meets RP (34)

Contemporary and colloquial usage of Portuguese, with emphasis on differences between the spoken and the written language of Brazil. Grammar review and writing practice. Readings enrich students’ vocabulary, improve their command of Brazilian Portuguese, and introduce them to Brazilian literature.

**PORT 140b, INTERMEDIATE PORTUGUESE II.** Marta Almeida.

MTWThF 11.35–12.25 L4 1 1/3 C Credits Meets RP (34)

Continuation of PORT 130a. Prerequisite: PORT 130a. (Formerly the second term of PORT 130)

**PORT 150a, ADVANCED PRACTICE IN PORTUGUESE.** Marta Almeida.

MWF 2.30–3.20 L5 Meets RP (37)

Advanced conversation and composition, with an introduction to Luso-Brazilian literature and culture. After PORT 140b. May be repeated for credit. (Formerly PORT 138a)

**PORT 246a/SPAN 245a, LATIN AMERICAN FILM: BRAZIL, MEXICO, AND ARGENTINA.** Paulo Moreira.

TH 1–2.15, 1 HTBA Hu (26)
An overview of the best cinema produced in Brazil, Mexico, and Argentina; survey of recent films by influential directors from these countries. Comparative discussion of cultures, using the contexts of film production and content. Conducted in English.

PORT 249b, INTRODUCTION TO BRAZILIAN CULTURE. Paulo Moreira.

TH 11.35-12.50, L5, Hu (24)
Introduction to current cultural issues in Brazil, with an overview of the country’s music, art, dance, theater, literature, and cinema. Source materials include literary and nonliterary texts in Portuguese, Web pages, music, and films. Conducted in Portuguese.

*PORT 350AG/*LITR 297A, NOVELLS OF MACHADO DE ASSIS.

K. David Jackson.

TH 9.25-11.15, WR, Hu (22) Tr
The novelistic world of J. M. Machado de Assis, a master of the nineteenth-century Brazilian novel. Examination of the author’s skepticism, narrative innovations, social critique, and encyclopedic referentiality. Readings and discussion in English; texts available in Portuguese.

*PORT 389A/*LITR 288A/*SPAN 341A, FAULKNER, ROSA, AND RULFO: REGIONALISM AND MODERNISM IN THE AMERICAS.

Paulo Moreira.

TH 11.35-12.50, WR, Hu (24) Tr
Comparative readings of short stories by William Faulkner, João Guimarães Rosa, and Juan Rulfo, twentieth-century masters of the modern narrative. The conjunction of prose inspired by modernist experimentations and an attachment to the local and rural margins. Readings and discussion in English; texts available in the original languages.

*PORT 392B/*LITR 396B, BRAZIL’S MODERN ART MOVEMENT.

K. David Jackson.

TH 9.25-11.15, WR, Hu (22) Tr
A study of Brazilian modernism in literature and the arts, centered on São Paulo’s “Modern Art Week” of 1922 from the perspective of the European avant-gardes (cubism, futurism, surrealism). The Cannibal Manifesto and cultural independence from Europe; avant-garde practices in literature and the arts from the 1920s to the construction of Brasília. Reading knowledge of French and Portuguese helpful but not required.

PORT 393B/LITR 231B, MODERN BRAZILIAN AND PORTUGUESE FICTION IN TRANSLATION. K. David Jackson.

MW 1-2.15, WR, Hu (36) Tr
An introduction to the major writers in modern Brazilian and Portuguese literatures, including J. M. Machado de Assis, Clarice Lispector, João Guimarães Rosa, Fernando Pessoa, and José Saramago. Conducted in English.

PORT 396A/LITR 292A, MODERN BRAZILIAN LITERATURE IN TRANSLATION. K. David Jackson.

MW 1-2.15, WR, Hu (36) Tr
Study of major writers, movements, and works in modern Brazilian literature, including drama, poetry, essay, memoirs, and fiction. Introduction to canonical writers, works, and movements, including naturalism, realism, modernism, social realism, innovative writing, and postmodern trends. General introduction to key concepts in Brazilian civilization. Conducted in English.
**PORT 471a and 472b, Directed Reading or Directed Research.**

Consult the director of undergraduate studies.

HTBA (0)

Individual study for qualified students under the supervision of a faculty member selected by the student. *Approval of the director of undergraduate studies required.*

**PORT 491a or b and 492a or b, The Senior Essay.** K. David Jackson.

HTBA (0)

A research project designed under a faculty director, resulting in a substantial paper written in Portuguese, submitted to the director of undergraduate studies and a second designated reader.

**PSYCHOLOGY**

Director of undergraduate studies: Woo-kyoung Ahn, 319 SSS, 432-9626, psychdus@yale.edu

**FACULTY OF THE DEPARTMENT OF PSYCHOLOGY**

**Professors**


**Associate Professors**

Larry Davidson, Karyn Frick, Jeannette Ickovics, Robert Kerns, Jr., Ami Klin, Linda Mayes, Nathan Novemsky, Maria Pifano, Laurie Santos, Brian Scholl, Mary Schwab-Stone, Jane Taylor, Teresa Treat

**Assistant Professors**

Maria Babvonyishev, William Corbin, Richard Eibach, Jeremy Gray, Julia Kim-Cohen, Douglas Mennin, Kristina Olson, Valerie Purdie-Vaughns, Glenn Schafe

**Lecturers**

Marc Brackett, James Charney, Nancy Close, Nelson Donegan, Carla Horwitz, Gaja Jarosz, David Klemanski, Jelena Krivokapić, Kristi Lockhart, Michael Pantalon, Daniel Rothschild, Burton Saxon, Barbara Shiller

The introduction to psychology is *psyc* 110a or b, the general survey course. All other courses have *psyc* 110a or b as a prerequisite, except the courses listed under “Survey Courses without Prerequisite.”

Courses in the department are organized so that they are best taken in several parallel sequences. Courses numbered from 120 to 190 and ending in a zero are core survey courses that introduce students to major areas of psychology and provide additional background for more advanced courses. These courses represent major content areas of psychology; students should sample broadly from them before specializing. Courses numbered from 200 to 209 focus on statistics and general methodology. Courses numbered from 210 to 299 teach data collection in various areas of psychology. Courses numbered from 300 to 399 are more advanced courses in a particular specialization. Senior seminars, whose enrollment is limited to twenty students, are numbered from 400 to 489. These seminars are best taken once a student has appropriate background. Courses numbered from 490 to 499 are special tutorial courses for which permission of the adviser and the director of undergraduate studies is required.
The standard major. The major in Psychology requires twelve term courses beyond PSYC 110a or b, not including the senior requirement. For the Class of 2010 and subsequent classes, no more than two term courses taken on a Credit/D/Fail basis may be applied toward the major.

1. Because psychology is so diverse a subject, every student is required to take at least two courses from the social science point of view in psychology (List A) and at least two from the natural science point of view (List B). At least one course from each list must be a core course numbered from 120 to 190 and ending in zero. Students are expected to take those two core courses as early as possible in the major, normally within two terms after declaring their major.

List A: 123a, 125a, 126a, 127a, 128b, 140a, 150b, 180b, 194a, 330b, 341b, 342a, 355

List B: 120a, 130a, 147b, 160b, 170a, 171b, 230La, 240b, 270a, 318a, 337a, 338b, 350a or b, 371a, 376a

2. Because statistical techniques and the mode of reasoning they employ are fundamental in psychology, a course in statistics (PSYC 200b or equivalent) is required, preferably prior to the senior year. A student may substitute an examination arranged with the instructor of PSYC 200b for this requirement. Students may take such an examination only one time.

3. To assure some direct experience in collecting and analyzing data, students must elect at least one course, preferably prior to the senior year, in which research is planned and carried out. Courses numbered between 210 and 299 fulfill this requirement. (The same course may satisfy both this and the first requirement.)

4. To encourage a consideration of the relation between psychology and other disciplines, students may count toward the major as many as three term courses in other related departments, including college seminars. That is, only nine of the twelve courses for the major must be in the Department of Psychology. Appropriate courses are offered by the departments of Anthropology; Computer Science; Ecology and Evolutionary Biology; Molecular, Cellular, and Developmental Biology; Philosophy; Political Science; and Sociology; and by the program in Cognitive Science. Some students may find courses in other departments related to their major. Students should consult with the director of undergraduate studies in Psychology about selecting outside courses to count toward the major. In all cases, courses in other departments must have substantial psychological content or clear links to topics in psychology.

5. Students are urged to take at least one seminar especially for seniors (400–489). They are also encouraged to take at least one of several tutorials (PSYC 490a, 491b, 492a, 493b) designed as independent study courses. Students interested in research are encouraged to take a tutorial as early as the sophomore year. Students may also take 700-level courses for one-half course credit per course, with prior permission of the faculty adviser, the director of undergraduate studies, and the director of graduate studies. No more than a total of three credits from the tutorials and 700-level courses combined may count toward the major.

Senior requirement. Every Psychology major is required to write a senior thesis. This senior requirement can be fulfilled either by engaging in an empirical research project, by analyzing an existing data set, or by writing a
conceptual paper. In all cases, it is expected that the senior project represent a substantial body of work that includes significant original contributions. The senior thesis should be at least twenty double-spaced pages in length, and it should also conform to the specific guidelines provided by the senior thesis adviser. Completion of the project itself does not award academic credit. Students are strongly encouraged to choose an adviser or develop a concrete plan for their senior project by the end of the junior year.

There are three possible options for writing a senior thesis. First, a student may work with a senior thesis adviser without registering for any specific class. Second, a student may earn directed research or directed reading credit, taken as PSYC 490a, 491b, 492a, or 493b while completing the senior project. There is no restriction on how many of these courses may be applied to a senior project. In the case of two-term directed research or directed reading credit, a student must register in each term for PSYC 490a, 491b, 492a, or 493b, and must submit a report of activities and progress at the end of the fall term. The midyear report must represent a body of work distinct from what is submitted at the end of the spring term as the final product for the senior project. Third, a student may write a senior essay as the final paper for a senior seminar. In researching and writing the essay, the student should consult regularly with the seminar instructor, and may consult with other faculty members as well. Senior seminars are open to interested juniors, but one must be taken in the senior year to fulfill the senior requirement. Seniors, with the permission of the director of undergraduate studies and the instructor, may arrange to take other seminars to fulfill the senior essay requirement. If a student seeks directed research or directed reading credit for a project that is linked to a topic in a seminar, the work done must be equivalent to a full course above and beyond any work done in the seminar.

In all three of these options, a second reader will be appointed by the department to determine a final grade for the senior thesis in consultation with the primary adviser.

Computer Science and Psychology major. The interdepartmental major Computer Science and Psychology may be considered by students with interests lying squarely between the two disciplines. See under Computer Science and Psychology for more information.

Departmental advisers. Schedules for all majors must be discussed with, and approved by, the director of undergraduate studies or the advisers for the neuroscience and philosophy tracks in Psychology. Only then can a schedule be submitted to the residential college dean’s office. For questions concerning credits for courses taken at other institutions or at Yale but outside the Department of Psychology, students should consult the director of undergraduate studies. For questions concerning special tracks, students should consult the advisers for the neuroscience and philosophy tracks in Psychology.

Psychology and early childhood teaching. It is possible to combine a major in Psychology with a program of study in the Teacher Preparation and Education Studies program to earn a Connecticut teaching certificate in early childhood education. This combination creates opportunities to join theory with practice through field experiences at early childhood centers in New Haven. See under Teacher Preparation and Education Studies for more information.
NEUROSCIENCE TRACK IN PSYCHOLOGY

Advisers: Glenn Schafe, 204 DL, 432-3461, glenn.schafe@yale.edu; Jeremy Gray, 212 SSS, 432-9615, jeremy.gray@yale.edu

Students with a major interest in neuroscience may wish to elect the neuroscience track. Such students are considered Psychology majors for whom the requirements have been modified to accommodate their interests, and to reflect the multidisciplinary nature of modern neuroscience and psychology. Given the broad nature of the field of neuroscience, students may wish to concentrate their studies in one area of the field (e.g., behavioral, cellular and molecular, cognitive, affective, social, clinical, or developmental). Students with such interests are encouraged to meet with one of the major advisers to tailor a course of study suitable for their interests.

Requirements for the neuroscience track are the same as for the standard major, with the following exceptions:

1. Two introductory courses are required for the major, MCDB 120a and E&EB 122b. Students with scores of 5 on the Advanced Placement test in Chemistry or 710 or higher on the SAT Biology M subject test, or who have had an equivalent course, may be exempted from MCDB 120a (but not E&EB 122b) at the discretion of one of the major advisers for the neuroscience track. When the exemption is granted, the student is strongly encouraged to take an additional course in Psychology or Biology.

2. The student must take PSYC 170a or 160b, and a data-collection course, PSYC 230La, 240b, or 270a. (MCDB 320a may substitute for the PSYC 170a or 160b requirement, or MCDB 320a and 321La may substitute for the PSYC 230La, 240b, or 270a requirement, but not both. If MCDB 320a is substituted for a psychology course, it cannot also be counted as one of the four additional courses outside the department.)

3. At least six courses must be in the Psychology department, with at least two being from the Psychology List A. The List A courses do not need to be core courses with a number ending in zero.

4. At least four courses must be chosen from the following: Ecology and Evolutionary Biology and Molecular, Cellular, and Developmental Biology courses numbered 200 and above that deal with human and/or animal biology (recommended courses include MCDB 200b, 202a, 205b, 210b, 300a, and 320a); BENG 300a and 421b; CPSC 475b and 477a; MB&BB 300a, 301b, 420a, 421b, 425a, 435a, 443b, 452b, and 465b; MATH 222a or b, 223a or b, 422a or b, 230; and STAT 241a. In addition to these courses, others may be selected in consultation with the neuroscience track advisers. Students should note that many of these courses have prerequisites that must be taken first. Students are encouraged to take accompanying laboratories where they exist. Laboratories in EEB or MCDB award one-half course credit toward the major. Organic chemistry, physics, and related laboratories cannot be substituted for any courses in the major.

5. The faculty adviser for the senior project may be a faculty member in another related department, subject to approval by the director of undergraduate studies. The appropriate courses for those wishing course credit are PSYC 490a and 491b, or 492a and 493b, regardless of whether the faculty adviser is in Psychology or another department. Such independent study courses require prior permission of the faculty adviser and one of the major advisers for the neuroscience track. Topics for the senior project vary widely. However, all topics should include, when appropriate, discussion of the
known or potential neurobiological mechanisms underlying the psychological phenomena of interest. Students are encouraged to discuss their plans for the senior project with a neuroscience track adviser by the spring term of their junior year.

PHILOSOPHY TRACK IN PSYCHOLOGY

Adviser: Brian Scholl, 304 SSS, 432-4629, brian.scholl@yale.edu

Students with interests encompassing both philosophy and psychology may wish to elect the philosophy track. Students in this track are considered Psychology majors for whom the requirements have been modified to accommodate their interests in philosophy.

Requirements for the philosophy track are the same as for the standard major in Psychology except that five of the elective courses required for the major must be taken from the Philosophy department, with the remaining eight courses (including the prerequisite) taken from the Psychology department. (This track thus precludes the possibility of counting any additional classes from other departments toward the major, as is possible in the standard major.) Students electing the philosophy track must still satisfy all other requirements of the major, including the requirements for introduction to psychology, statistics, research methods, List A and List B, and the senior project. Senior project advisers for students in this track may be chosen from either the Psychology or Philosophy departments. In selecting courses in philosophy, students are advised to consider the following aims: (1) to obtain a background through an introductory or historical course in philosophy; (2) to obtain breadth by taking at least one course in each major area defined in the description of the Philosophy major; (3) to include courses addressing problems especially pertinent to psychology.

Students interested in psychology and philosophy are also urged to consult the description of the psychology track offered by the Philosophy department for an alternative method of satisfying these interests.

REQUIREMENTS OF THE MAJOR

STANDARD MAJOR

Prerequisite: PSYC 110A or b
Number of courses: 12 term courses beyond prereq
Specific course required: PSYC 200b
Distribution of courses: 2 courses from List A, 2 courses from List B as specified; 1 Psych course numbered 210–299
Substitution permitted: For PSYC 200b, exam arranged with instructor; up to 3 relevant courses in other depts, incl college sems, with DUS permission
Senior requirement: Senior project (in PSYC 490a, 491b, or in 492a, 493b, or in sem 400–489, or without enrollment in a course)

NEUROSCIENCE TRACK

Prerequisite: PSYC 110A or b
Number of courses: 12 term courses beyond prereq
Specific courses required: PSYC 170A or 160b; PSYC 200b; PSYC 230Lb, 240b, or 270a; MCDB 120a; E&EB 122b
Distribution of courses: At least 6 courses in Psych, at least 2 of which are from List A; at least 4 courses from EEB and MCDB numbered 200 or higher dealing with human or animal biology, BENG 350a, 421b, CPSC 475b, 477a, MB&BB 300a, 301b, 420a, 421b, 425a, 435a, 443b, 452b, 465b, MATH 222a or b, 225a or b, 230, STAT 241a
Substitution permitted: MCDB 320a for PSYC 170a or 160b, or MCDB 320a and 321La for PSYC 230La, 240b, or 270a

Senior requirement: Senior project (in PSYC 492a, 491b, or in 492a, 493b, or in sem 400–489, or without enrollment in a course)

PHILOSOPHY TRACK

Prerequisite: PSYC 110a or b
Number of courses: 12 term courses beyond prereq
Specific course required: PSYC 200b
Distribution of courses: 7 courses in Psych, 5 courses in Phil; 2 courses from List A, 2 courses from List B as specified; 1 Psych course numbered 210–299
Substitution permitted: For PSYC 200b, exam arranged with instructor
Senior requirement: Same as for standard major, with adviser from either Phil or Psych dept

INTRODUCTORY COURSE

PSYC 110a or b, Introduction to Psychology.

110a: MW 2:30–3:45 So (0) Paul Bloom
110b: TT 11:35–12:50 So (0) Karen Wynn

A survey of major psychological approaches to the biological, cognitive, and social bases of behavior.

SURVEY COURSES WITHOUT PREREQUISITE

★PSYC 120a/★CGSC 201a, Brain and Thought: An Introduction to the Human Brain. Amy Arnsten.
For description see under Cognitive Science.

PSYC 123a, The Psychology, Biology, and Politics of Food.
Kelly Brownell.

MW 9–10.15 So (0)

A study of eating as it affects the health and well-being of every human. Topics include taste preferences, food aversions, the regulation of hunger and satiety, food as comfort and friendship, eating as social ritual, and social norms of blame for food problems; the politics of food, including issues such as sustainable agriculture, organic farming, genetically modified foods, nutrition policy, and the influence of food and agriculture industries; food problems such as malnutrition, eating disorders, and the global obesity epidemic; the impact of food advertising aimed at children, poverty and food, and how each individual’s eating is affected by the modern environment.

★PSYC 125a/★CHLD 125a/★TPRP 125a, Child Development. Nancy Close and staff.
For description see under Child Study Center.

PSYC 126a, Attraction and Relationships. Margaret Clark.

TT 1–2.15 So (26)

Theory and empirical research on the antecedents and consequences of attraction, and on intra- and interpersonal processes that either facilitate or interfere with the formation and maintenance of close relationships. Methodological bases for rigorous study of these topics.

★PSYC 127a/★CHLD 127a/★TPRP 127a, Early Childhood Methods.
Carla Horwitz.
For description see under Child Study Center.
   Nancy Close, Carla Horwitz.
   For description see under Child Study Center.

PSY 129a/STAT 129a, Statistics as a Way of Knowing.
   Nelson Donegan.
   Tth 11.35-12.50 QR (0)
   An introduction to basic concepts of statistics and probability that allow us to
describe, evaluate, and understand aspects of the world and make informed
choices. Exploration of relationships among statistical reasoning, cognitive psy-
chology, and philosophical theories of knowledge. Enrollment limited to freshmen
and sophomores.

PSY 130a/CGSC 110a, Introduction to Cognitive Science.
   Daniel Rothschild.
   For description see under Cognitive Science.

PSY 147b, Animal Models of Clinical Disorders.
   Nelson Donegan.
   Tth 1-2.15 So (26)
   An interdisciplinary approach to understanding and treating psychiatric disor-
ders, integrating clinical psychology, psychiatry, and advances in basic neuro-
science. Focus on how research with animal models can advance our under-
standing of psychiatric disorders and generate more effective treatments for
patients. Topics include drug addiction, depression, Parkinson’s disease, and
schizophrenia.

[PSY 150b, Personality Psychology]

PSY 171b, Sex, Evolution, and Human Nature.
   Laurie Santos.
   Tth 4-5.15 So (27)
   Consideration of human behavior in a broad evolutionary context. Topics
include basic evolutionary theory, human mating strategies, the biology of war-
fare, sex differences in behavior, love and lust, the evolution of morality, and the
role of language and culture.

PSY 194a/TPRP 194a, Educational Psychology.
   Burton Saxon.
   For description see under Teacher Preparation & Education Studies.

SURVEY COURSES WITH PREREQUISITE

PSY 110a or b is a prerequisite for the courses below.

PSY 140a, Developmental Psychology.
   Frank Keil.
   Tth 9-10.15 WR, So (22)
   An introduction to research and theory on the development of perception,
action, emotion, personality, language, and cognition from a cognitive science
perspective. Focus on birth to adolescence in humans and other species.

PSY 150b, Social Psychology.
   John Bargh.
   Tth 11.35-12.30 So (0)
   Study of social cognition, attitudes and persuasion, group processes, intergroup
processes, prosocial behavior, aggression, and conformity. Theories, methodol-
ogy, and applications of social psychology.

PSY 160b, Human Neuroscience.
   Jeremy Gray.
   Tth 2.30-3.45 (27)
Introduction to the neural bases of human psychological function, including social, cognitive, and affective processing. Preparation for more advanced courses in cognitive and social neuroscience. Topics include memory, reward processing, neuroeconomics, individual differences, emotion, social inferences, and clinical disorders. Neuroanatomy, neurophysiology, and neuropharmacology are also introduced.

**PSYC 170A, Fundamentals of Neuroscience.** Glenn Schafe.  
**TTh 11:35-12:50 Sc, So (24)**  
Examination of the way the nervous system controls behavior. Biological insights about neural cell function are used to develop an understanding of how such processes as learning, emotion, and perception may be generated.

**PSYC 180B, Abnormal Psychology.** Susan Nolen-Hoeksema.  
**MW 11:35-12:50 WR, So (0)**  
The major forms of psychopathology that appear in childhood and adult life. Topics include the symptomatology of mental disorders; their etiology from psychological, biological, and sociocultural perspectives; and issues pertaining to diagnosis and treatment.

**STATISTICS AND GENERAL METHODOLOGY**

**PSYC 200B, Statistics.** Teresa Treat.  
**MWF 10:30-11:20 QR (33)**  
Measures of central tendency, variability, association, and the application of probability concepts in determining the significance of research findings.

**DATA COLLECTION**

**PSYC 230La, Research Methods in Human Neuroscience.**  
Gregory McCarthy.  
**W 1-5 Sc (0)**  
Experience in methods of human neuroscience research. Focus on functional magnetic resonance imaging, electroencephalography, and evoked potentials. Some attention to psychophysiological techniques such as the measurement of skin conductance. Students design experiments, acquire data, and perform analyses. Extensive use of MATLAB. **Prerequisites:** PSYC 170A and a course in statistics, or permission of instructor. Recommended to be taken concurrently with PSYC 337A.

**PSYC 235B, Research Methods in Psychology.**  
Valerie Purdie-Vaughns.  
**MW 11:35-12:50, 1 HTBA So (34)**  
Introduction to general principles and strategies of psychological research. Topics include generating and testing hypotheses, laboratory and field experiments, scale construction, sampling, archival methods, case studies, ethics and politics of research, and Internet and cross-cultural methods. Hands-on research experience in laboratories. **No prerequisites.**

**PSYC 240B, Research Methods in Conditioning and Learning.**  
Allan Wagner.  
**TTh 1-2:15 Sc (26)**  
Laboratory examination of the basic procedures used in the investigation of animal learning. Topics include habituation, classical conditioning, and instrumental learning.
Laboratory course in which students design and conduct research to study brain function and behavior. Hands-on participation in surgical, behavioral, and other neuroscience techniques. Prerequisites: PSYC 170a and a course in statistics.

ADVANCED COURSES

[PSYC 301a, THINKING]

[PSYC 312a, ADOLESCENT PSYCHOPATHOLOGY AND TREATMENT]

[PSYC 317a, THE PSYCHOLOGY OF CULTURE]

PSYC 318a/LING 120aG, GENERAL PHONETICS. Jelena Krivokapić.
For description see under Linguistics.

[PSYC 320a, COGNITIVE NEUROSCIENCE]

PSYC 322b/LING 130bG, EVOLUTION OF LANGUAGE. Stephen Anderson.
For description see under Linguistics.

*PSYC 327a/*LING 141aG, LANGUAGE AND COMPUTATION. Gaja Jarosz.
For description see under Linguistics.

PSYC 330b, PSYCHOLOGY AND THE LAW. Kristi Lockhart.
MWF 10.30-11.20  Sc, So (33)
Contributions of psychological theory and research to our understanding of the law and the criminal justice system. Topics include criminality, eyewitness testimony, lie detection, jury decision making, the death penalty, the insanity defense, civil commitment, prisons, repressed memories, children as witnesses and defendants, and the role of psychologists as expert witnesses and trial consultants.

PSYC 337aG, MAPPING THE HUMAN BRAIN. Gregory McCarthy.
TTh 1-2.15  Sc, So (26)
An introduction to the physiology, physics, and biophysics of methods used to relate human brain structure and function. Functional MRI and positron emission tomography, direct and transcranial brain stimulation, field potential recording, electroencephalography and magnetoencephalography, lesion analysis, and imaging genomics. Critical assumptions underlying each technique, relative strengths and weaknesses, and inferences about brain function.

PSYC 338b, NEUROPSYCHOLOGY OF AGING. Karyn Frick.
TTh 11.35-12.50  Sc (o)
A broad overview of how the brain and behavior change with age. Primary emphasis on neurobiological aspects of aging, including neurodegenerative diseases, that profoundly affect behavior in the elderly. Prerequisite: PSYC 170a.

PSYC 341b, EMOTIONAL INTELLIGENCE. Marc Brackett.
MW 9-10.15  So (o)
Integration of emotional information with cognitive processes in management of personal and social life. The emotion-related skills comprising emotional intelligence (the perception, use, understanding, and management of emotion) defined, measured, and developed. How these skills relate to effective social functioning, mental health, and quality of life at home, school, and work.
psyc 342a/wgss 315a, Psychology of Gender. Marianne LaFrance.
MW 2:30-3:45 So (37)
Exploration of the relationship between gender and psychological processes at individual, interpersonal, institutional, and cross-cultural levels.

[psyc 343b, Emotion Function and Dysfunction: Applications to Psychopathology]

★psyc 350a or b/child 350a or b, Autism and Related Disorders I.
Ami Klin, Fred Volkmar.
For description see under Child Study Center.

★psyc 351b/child 351b, Autism and Related Disorders II.
Ami Klin, Fred Volkmar.
For description see under Child Study Center.

★psyc 355, Clinical Psychology in the Community.
Kristi Lockhart.
Th 9.25-11.15 So (0) Cr/Year only
Examination of how mental disorders are treated within a community setting. Students participate in a fieldwork placement, working either one-on-one or in groups with the psychiatrically disabled. Weekly seminar meetings focus on such topics as the nature of severe mental disorders, the effects of deinstitutionalization, counseling skills, and social policy issues related to mental health. Prerequisite: psyc 180b.

★psyc 371a, Laboratory in Animal Cognition. Laurie Santos.
T 7-8.50 P.M. So (0)
An introduction to current issues, laboratory techniques, and field methods in animal cognition. Students help develop and pilot research projects on non-human primates. Topics include number, theory of mind, and causality.

Claire Bowern.
For description see under Linguistics.

psyc 376a, Basics of Learning and Memory. Thomas Brown.
MW 11.35-12.50 Sc, So (0)
The basic facts, general principles, and theories that describe how higher animals, from mice to humans, are changed by their experiences. The historically separate fields of learning and memory research desegregated under a neuroscientific perspective that recognizes the evolutionary continuity among higher animals. Prerequisites: introductory courses in biology and psychology, or permission of instructor. (Formerly psyc 176a)

SENIOR SEMINARS

The seminars below may be used to fulfill the senior requirement.

Th 9.25-11.15 So (0)
Selected advanced topics in infant cognitive, social, and emotional development. Topic varies from year to year. Examples of topics are infants’ concept of object, concept of number, early social cognition, and early emotional development.

★psyc 404b/film 343b, Psychopathology in Film. James Charney.
W 1.30-3.20; screenings T 7 P.M. So (0)
A clinical discussion of psychosis, paranoia, psychopathy, depression, mania, and obsessions as they appear in films. Distortions from reality that are introduced for dramatic or cinematic effect. The language and craft of film as they convey character and inner experience. Primary texts are films such as Repulsion, Strangers on a Train, The Night of the Hunter, Taxi Driver, Psycho, and A Woman Under the Influence. First class session is the screening on January 13, 2009, in 211 LC.

**PSYC 407b**/**CGSC 407b**, **COGNITIVE SCIENCE OF CAUSALITY.**

Frank Keil.

M 1.30-3.20 So (0)

Examination of how people and animals track causal patterns in the world around them. Topics include the perception of causality; mechanistic, teleological, and psychological causation; variations in causal thinking across domains; the role of counterfactuals; biases and heuristics in causal thought; and the development of causal thinking.

**PSYC 408b**, **COGNITIVE SCIENCE OF IGNORANCE**

**PSYC 410a**/**CGSC 410a**, **THE MODERN UNCONSCIOUS.**

John Bargh.

W 1.30-3.20 So (0)

Modern psychological research on unconscious phenomena; relation of this research to historical conceptions of the unconscious. Applications to issues of free will, extent of personal control over one's feelings, judgments, and behavior; prejudice and discrimination; and influence of advertising and other forms of "mind control." *May not be taken after PSYC 315b*.

**PSYC 411b**, **WHAT WE EAT AND WHY.**

Kelly Brownell.

M 3.30-5.20 So (0)

Topics pertaining to food, nutrition, and behavior. Forces that affect what humans eat, the impact of modern food conditions, and actions that might be taken to improve the nutrition landscape. Factors include the business of modern agriculture, food industry practices, human biology, the law, politics, and globalization.

**PSYC 413b**/**CGSC 413b**, **MIND, BRAIN, AND SOCIETY.**

Marvin Chun.

W 9.25-11.15 So (0)

Recent advances in modern neuroscience as they inform or complicate issues in society. Views from disciplines such as psychology, philosophy, economics, political science, law, and religion.

**PSYC 414b**/**WGSS 466b**, **GENDER IMAGES: A PSYCHOLOGICAL PERSPECTIVE.**

Marianne LaFrance.

MW 2.30-3.45 So (0)

The nature and effects of gender images (males and females, sexual orientation, gender identities) on the construction of self-identity, stereotypes, aspirations, and interpersonal relationships. Focus on contemporary media, with attention to how, when, and why gender images change with time.

**PSYC 421b**/**CGSC 421b**, **COGNITIVE SCIENCE OF PLEASURE**

**PSYC 428a**, **SOCIAL AND EMOTIONAL LEARNING.**

Jeremy Gray.

T 3.30-5.20 So (0)

Review of work in social cognitive and affective neuroscience, with attention to its relevance for learning and education. Topics include neuroscience of emotion, emotion regulation, altruism, close relationships, aggression, autism, mindfulness meditation, personality, moral reasoning, emotional intelligence, and self-control and impulsivity. Consideration of the plasticity and development of social-emotional abilities, as well as their expression in adults.
PSYC 454bG, Sensory Information Processing. Lawrence Marks.
T 9.25-11.15 Sc, So (o)
A functional examination of the ways that sensory systems transduce stimulus energies and information. Topics include sensory anatomy and physiology, psychophysical analysis of the qualitative dimensions of sensory experience, selective attention, and interactions among sensory, perceptual, and cognitive mechanisms.

[PSYC 459bG, Addictive Behaviors: Alcohol and Other Drugs of Abuse]

For description see under Teacher Preparation & Education Studies.

[PSYC 466aG, Neurobiology of Emotion]

PSYC 467bG, Personality and Individual Differences.
Michael Pantalon.
T 9.25-11.15 So (22)
A study of personality, a person’s dynamic and unique set of characteristics that influence actions, thoughts, and feelings. An individual differences approach to psychology, differentiated from the more common study of group effects (e.g., randomized controlled trials of psychotherapy effectiveness).

PSYC 486a, Cellular Analysis of Learning and Memory: Model Systems. Glenn Schafe.
TH 9.25-11.15 Sc, So (22)
An examination of brain circuitry and the cellular and molecular basis for learning and memory. Emphasis on vertebrate model systems. Topics include habituation, sensitization, Pavlovian and instrumental conditioning, and declarative memory formation.

T 1.30-3.20 So (o)
The development of learning theory from its beginnings in associationism, behaviorism, and the Darwinian revolution to its present “connectionist” neural-network expressions.

PSYC 489b, Principles of Behavior Therapy. Alan Kazdin.
W 2.30-4.20 So (o)
An examination of the diverse theories, principles, and treatments in behavior therapy, including operant and classical conditioning, cognitive behavioral approaches, and social learning. Enrollment limited to senior Psychology majors.

TUTORIALS

PSYC 490a and 491b, Directed Reading. Woo-kyoung Ahn.
HTBA (o)
Individual study for qualified students, primarily seniors, who wish to investigate an area of psychology not covered by regular departmental offerings. A student must be sponsored by a faculty member, who sets requirements and meets regularly with the student. To register, the student must submit a written plan of study approved by the adviser to the director of undergraduate studies. The normal minimum requirement is a term paper, but individual faculty members may set alternative equivalent requirements. May be elected for one or two terms.
PSYCHOLOGY AND COMPUTER SCIENCE

(See under Computer Science and Psychology.)

PSYCHOLOGY AND PHILOSOPHY

(See under Philosophy or under Psychology.)

PUBLIC HEALTH

For information about Yale College course offerings related to health, see under Health Studies.

B.A.–B.S./M.P.H. degree program. The Select Program in Public Health gives Yale College students interested in the field of public health the opportunity to earn a bachelor’s degree from Yale College and an M.P.H. degree from the Yale School of Public Health in a five-year joint program. During four years of Yale College enrollment, students complete a standard Yale College major and six course credits applicable toward the M.P.H. degree. Students are placed in a public health internship between the fourth and fifth years of the program and study at the School of Public Health (YSPH) full time in the fifth year, when they complete the master’s thesis and the remaining ten courses for the master’s degree.

Students apply to YSPH for the joint program in the fall term of their junior year. Candidates must present evidence of a commitment to public health, as well as a record of one year of college-level mathematics and either biology, chemistry, or physics. Applicants must complete the standard YSPH application forms and must submit transcripts, SAT scores, three letters of recommendation, and a personal statement. Financial aid, if provided during the fifth year, comes from YSPH.

Further information about this program may be obtained from the YSPH Office of Student Affairs, 66 College Street, P.O. Box 208034, New Haven, CT 06520-8034, 785-6260, or on the Web at http://publichealth.yale.edu.

QUANTITATIVE REASONING

*QUAN 199a, Quantitative Methods across the Disciplines.
Douglas Kankel.

Quantitative approaches to the analysis of real-world problems drawn from economics, medicine, politics, psychology, sports, and the natural sciences. Intended for students who do not expect to major in a quantitative discipline. Enrollment limited to freshmen and sophomores.
RELIGIOUS STUDIES

Director of undergraduate studies: Paula Hyman, 451 College St., 432-0828, paula.hyman@yale.edu

FACULTY OF THE DEPARTMENT OF RELIGIOUS STUDIES

Professors
Gerhard Böwering, Jon Butler, John Darnell, Carlos Eire, Steven Fraade, Isaiah Gafni (Visiting), Bruce Gordon, Philip Gorski, Phyllis Granoff, Alyssa Gray (Visiting), Christine Hayes, Paula Hyman, Bentley Layton, Ivan Marcus, Dale Martin, Gene Outka, Baruch Schwartz (Visiting), Harry Stout (Chair), Denys Turner, Miroslav Volf, Robert Wilson

Associate Professors
Stephen Davis, Frank Griffel

Assistant Professors
Shannon Craig-Snell, Jacob Dalton, Ludger Viefhues-Bailey

Senior Lecturer
Koichi Shinohara

Lecturers
Hugh Flick, Jr., John Grim, Brian Noell, Shai Secunda, Hizky Shoham, George Syrimis, Mary Evelyn Tucker

The study of religion investigates religious traditions, institutions, cultural practices, texts, and ideas in many different ways. Courses in the Religious Studies department concentrate on the history of religious traditions (Western and Eastern, ancient and modern) and the role of religion in shaping past human cultures and current events; on textual traditions and religious literatures of various kinds; and on ethical and philosophical issues central to religious reflection, such as the nature of the divine or the problem of evil and suffering. Because religious studies is an interdisciplinary field, it makes use of a wide variety of methods and academic disciplines. Students who want a broad introduction to the study of religions can choose courses listed under Groups A or B below, though courses listed under Group C are also open without prerequisite. Religious Studies majors develop specialized concentrations as they plan a major program in consultation with the director of undergraduate studies and other members of the faculty.

Religious Studies course offerings, other than freshman seminars, are arranged in four categories. Group A features general, comparative, and thematic courses that engage more than one religious tradition. Group B includes survey courses that provide a broad introduction to a particular religious tradition or scripture in historical context. Group C includes courses on specialized topics in religious studies, both introductory and intermediate. Group D offers advanced courses on specialized topics. Normally, courses in Groups A to C have no prerequisites while courses in Group D have a specific prerequisite or require the permission of the instructor.

The department offers two programs for students majoring in Religious Studies: the standard major and a major in which religious studies is combined with another subject closely related to the senior essay. Both programs require a core of courses and a two-term senior essay. For the Class of 2009, courses taken Credit/D/Fail may not be counted toward the requirements of the major, except with permission of the director of undergraduate studies.

Core requirement. A core of six term courses in Religious Studies is required of all majors. One core course examines world religions; qualifying courses
include RLST 100b or others with permission of the director of undergraduate studies. Three core courses are in the historical or textual study of a specific religion, most commonly from Group B; each of the three courses must be on a different religion, and at least one must be focused on Judaism, Christianity, or Islam and one on Buddhism or Hinduism. One core course studies systematic thought (ethics, philosophy of religion, or theology); qualifying courses in 2008–2009 are RLST 113b, 163a, 164b, 275a, and 287a. The final core course is RLST 490a, the junior seminar on approaches to the study of religion. Before the end of the junior year, students must also complete a seminar (in addition to the junior seminar) that requires a major research paper. In Program I, this seminar must be an elective in Religious Studies. In Program II, it may be a course in Religious Studies, or it may constitute one of the four term courses outside the department.

I. THE STANDARD MAJOR

Program I consists of twelve term courses in Religious Studies, including the core of six required courses, the two-term senior essay, and four electives. The electives are usually selected from Groups C and D and form a coherent unit to help the student prepare for the senior essay. Certain cognate courses in other departments that investigate religious phenomena or literature and are integral to the student’s area of concentration may count toward the major with permission of the director of undergraduate studies. Normally the maximum number of cognate courses that may be applied is two. Two terms of an ancient language related to the study of religion may, with permission of the director of undergraduate studies, be counted.

II. RELIGIOUS STUDIES WITH ANOTHER SUBJECT

Program II consists of eight term courses in Religious Studies (the core of six required courses and the two-term senior essay) and four term courses outside the department, one of which may fulfill the seminar requirement outlined above. The four courses outside the department need not directly concern religion, but they must form a coherent unit. Through them students can develop expertise in a single methodological approach, cultural area, historical period, or body of literature contributing to the senior essay. Examples of successful combinations might be: four courses in Chinese history, language, and literature with a senior essay topic on Chinese Buddhism; four courses in early American history and literature with a topic on colonial American religion; four courses in a specific area of biology and medical science with a topic on biomedical ethics. Each student’s petition to take this program will be judged on its contribution to the student’s senior essay. Normally introductory courses in other departments may not count among the outside courses; appropriate language courses at a higher level may. Students electing Program II must, at the end of the junior year and in no case later than the beginning of the senior year, obtain approval for their proposed program from the director of undergraduate studies. Students who think they may elect this program should consult the director of undergraduate studies as early as possible in their studies to begin suitable selection of courses.

Senior requirement. Students in both programs must write a senior essay under the supervision of a faculty adviser in the student’s area of concentration.
In selecting a senior essay topic, students normally choose a topic on which they have completed course work before commencing the senior year. The essay counts as two term courses and is taken in both terms of the senior year. The student should begin choosing a senior essay topic during the second term of the junior year, and early in the first term of the senior year must submit a Statement of Intention approved by a faculty adviser and the director of undergraduate studies. The Senior Essay (RLST 491) includes research and writing assignments as well as colloquia in which seniors present and discuss their research. The student must submit at least ten pages of the essay to the director of undergraduate studies by the last day of classes of the first term in order to receive a grade of “satisfactory” for that term.

Students in Yale College are eligible to take certain courses in the Divinity School; those interested should consult its bulletin. Some Divinity School courses may count toward the major, with permission of the director of undergraduate studies.

Students majoring in Religious Studies who plan to do graduate work in the subject are strongly encouraged to study languages of which a reading knowledge will be needed for their graduate program.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:**

*Program I*—12 term courses (incl two-term senior essay);

*Program II*—8 term courses in Rel St (incl two-term senior essay), and 4 nonintro courses in another subject linked with senior essay, chosen in consultation with DUS

**Specific course required:** Both programs—RLST 490a

**Distribution of courses:** Both programs—1 course in world religions; 3 courses in historical or textual study of a specific religion, as specified; 1 course in systematic thought, as specified; 1 sem other than junior sem, as specified

**Substitution permitted:** Program I—related courses in other depts, incl 2 courses in related ancient lang, with DUS permission; Both programs—Divinity School courses, with DUS permission; related courses for world religions req, with DUS permission

**Senior requirement:** Both programs—senior essay (RLST 491)

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**FRESHMAN SEMINARS**

*RLST 001a/HIST 008a/HUMS 080a, ESSENTIAL HERESIES.* Carlos Eire. For description see under History.

*RLST 006b, THE HISTORICAL JESUS.* Dale Martin.

**TTh 2.30-3.45 Hu (o) Fr sem**

Analysis of the modern “quest for the historical Jesus” and the use of modern historical methods to construct the historical figure of Jesus of Nazareth. Attention to both scholarly and popular portrayals. Critical examination of modern historiography. *No background in New Testament assumed. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

[RLST 007a, KARMA, CURSES, AND CRIME]

[RLST 008b, ZEN BUDDHISM]

*RLST 009a, SIVA AND MAHAKALA.* Phyllis Granoff.

**TTh 1-2.15 Hu (o) Fr sem**

Introduction to the myth, ritual, art, and philosophy of the Hindu god Siva and the Tantric Buddhist deity Mahakala. The temples, paintings, and sculpture
dedicated to these gods. Shared elements of iconography and belief and their relation to ritual practices. Readings in translation. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

For description see under History.

GENERAL, COMPARATIVE, AND THEMATIC COURSES (GROUP A)

**RLST 100B, Introduction to World Religions.** Gerhard Böwering.

**TT 2.30-3.45 Hu (27)**
Introduction to the literature, ideals, concepts, practices, rituals, and institutions of four major world religions as they have appeared in history: Hinduism, Buddhism, Christianity, and Islam. A historical survey combined with a phenomenological treatment of principal topics.

**RLST 110B, Apocalyptic Religion in Cross-Cultural Perspective**

**RLST 113B, Religious Ethics and Modern Moral Issues**

SURVEYS OF RELIGIOUS TRADITIONS (GROUP B)

**RLST 134B/EALL 200B, Buddhism in China and Japan.** Koichi Shinohara.

**TT 2.30-3.45 Hu (0)**
Introduction to Buddhism in East Asia through a close reading of original sources in translation. Focus on the lives and teachings of several leading monks. Topics include meditation, faith, rebirth, and secret rituals.

**RLST 140B/G, Gnostic Religion and Literature**

**RLST 141B/ARC 222B/NELC 112B, Egyptian Religion through the Ages.** John Darnell.
For description see under Near Eastern Languages & Civilizations.

**RLST 145A/JDST 110A, Introduction to the Old Testament (Hebrew Bible).** Christine Hayes.

**MW 1-2.15 Hu (36)**
The Old Testament (Hebrew Bible) as an expression of the religious life and thought of ancient Israel. Emphasis on the texts’ cultural and historical setting in the ancient Near East. Introduction to a wide range of critical and literary approaches to biblical studies. Students view course lectures on line; class time focuses on close reading and discussion of biblical texts and their subsequent interpretation.

**RLST 146B/JDST 202B, Judaism: Continuity and Change**

**RLST 147B/JDST 235B, Introduction to Judaism in the Ancient World.** Steven Fraade.

**TT 1-2.15 Hu (26)**
The emergence of classical Judaism in its historical setting, Jews and Hellenization; varieties of early Judaism; apocalyptic and postapocalyptic responses to suffering and catastrophe; worship and atonement without cult; interpretations of scriptures; religious imagination; law and life; the rabbi; faith in reason; Sabbath and festivals; history and its redemption. (No prior background in Jewish History assumed.)

TH 11.35-12.50 Hu (24)

A broad introduction to the history of Jewish culture from its beginnings until the late Middle Ages, focusing on the formative period of classical rabbinic Judaism and on the symbiotic relationships between Judaism, Christianity, and Islam. An overview of Jewish society and culture in its biblical, rabbinic, and medieval settings. For History majors, counts toward either Middle Eastern or European distributional credit.

rlst 149bG/hist 220bG/jdst 201bG, History of Jewish Culture, 1500 to the Present. Paula Hyman.

TH 11.35-12.50 Hu (24)

A broad introduction to the history of Jewish culture from the late Middle Ages until the present. Emphasis on the changing interaction of Jews with the larger society as well as the transformation of Judaism in its encounter with modernity.


MW 2.30-3.20, 1 HTBA Hu (37)

A study of earliest Christianity; its origins and development into the early second century; its literature and thought.

RLST 155aG/JDST 120aG, Worship in Ancient Israel.

Baruch Schwartz.

For description see under Judaic Studies.

[RLST 158aG, History of Christianity in the Ancient World: Jesus to Augustine]


TH 10.30-11.20, 1 HTBA Hu (6)

A survey of major developments in religious thought in the West from Descartes to Schleiermacher, focusing on the struggles to defend, discredit, or distance religious belief in relation to reason. Connections between theology, philosophy, and social history. No background in religious studies assumed.


TH 10.30-11.20, 1 HTBA Hu (6)

An overview of important developments in Western religious thought during the nineteenth and twentieth centuries. Connections between philosophy, theology, and social history. Authors include Hegel, Barth, Tillich, Rahner, and Gutiérrez. No background in religious studies assumed.


TH 2.30-3.45 Hu (27)

The rise of Islam in Arabia; Muhammad and the Qur’an; Muslim tradition and religious law; crucial issues of Islamic philosophy and theology; basic beliefs and practices of the Muslim community; religious institutions and modern trends.


For description see under Political Science.
**RLST 181b, Buddhist Masters of the Himalaya.** Jacob Dalton.

* TTh 11:30-12:30 Hu (0)

Introduction to the life stories of Buddhist saints. The ways in which these stories have shaped Himalayan cultures from northern India and Nepal to Tibet. Saints' biographies as mixtures of legend and historical fact. Written accounts, Buddhist statuary, paintings, and local story-telling.

**RLST 182a, Death, Dreams, and Visions in Indo-Tibetan Buddhism.** Jacob Dalton.

* W 2:30-4:20 Hu (37)

Examination of how Tibetan Buddhists have turned the act of dying toward the realization of basic philosophical concepts of Buddhism. The transitional state between birth and death as an opportunity for transformation; harnessing the dream state to enact transformation; preparation for the crucial moment of death through tantric meditation practices, and how funerary rituals work to assist the dead to this end; the effect of Western fascination with the Tibetan Book of the Dead on interpretations of the text.

**TOPICS IN RELIGIOUS STUDIES (GROUP C)**

[**RLST 184b, The Ramayana**]

**RLST 185b, The Mahabharata.** Hugh Flick, Jr.

* W 1:30-3:20 Hu (0) Tr

Examination of the religious and cultural significance of the world’s longest epic poem within the Hindu bhakti religious tradition. Emphasis on the core narrative, the embedded narratives, and the internal philosophical discourses, including the Bhagavad Gita.

**RLST 186a/EALL 205a, Mandalas and Mantras.** Koichi Shinohara.

* M 1:30-3:20 Hu (0)

A study of the Buddhist tradition characterized by the use of magical spells, cosmic diagrams, and visualization of deities. Topics include stories of esoteric deities, the evolution of distinctive rituals, art, and the tradition’s place in society.

[**RLST 189b, Introduction to Indian Philosophy**]

**RLST 191b, Ritual and Salvation in India.** Phyllis Granoff.

* T 1:30-3:20 Hu (0)

The role of ritual in Buddhism and Hinduism in India, Nepal, and Tibet. The origins of ritual in the vedic sacrifice; domestic ritual and early image worship, agamic and tantric yoga; notions of sound and the practice of mantric recitation; the symbolism of cosmic diagrams; rituals and literature of pilgrimage.

**RLST 192a/JDST 241a, Introduction to Talmudic Culture.**

Shai Secunda.

For description see under Judaic Studies.

**RLST 197a/PLSC 329a, Islamic Law and Ethics.** Andrew March.

For description see under Political Science.

**RLST 198a/HUMS 389a/JDST 296a, Tel Aviv: Between Image and Reality.** Hizky Shoham.

For description see under Judaic Studies.
"RLST 201a/\texttt{HIST} 392a/\texttt{JDST} 270a, Medieval Jews, Christians, and Muslims Imagining Each Other. Ivan Marcus. For description see under Humanities."

"RLST 202b/G/\texttt{HIST} 345b/G/\texttt{JDST} 265b/G, Jews in Muslim Lands from the Seventh to the Sixteenth Centuries. Ivan Marcus. For description see under History."

"RLST 212a/\texttt{HUMS} 262a/\texttt{LITR} 341a/\texttt{MGRK} 210a/\texttt{WGSS} 247a, Religion and Literature: Irreverent Texts. George Syrimis. For description see under Hellenic Studies."

"RLST 213b/\texttt{HUMS} 266b/\texttt{JDST} 298b, The Formation of New Hebrew Culture. Hizky Shoham. For description see under Judaic Studies."

"RLST 217a/G/\texttt{HIST} 230a/G/\texttt{JDST} 390a/G, Memory, Memoirs, and Modern Jewish History. Paula Hyman. For description see under History."

"RLST 225b/G/\texttt{HIST} 244b/G/\texttt{JDST} 385b/G/\texttt{WGSS} 383b, Women and Judaism. Paula Hyman. M 1.30-3.20 Hu (o) The roles and representation of Jewish women in the modern period. Special attention to the role of gender in Judaism; the social, cultural, and political activity of women; and the development and impact of feminism. For History majors, counts toward either European or U.S. distributional credit, upon application to the director of undergraduate studies."

"RLST 230a/G/\texttt{HIST} 269a/G/\texttt{JDST} 286a/G, Holocaust in Historical Perspective. Paula Hyman. For description see under History."

"[RLST 257a/G, Patristic Greek]"

"RLST 264a/\texttt{HIST} 242a, The German Reformation, 1517–1555. Bruce Gordon. Th 1.30-3.20 Hu (o) The turbulent course of the Reformation in German lands from Martin Luther's protest until the Peace of Augsburg. Theological issues, imperial religious politics, local religious cultures, the radicalization of the Reformation, theologies of political resistance, and the respective roles of print and oral media."

"RLST 273a/G/\texttt{PLSC} 281a, Moral, Religious, and Social Issues in Bioethics. David Smith. For description see under Political Science."

"RLST 275a, Self and Other: The Individual in Western Religious Thought. Gene Outka. T 1.30-3.20 Hu (o) The individual as a basic subject of religious and moral predicates. Inquiry into the relational, social, and neuroscientific challenges to individualism. Readings include works by Augustine, Dostoievsky, Kierkegaard, John Stuart Mill, Buber, George Herbert Mead, Seyla Benhabib, and Aldous Huxley, as well as contemporary appraisals of psychotropic drugs."
[rlst 278a, Christian Understandings of Evil and the Power of God]

rlst 279b, Four Atheist Critiques of Christian Theism.
Denys Turner.
TTh 10.30-11.20, 1 HTBA Hu (0)
An exploration of four styles of atheistic rejection of classical Christian theism: those of Feuerbach, Marx, Nietzsche, and Derrida. Consideration of whether there are rational means for settling the question of the existence of the classical Christian God.

[rlst 287a, Islamic Theology]

rlst 290b/PLSC 435b, Islam Today: Jihad and Fundamentalism.
Frank Griffel.
TTh 10.30-11.20, 1 HTBA Hu (23)
Introduction to modern Islam, including some historical background. Case studies of important countries in the contemporary Muslim world, such as Egypt, Iran, Pakistan, and Saudi Arabia. Islam as a reactive force to Western colonialism; the ideals of Shari’a and jihad; violence and self-sacrifice; and Islam as a political ideology.

[rlst 293a, Religion in American Society, 1550–1870]

[rlst 302b/JDST 325b, Jewish and Christian Feminisms]

ADVANCED TOPICS IN RELIGIOUS STUDIES (GROUP D)

*rlst 406a/JDST 415a, Critical Methods in the Study of Inter-Talmudic Parallels. Alyssa Gray.
For description see under Judaic Studies.

[rlst 407b/JDST 391b, Midrash Seminar: The Exegetical History of Passover and the Passover Seder in Antiquity]

*rlst 408a/JDST 400a, Midrash Seminar: Exodus 32 and Its Midrashic Development. Christine Hayes.
MW 2.30-3.45 Hu (0)
A study of the midrashic career of the Golden Calf story. Examination of the rich and polyphonic tradition of interpretation found in the Bible itself, in ancient translations, and in classical rabbinic sources. Prerequisite: reading proficiency in Hebrew.

W 2.30-4.20 Hu (0)
The social and intellectual history of Christian monasteries, hermits, ascetics, and monastic institutions and values in late antiquity and the early Middle Ages, as seen in classic texts of monastic literature and in monastic archaeology.

OTHER COURSES

*rlst 488a and 489b, Individual Tutorial. Consult the director of undergraduate studies.
HTBA (0)
For students who wish, under faculty supervision, to investigate an area in religious studies not covered by regular departmental offerings. The course may be used for research or for directed reading. A long essay or several short ones are required. To apply, students should present a prospectus with bibliography of work they propose to undertake to the director of undergraduate studies together with a letter of support from the faculty member who will direct the work.

**RLST 490A, Seminar on Approaches to the Study of Religion.**
Ludger Viehues-Bailey.

W 3:30-5:20 Hu (o)
Introduction to the study of religion in anthropology, sociology, phenomenology, philosophy, psychology, and history. Focus on current debates about how religion should be approached and on issues crucial to the investigation of religion in an academic setting. Required for all junior majors; open to others with permission of the instructor.

**RLST 491, The Senior Essay.** Consult the director of undergraduate studies.
W 7-8:50 p.m. (o) Cr/Year only
Students writing their senior essay meet periodically in the fall and weekly in the spring for the colloquium directed by the director of undergraduate studies. The essay, written under the supervision of a member of the department, should be a substantial paper between 12,500 and 15,000 words.

**ADDITIONAL COURSE RELEVANT TO THE MAJOR**

**EGYP 147bG, Egyptian Monastic Literature in Coptic.**
Stephen Davis.
For description see under Near Eastern Languages & Civilizations.

**RENAISSANCE STUDIES**

Director of undergraduate studies: Carlos Eire, 203 HGS, 432-1357, carlos.eire@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF RENAISSANCE STUDIES**

Professors
Leslie Brisman (English), §Edwin Duval (French), §Carlos Eire (History), Roberto González Echevarría (Spanish & Portuguese), Bruce Gordon (Divinity School), Karsten Harries (Philosophy), K. David Jackson (Spanish & Portuguese), §Lawrence Manley (English), §Giuseppe Mazzotta (Italian), Steven Pincus (History), §David Quint (Chair) (English), §John Rogers (English), §Ellen Rosand (Music), Francesca Trivellato (History), §Christopher Wood (History of Art), Craig Wright (Music)

Associate Professor
Anne Dunlop (History of Art)

Assistant Professors
Angela Capodivacca (Italian), James Kearney (English), Brian Walsh (English)

§Member of the Executive Committee for the program.

The major in Renaissance Studies is a special major in the humanities whose purpose is to contribute to an integrated understanding of the Western cultural tradition (see also Humanities). It is an interdisciplinary program that introduces students to that period in European history conventionally termed the Renaissance—roughly the fifteenth and sixteenth centuries in Italy, the sixteenth century in northern and western Europe, and 1500–1660.
in England. Students in the major study several aspects of this rich civiliza-
tion, including visual arts, social and political history, history of ideas and
philosophy, religion, literature, and history of music. Such study of a distant
era demands and fosters a capacity for intellectual flexibility; students in the
program are invited to learn the various languages of the era’s visual arts, of
early Protestantism and the Counter-Reformation, of records and objects, of
Renaissance music, lyric poetry, epic, drama, and prose narrative. The pro-
gram’s challenge lies partly in the need to grasp systems of communication
different from our own but possessing their own coherence and intricate
relationships to each other.

Competence in at least one foreign language is essential for an understand-
ing of this complex period. A student entering the program is expected to have
the equivalent of two years of college language study in French, German,
Italian, Portuguese, Spanish, or Latin. Knowledge of a second foreign lan-
guage is not required but would be helpful. Beyond this prerequisite, a stu-
dent majoring in Renaissance Studies takes at least twelve term courses
focused on some aspect of Renaissance culture. Four of the courses must
be in different disciplines: one each in English literature, history, history
of art, and a relevant foreign literature (French, German, Italian, Spanish,
Portuguese, or Latin) at an advanced level. One required course must be
taken by the junior year: **RNST 223b**. Seniors are required to take a senior
seminar, chosen in consultation with the director of undergraduate studies,
and the senior essay, **RNST 495a or b**. The remaining courses required for the
major may be taken in an area of concentration that the student chooses in
consultation with the director of undergraduate studies.

**Renaissance Studies as a second major.** Students may wish to plan a major
in Renaissance Studies in conjunction with a major in a related discipline, such
as (but not limited to) a relevant language or literature program, English,
Literature, History, History of Art, or Music.

**Senior requirement.** Students take a senior seminar, usually in the fall term
of the senior year. They also write a senior essay, which should grow out of
their previous study and which normally should involve more than one field.
The senior essay is typically written in the spring term.

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**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** 2 years of college-level French, German, Italian, Portuguese, Spanish,
or Latin, or the equivalent

**Number of courses:** 12 term courses beyond prereq (incl senior req)

**Distribution of courses:** 1 term course dealing with the Renaissance in English lit,
hist, hist of art, and a foreign lit

**Specific course required:** **RNST 223b**

**Senior requirement:** Senior sem and senior essay (**RNST 495a or b**)

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**RNST 200b/HSAR 28b, ITALIAN RENAISSANCE ART.** Anne Dunlop.
For description see under History of Art.

**RNST 223b/HIST 223b/HUMS 244b, RENAISSANCE ITALY.**
Francesca Trivellato.
For description see under History.

**RNST 251a/HIST 251a, EARLY MODERN ENGLAND: POLITICS, RELIGION,
AND SOCIETY UNDER THE TUDORS AND STUARTS.** Keith Wrightson.
For description see under History.
rnst 258b/hums 230b, Life, Love, and Art at the Renaissance Courts. Anne Dunlop.
For description see under Humanities.

*rnst 279a/*hums 261a/*ital 279a, Early Modern Women Authors.
Angela Capodivacca.
For description see under Italian.

*rnst 320b/*hums 388b/*ital 320b, Italy's Cities. David Lummus.
For description see under Italian.

*rnst 421a/*hsar 438a/*hums 379a, Silk Road Renaissance.
Anne Dunlop.
For description see under History of Art.

*rnst 495a or b, The Senior Essay. Consult the director of undergraduate studies.

HTBA (0)
Preparation of a research paper about thirty pages long under the direction of a qualified instructor, on a subject chosen by the student. During the term before the essay is written, the student plans the project in consultation with a qualified instructor or with the director of undergraduate studies. No student is permitted to enroll in rnst 495a or b without submitting a project statement, with the formal title of the essay and a brief description of the subject to be treated. The statement must be signed by the student's adviser and presented to the director of undergraduate studies before the student's schedule can be approved.

The student must submit a project outline and bibliography to the adviser and the director of undergraduate studies by September 26 (495a) or January 30 (495b). The outline should indicate the focus and scope of the essay topic, as well as the proposed research methodology; the bibliography should be annotated. Senior essays written in the fall term are due on December 1; those in the spring term on April 3. Two copies must be submitted to the director of undergraduate studies. Failure to comply with any deadline will be penalized by a lower final grade. No late essay will be considered for a prize in the department.

*clss 423b, Medieval Readings about Writing. Mary Rouse.
For description see under Classics.

engl 125, Major English Poets. Christopher R. Miller and staff.

engl 129, The European Literary Tradition.
Timothy Robinson [F], Stefanie Markovits [Sp], and staff.

engl 170a, Chaucer: The Canterbury Tales. Alastair Minnis.


*engl 185b, Medieval Literature at the Movies. Alastair Minnis.

*engl 190a, Spenser. Leslie Brisman.

engl 200b, Shakespeare: Comedies and Romances.
Lawrence Manley.

engl 201a, Shakespeare: Histories and Tragedies.
David Scott Kastan.

engl 220b, Milton. John Rogers.
*ENGL 406a, Renaissance Lyric.  Christopher R. Miller.

*GMAN 305a/GMST 305a/HUMS 238a/LITR 216a, Oedipus and Faust: Tragedies of Knowledge.  Rainer Nägele.
   For description see under Germanic Languages & Literatures.

*GMAN 336a/G, Introduction to Middle High German Literature.  William Whobrey.

*HIST 204Ja/HUMS 330a, Slavery in the Medieval Mediterranean.  Youval Rotman.
   For description see under History.

HIST 210a/HUMS 380a, The Early Middle Ages, 284–1000.
   Paul Freedman.
   For description see under History.

HIST 211b/HUMS 381b, The Birth of Europe, 1000–1500.
   Anders Winroth.
   For description see under History.


*HIST 228Ja/HUMS 393a, Venice and the Mediterranean, 1400–1700.  Francesca Trivellato.
   For description see under History.


HSAR 115b, History of Western Art from the Renaissance to the Present.  Alexander Nemerov.

   For description see under History of Art.

HSAR 250a/ARC 170a/CLCV 170a, Roman Art: Empire, Identity, and Society.  Diana Kleiner.
   For description see under History of Art.

HSAR 252b/ARC 252b/CLCV 175b, Roman Architecture.  Diana Kleiner.
   For description see under History of Art.


*HSAR 433b, Albrecht Dürer and His Time.  Christopher Wood.

*HUMS 226a, Classical to Romantic Epic.  Jane Levin.

*HUMS 228a, Shakespeare and the Canon: Histories, Comedies, and Poems.  Harold Bloom.

*HUMS 241a/FREN 210a/LITR 190a, Renaissance of the Middle Ages.  R. Howard Bloch.
   For description see under Humanities.
RUSSIAN AND EAST EUROPEAN STUDIES

Director of undergraduate studies: Hilary Fink, 2705 HGS, 432-1301, hilary.fink@yale.edu

FACULTY ASSOCIATED WITH THE MAJOR

PROFESSORS
Vladimir Alexandrov (Slavic Languages & Literatures), Ivo Banac (History), Paul Bushkovitch (History), Katerina Clark (Comparative Literature, Slavic Languages & Literatures), Laura Engelstein (History), John Gaddis (History), Harvey Goldblatt (Slavic Languages & Literatures), Robert Greenberg (Adjunct) (Slavic Languages & Literatures), Benjamin Harshav (Comparative Literature), John MacKay (Slavic Languages & Literatures), Timothy Snyder (History), Ivan Szelenyi (Sociology), Tomas Venclova (Slavic Languages & Literatures)

ASSOCIATE PROFESSORS
Keith Darden (Political Science), Hilary Fink (Slavic Languages & Literatures)

ASSISTANT PROFESSOR
Kate Holland (Slavic Languages & Literatures)

SENIOR LECTOR II
Irina Dolgova

SENIORLECTORS
Krystyna Illakowicz, Rita Lipson, Constantine Muravnik, Julia Titus, Karen von Kunes

The major in Russian and East European Studies, administered by the Department of Slavic Languages and Literatures, offers an interdisciplinary approach to the study of a broad region: Russia, Ukraine, Belarus, the Caucasus, and
Central Asia; Poland, Hungary, the Czech and Slovak Republics, and other areas in east central Europe; and the Balkans. The program is appropriate for students considering careers in international public policy, diplomacy, or business, and is also suited to students wishing to continue academic work.

Languages. A full understanding of the area demands a knowledge of its languages. Students must demonstrate either proficiency in Russian or intermediate-level ability in an East European language. Students may demonstrate proficiency in Russian by (1) completing fourth-year Russian (RUS 160a, 161b); (2) passing a written examination to demonstrate equivalent ability; or (3) completing a literature course taught in Russian and approved by the director of undergraduate studies. Students may demonstrate intermediate-level ability in an East European language by (1) completing a two-year sequence in an East European language (currently Czech or Polish; students interested in studying other East European languages should contact the director of undergraduate studies); or (2) by passing a language examination demonstrating equivalent ability. Students are encouraged to learn more than one language.

Course requirements. Thirteen term courses taken for a letter grade are required for the major. Students must take one course from HIST 264b or 290a. If Russian is presented as the primary language to satisfy the requirements of the major, then all East European language courses and third- and fourth-year Russian courses count toward the major. If an East European language other than Russian is presented as the primary language, then all courses in that language designated L3 or higher count toward the major. Elective courses are chosen from an annual list of offerings, in consultation with the director of undergraduate studies. Electives must include at least one course in a social science. Other undergraduate courses relevant to Russian and East European Studies, including residential college seminars, may also count toward the major if approved by the director of undergraduate studies. Qualified students may elect pertinent courses in the Graduate School with the permission of the instructor, the director of graduate studies, and the director of undergraduate studies.

Senior requirement. Every major must write a senior essay. At the beginning of the first term of the senior year, students enroll in RSEE 490 and arrange for a faculty member to serve as senior adviser. By the third Friday of October, senior majors submit a detailed prospectus of the essay, with bibliography, to the adviser. A draft of at least ten pages of the senior essay, or a detailed outline of the entire essay, is due to the adviser by the last day of reading period in the first term. The student provides the adviser with a form that the adviser signs to notify the director of undergraduate studies that the first-term requirements have been met. Failure to meet these requirements results in loss of credit for the first term of the course. The senior essay takes the form of a substantial article, no longer than 13,000 words of text, excluding footnotes and bibliography. The essay is due on April 17, 2009, in triplicate, in the Russian and East European Studies office. A member of the faculty other than the student’s adviser grades the essay.

Study and travel. Students should be aware of opportunities for study and travel in Russia and eastern Europe. The director of undergraduate studies can provide information on these programs and facilitate enrollment. Those students who spend all or part of the academic year in the region participating in established academic programs usually receive Yale College credit. Students are strongly encouraged to take advantage of study abroad
opportunities during summers or through the Year or Term Abroad program. Students wishing to travel abroad as part of the major should consult the director of undergraduate studies by October 1.

**M.A. program.** The European and Russian Studies program does not offer the simultaneous award of the B.A. and M.A. degrees. However, students in Yale College are eligible to complete the M.A. in European and Russian Studies (with concentration in Russia and Eastern Europe) in one year of graduate work. Students interested in this option must complete eight graduate courses in the area by the time of the completion of the bachelor’s degree. Only two courses may be counted toward both the graduate degree and the undergraduate major. Successful completion of graduate courses while still an undergraduate does not guarantee admission into the M.A. program. Students must submit the standard application for admission to the M.A. program.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite or corequisite:** Demonstrated proficiency in Russian or intermediate-level ability in an East European language

**Number of courses:** 13 term courses (incl senior essay and specified lang courses)

**Specific courses required:** HIST 264b or 290c

**Distribution of courses:** At least 1 course in social sciences

**Senior requirement:** Senior essay (RSEE 490)

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*rsee 240a/*CZEC 246a/*FILM 364a, Milos Forman and His Films. Karen von Kunes. For description see under Slavic Languages & Literatures.

*rsee 255b/LITR 206b/RUSS 255b, Studies in the Novel: Tolstoy. Vladimir Alexandrov. For description see under Slavic Languages & Literatures.

*rsee 256a/LITR 208a/RUSS 256a, Studies in the Novel: Dostoevsky. Kate Holland. For description see under Slavic Languages & Literatures.

*rsee 300b/*CZEC 301b/*LITR 220b, Milan Kundera: The Czech Novelist and French Thinker. Karen von Kunes. For description see under Slavic Languages & Literatures.

*rsee 321b/G/FILM 441b/G/LITR 391b/G/RUSS 245b, Russian Film. John MacKay. For description see under Literature.

*rsee 385a/*INTS 369a/*PLSC 312a, Moral Values in Civil Society. Boris Kapustin. For description see under International Studies.

[rsee 390b/ruSS 241b, Russian Culture: The Modern Age]

*rsee 490, The Senior Essay. Consult the director of undergraduate studies.

**HTBA (c) Cr/Year only**
Preparation of the senior essay under faculty supervision. The essay grade becomes the grade for both terms of the course. **Required of all seniors majoring in Russian and East European Studies.**
COURSES IN OTHER DEPARTMENTS THAT COUNT TOWARD THE MAJOR

czec 110a, ELEMENTARY CZECH I. Karen von Kunes.  
For description see under Slavic Languages & Literatures.

czec 120b, ELEMENTARY CZECH II. Karen von Kunes.  
For description see under Slavic Languages & Literatures.

czec 130a, INTERMEDIATE CZECH. Karen von Kunes.  
For description see under Slavic Languages & Literatures.

czec 140b, ADVANCED CZECH. Karen von Kunes.  
For description see under Slavic Languages & Literatures.

*hist 221Ja, THE RUSSIAN REVOLUTION. Laura Engelstein.

*hist 224Jb, DIARIES AND MEMOIRS OF TWENTIETH-CENTURY EUROPE. Laura Engelstein.

hist 264b, EASTERN EUROPE SINCE 1914. Ivo Banac, Timothy Snyder.

hist 290a, RUSSIA FROM THE NINTH CENTURY TO 1801. Paul Bushkovitch.

plsh 110a, ELEMENTARY POLISH I. Krystyna Illakowicz.  
For description see under Slavic Languages & Literatures.

plsh 120b, ELEMENTARY POLISH II. Krystyna Illakowicz.  
For description see under Slavic Languages & Literatures.

plsh 130a, INTERMEDIATE POLISH I. Krystyna Illakowicz.  
For description see under Slavic Languages & Literatures.

plsh 140b, INTERMEDIATE POLISH II. Krystyna Illakowicz.  
For description see under Slavic Languages & Literatures.

SANSKRIT  
(See under Linguistics and under South Asian Studies.)

SCIENCE

Perspectives on Science is a lecture and discussion course that supplements the standard academic program of a selected group of freshmen who have unusually strong preparation in mathematics and science. It presents a broader range of topics than standard science courses and highlights the interdependence of the scientific disciplines. Students apply for consideration during the summer before their freshman year. Application information is available on the Web at www.yale.edu/yalecollege/freshmen/special/ps and in the Freshman Handbook.

*scie 198, PERSPECTIVES ON SCIENCE. Craig Crews, J. Michael McBride.  
Lect. and disc. F 1:30-3 Sc 1 C Credit (0) Cr/Year only
A series of lectures—one every other week—by science and engineering faculty guest lecturers. In alternate weeks, groups of students and faculty participants meet to discuss the lecture topics more fully. Students are expected to demonstrate their interest in science by enrolling in other science courses, usually with laboratory. One course credit is awarded for successful completion of the year’s work.

SLAVIC LANGUAGES AND LITERATURES

Director of undergraduate studies: Hilary Fink, 2705 HGS, 432-1301, hilary.fink@yale.edu; language coordinator: Irina Dolgova, 2704A HGS, 432-1307, irina.dolgova@yale.edu

FACULTY OF THE DEPARTMENT OF SLAVIC LANGUAGES AND LITERATURES

Professors
Vladimir Alexandrov, Katerina Clark, Laura Engelstein, Harvey Goldblatt, Robert Greenberg (Adjunct), Benjamin Harshav, John MacKay, Tomas Venclova

Associate Professor
Hilary Fink

Assistant Professor
Kate Holland

Senior Lector II
Irina Dolgova

Senior Lectors
Kryszyna Illakowicz, Rita Lipson, Constantine Muravnik, Julia Titus, Karen von Kunes

The major in Russian offered by the Department of Slavic Languages and Literatures acquaints students with Russian literature and culture, develops students’ appreciation of literary values and skill in literary analysis, and gives them a basic competence in Russian. For an area major in Russian studies, see Russian and East European Studies, an interdisciplinary program administered by the Department of Slavic Languages and Literatures.

Students majoring in Russian may concentrate exclusively on Russian language and literature (Program I), or they may elect to study Russian literature in the context of comparative studies of literature (Program II). For Program II, credit is given for work done in other departments. Specific courses in each program must be arranged with the director of undergraduate studies. Students interested in specializing in Russian or Slavic linguistics may arrange a special concentration in linguistics with the director of undergraduate studies.

The major. Prerequisite to the major in both programs is RUSS 13ib. The department offers two sequences of language courses to fulfill the prerequisite: either (1) RUSS 110a, 120b, 130a, 140b, 150a, and 151b or (2) RUSS 125a, 145b, 150a, and 151b. Prospective majors should complete RUSS 140b or 143b by the end of their sophomore year or accelerate their course of study by taking summer courses or studying abroad. While completing the prerequisite, students are encouraged to begin fulfilling requirements of the major that do not presuppose advanced knowledge of Russian by taking courses in Russian history and Russian literature in translation.

In addition to the prerequisite, the major in Russian requires eleven term courses, which must include the following (some courses may fulfill more than one requirement):

1. Two terms of Russian literature in translation: RUSS 250a and 253b.
3. Two terms of Russian literature read and discussed in the original, typically selected from Group A courses numbered 170 or above.

4. At least two term courses in Russian literature of the nineteenth century and two in Russian literature of the twentieth century. Students should select courses from Group A and from the 250 series with this distribution requirement in mind.

5. RUSS 490A or B. The senior essay is the intellectual culmination of the student’s work in the major. All primary sources used in the essay must be read in Russian.

In addition to the requirements above, each program requires the following:

Program I. One term course in the history or culture of Russia, selected in consultation with the director of undergraduate studies; three additional term courses in the Department of Slavic Languages and Literatures above RUSS 151B. These may include literature courses taught either in translation or in the original, advanced language training courses, or graduate courses.

Program II. Four term courses relevant to the major in the context of comparative studies of literature in other departments, selected in consultation with the director of undergraduate studies.

Study abroad. Students majoring in Russian are strongly encouraged to spend a summer or a term studying in the Russian Federation under the auspices of programs approved by the director of undergraduate studies. Language courses taken during the summer or during a term in Russia in approved programs may substitute for certain advanced Russian courses at Yale. Students interested in study abroad should consult the director of undergraduate studies well before their junior year.

Senior requirement. All majors write a senior essay (RUSS 490A or B), an independent project carried out under the guidance of a faculty member.

Placement examination. A departmental placement examination will be given on Sunday, August 31, at 2 P.M. in 221 HGS. Students who have studied Russian elsewhere must take the placement examination before enrolling in any Russian language course at Yale. For further information consult Irina Dolgova, language coordinator, 432-1307.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** RUSS 151B

**Number of courses:** 11 term courses beyond prereq (incl senior essay)

**Distribution of courses:** Both programs—2 terms of 19th-century Russian lit; 2 terms of 20th-century Russian lit; 2 courses from Group A numbered 170 or above; Program I—1 course in hist or culture of Russia; 3 addtl courses in dept of Slavic Langs and Lits above level of RUSS 151B; Program II—4 courses relevant to major in other depts, with DUS approval

**Specific courses required:** Both programs—RUSS 160A, 161B, 250A, 253B

**Senior requirement:** Senior essay (RUSS 490A or B)

**GROUP A COURSES**

Unless otherwise noted, all Group A courses are conducted in Russian.

RUSS 110A, First-Year Russian I. Julia Titus and staff.

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<tr>
<th>Credits</th>
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110A–1: MTWThF 9.25-10.15
110A–2: MTWThF 10.30-11.20
110A–3: MTWThF 11.35-12.25
A video-based course designed to develop all four language skills: reading, writing, speaking, and listening comprehension. Use of dialogues, games, and role playing. In addition to readings in the textbook, students read original short stories and learn Russian songs and poems. Oral and written examinations. **Credit only on completion of RUSS 120b.** (Formerly the first term of RUSS 115)

**RUSS 120b, First-Year Russian II.** Julia Titus and staff.
L2 1½ C Credits Meets RP (61)
120b–1: MTWThF 9.25-10.15
120b–2: MTWThF 10.30-11.20
120b–3: MTWThF 11.35-12.25
Continuation of RUSS 110a. **After RUSS 110a or equivalent.** (Formerly the second term of RUSS 115)

**RUSS 122a, Russian for Bilingual Students I.** Julia Titus.
MW 11.35-12.50 L1–L2 (34)
A comprehensive Russian course for native speakers of Russian or other Slavic languages whose formal education has been in English. Overview of Russian grammar, focusing on the writing system, cases, conjunction, and syntax. Readings from Russian prose, film screenings, discussion, and regular practice in translation and compositions. (FormerlyRUSS 126a)

**RUSS 125a, Intensive Elementary Russian.** Constantine Muravnik.
MTWThF 10.30-11.20; MWF 9.25-10.15 L1–L2 2 C Credits
Meets RP (33)
An intensive course that covers in one term the material taught in RUSS 110a and 120b. For students of superior linguistic ability. Study of Russian grammar; practice in conversation, reading, and composition. **Recommended for prospective majors in Russian and in Russian and East European Studies.**

**RUSS 130a, Second-Year Russian I.** Irina Dolgova.
L3 1½ C Credits Meets RP (61)
130a–1: MTWThF 9.25-10.15
130a–2: MTWThF 10.30-11.20
An intermediate course designed to promote all language skills, as well as to introduce students to the wealth of Russian history and culture. Focus on the Russian poet Alexander Pushkin. Readings in and discussion of Pushkin’s personal life and creative endeavors as seen against the backdrop of Russian history and culture. Systematic in-depth review of basic grammar structures; the mechanics and semantics of Russian syntax and morphology. **After RUSS 120b or equivalent.** (Formerly the first term of RUSS 122)

**RUSS 140b, Second-Year Russian II.** Irina Dolgova.
L4 1½ C Credits Meets RP (61)
140b–1: MTWThF 9.25-10.15
140b–2: MTWThF 10.30-11.20
Continuation of RUSS 130a. **After RUSS 130a or equivalent.** (Formerly the second term of RUSS 122)

**RUSS 142b, Russian for Bilingual Students II.** Julia Titus.
MW 11.35-12.50 L3–L4 (34)
Continuation of RUSS 122a. Further development of reading and writing skills. Expansion of vocabulary. **After RUSS 122a or equivalent.** (Formerly RUSS 137b)

**RUSS 145b, Intensive Intermediate Russian.** Constantine Muravnik.
MTWThF 10.30-11.20; MWF 9.25-10.15 L3–L4 2 C Credits
Meets RP (33)
A continuation of ROSS 125a that covers in one term the material taught in ROSS 130a and 140b. For students of superior linguistic ability. **Prerequisite:** ROSS 125a. (Formerly the second term of ROSS 125)

**ROSS 150a, Third-Year Russian I.** Constantine Muravnik.  
**MWf 11:35-12:50 L5 1 C Credits Meets RP (34)**  
Intensive practice in conversation and composition accompanied by review and refinement of grammar. Readings from nineteenth- and twentieth-century literature, selected readings in Russian history and current events, and videotapes and films are used as the basis of structured conversation, composition, and grammatical exercises. Oral and written examinations. **Audiovisual work in the Center for Language Study required. After ROSS 140b or 145b or equivalent.** (Formerly the first term of ROSS 130)

**ROSS 151b, Third-Year Russian II.** Constantine Muravnik.  
**MWf 11:35-12:50 L5 1 C Credits Meets RP (34)**  
Continuation of ROSS 150a. **After ROSS 150a or equivalent.** (Formerly the second term of ROSS 130)

**ROSS 154a, Russian for Literary and Cultural Interpretation.**  
Constantine Muravnik.  
**MW 1-2.15 L5, Hu (36)**  
Close reading, interpretation, and discussion of Russian fiction, poetry, and discursive prose in history and philosophy. Special attention to cultural significance, stylistics, and aesthetics, as well as to grammatical structures and syntax. Use of translation as a method for interpretation. Grammar review and extensive vocabulary building. Readings include works by Babel, Nabokov, Bulgakov, Mandelshtam, Tsvetaeva, Karamzin, Chaadaev, and Victor Erofeev. **Conducted in Russian and English. Prerequisite: ROSS 140b or 145b or permission of instructor.** (Formerly ROSS 134a)

**ROSS 156a, Advanced Conversation in Contemporary Russia.**  
Irina Dolgova.  
**MW 1-2.15 L5 (0)**  
A course for intermediate and advanced students, with a focus on achieving the level of oral and written proficiency necessary for engaging in intelligent discourse on current issues. Attention to the sociopolitical, economic, and cultural realities of the modern Russian Federation and Russian-speaking world. Extensive exposure to materials of various media; intensive conversation practice. **After ROSS 151b or equivalent.** (Formerly ROSS 142a)

**ROSS 160a, Fourth-Year Russian I.** Julia Titus.  
**MWF 10:30-11:20 L5 (33)**  
Development of advanced skills in speaking, listening, reading, and writing Russian. Class work centers on discussion and analysis of videotapes, literary texts, newspaper articles, and readings about Russian intellectual life and culture. Weekly compositions or translations, oral reports, intensive review, and refinement of syntactical and lexical topics. **After ROSS 151b or equivalent.** (Formerly ROSS 140a)

**ROSS 161b, Fourth-Year Russian II.** Julia Titus.  
**MWF 10:30-11:20 L5 (33)**  
Continuation of ROSS 160a. **After ROSS 160a or equivalent.** (Formerly ROSS 141b)

**ROSS 171b, Introduction to Nineteenth-Century Russian Literature: Poetry.** Rita Lipson.  
**TTW 11:35-12:50 L5 (0)**
An in-depth analysis of Pushkin’s verse. After RUSS 140b or 145b. (Formerly RUSS 161a)

[RUSS 172a, INTRODUCTION TO NINETEENTH-CENTURY RUSSIAN LITERATURE: PROSE]

RUSS 176a, CHEKHOV IN RUSSIAN AND WORLD CINEMA. Rita Lipson. 
TH 9-10.15; SCREENINGS M 7 P.M. L5, Hu (o)
Exploration of the fascination of filmmakers around the world with Chekhov’s writings. Readings from Chekhov’s prose and plays, as well as from critical texts on the author and on theory of adaptation. After RUSS 151b. (Formerly RUSS 166a)

RUSS 177a, INTRODUCTION TO TWENTIETH-CENTURY RUSSIAN LITERATURE: POETRY. Rita Lipson. 
TH 11.35-12.50 L5, Hu (o)
Symbolism, acmeism, futurism. After RUSS 151b. (Formerly RUSS 167b)

[RUSS 185b, CONTEMPORARY RUSSIAN CULTURE AND FILM]

GROUP B COURSES

These courses, conducted in English, are open to all Yale College students and are considered particularly appropriate for students in the Literature major.

[RUSS 022a, THE DIVINE AND THE HUMAN IN RUSSIAN FICTION.]
Vladimir Alexandrov.
MW 1-2.15 Hu (o) Tr Fr sem
A study of major works by several of the greatest writers in nineteenth- and twentieth-century Russian literature: Dostoevsky, Tolstoy, Bely, Nabokov, and Bulgakov. Primary attention to the ways the authors embody in their themes, devices, and forms the link between the human realm and the transcendent, a central preoccupation of Russian culture. Readings and discussion in English. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

[SLAV 202aG, OLD CHURCH SLAVIC]

[SLAV 205bG, LANGUAGE, NATIONALISM, AND ETHNIC CONFLICT IN THE BALKANS]

SLAV 207bG/PLSC 365b, LANGUAGES AND POLITICS. Robert Greenberg. 
MW 4-5.15 So (37)
Political controversies surrounding issues of language planning and language policy. How social and political actors differentiate languages and dialects, and how nationalist ideology has shaped language choices. Topics include the English-only movements in the United States, the policy of official bilingualism in Canada, and language policies in Europe, with emphasis on Slavic countries.

[SLAV 210a, INTRODUCTION TO SLAVIC LANGUAGES.]
Robert Greenberg. 
M 7-8.50 P.M. So (37)
The historical development of the Slavic languages from the time of an assumed Slavic unity through the modern period. Consideration of linguistic, cultural, historical, and social factors to explain how more than a dozen Slavic languages emerged as standard languages in the past two centuries. Topics include the role of elites in shaping new Slavic languages, the influence of neighboring languages
on the development of Slavic, and the natural linguistic differentiation that occurred in the Slavic lands. No previous knowledge of Slavic languages required.

**RUSS 245**G/FILM 441**G/LITR 391**G/RSEE 321**G, RUSSIAN FILM.

John MacKay.

For description see under Literature.

**RUSS 250a, LITERATURE AND EMPIRE IN RUSSIA.** Hilary Fink.

MF 11.35-12.50 Hu (34) Tr

A survey of nineteenth-century Russian literature in its historical context. Examination of artistic meditations on justice and rebellion and on national identity and the nature of the individual as these issues are embodied in texts by Pushkin, Gogol, Turgenev, Dostoevsky, Tolstoy, and Chekhov. Emphasis on social, ethical, and psychological conflicts of the period. Readings and discussion in English.

**RUSS 253b, LITERATURE AND REVOLUTION IN RUSSIA, 1892 TO THE PRESENT.** Hilary Fink.

MF 11.35-12.50 Hu (34) Tr

A survey of major writers and literary movements, focusing on the intersection of art and revolution in twentieth-century Russian literature. Topics include the Symbolists and Decadents at the end of the nineteenth century; the reception of the 1917 Revolution by Russian writers in the 1920s; the formation of Stalinist literary orthodoxy and reactions against it; and contemporary literary rebellions against the political and artistic legacies of the past. Readings include works by Blok, Bely, Babel, Olesha, Bunin, Akhmatova, and Bulgakov. Readings and discussion in English.

**RUSS 255b/LITR 206b/RSEE 255b, STUDIES IN THE NOVEL: TOLSTOY.** Vladimir Alexandrov.

MW 1.30-2.20, 1 HTBA Hu (36) Tr

A survey of Leo Tolstoy’s legacy. Readings include early stories, War and Peace and Anna Karenina, and short later works. Close textual analyses, with primary attention to the interrelation of theme, form, and literary and cultural contexts. Readings and discussion in English.

**RUSS 256a/LITR 208a/RSEE 256a, STUDIES IN THE NOVEL: DOSTOEVSKY.** Kate Holland.

MW 1.30-2.20, 1 HTBA Hu (36) Tr

The literary and intellectual legacy of Fyodor Dostoevsky. Focus on Crime and Punishment and The Brothers Karamazov; consideration of several short stories and novellas. Special attention to Dostoevsky’s concept of modernity. Close textual analysis is accompanied by discussion of the historical, biographical, literary, and philosophical contexts of Dostoevsky’s novels. Readings and discussion in English.

**RUSS 315b, THE IRRATIONAL IN RUSSIAN LITERATURE.** Hilary Fink.

M 9.25-11.15 (32) Tr

Themes of the irrational, the absurd, and madness in works of Russian literature from romanticism to contemporary fiction. Particular attention to the role of the individual in society, the battle in Russian thought between reason and antireason, and the function of the irrational in the search for ontological truth. Authors include Gogol, Dostoevsky, Kharms, and others. Readings and discussion in English.

**RUSS 316a/HUMS 346a, RUSSIAN LITERATURE IN THE CONTEXT OF WESTERN PHILOSOPHY.** Hilary Fink.

M 9.25-11.15 Hu (0) Tr
Intensive analysis of Dostoevsky’s *Notes from the Underground*, Tolstoy’s *The Death of Ivan Il’ich* and *The Cossacks*, and selected short stories by Chekhov. The works are examined through the prism of such Western philosophers as Rousseau, Schiller, Kierkegaard, Schopenhauer, Nietzsche, Bergson, and Heidegger. Some attention to Russian philosophy in relation to the Russian literary tradition.

**Russ 319a/**Litr 236a, Criminality and the Novel. Kate Holland. 
T 1:30–3:20 Hu (0) Ir
Criminals and criminality as they are represented in the nineteenth-century European novel. Topics include the criminal as social deviant, the novelistic narrator as criminologist, the language of criminals, crime in the city and in the provinces, political crimes, sexual crimes, and changing interpretations of the causes of crime. Readings include novels by Balzac, Gogol, Hugo, and Dostoevsky, and nonfictional writings by Vidocq and Nechaev. *Readings and discussion in English.*

**Group C Courses**

**Russ 480, Directed Reading in Russian Literature.** Consult the director of undergraduate studies.

HTBA (0)
Individual study under the supervision of a faculty member selected by the student. Applicants must submit a prospectus approved by the adviser to the director of undergraduate studies by the end of the first week of classes in the term in which the course is taken. The student meets with the adviser at least one hour each week, and takes a final examination or writes a term paper. *No credit granted without prior approval of the director of undergraduate studies.*

**Slav 485a or b, Directed Reading or Individual Research in Slavic Languages and Literatures.** Consult the director of undergraduate studies.

HTBA (0)
Individual study under the supervision of a faculty member selected by the student. Applicants must submit a prospectus approved by the adviser to the director of undergraduate studies by the end of the first week of classes in the term in which the course is taken. The student meets with the adviser at least one hour each week, and takes a final examination or writes a term paper. *No credit granted without prior approval of the director of undergraduate studies.*

**Russ 490a or b, The Senior Essay.** Consult the director of undergraduate studies.

HTBA (0)
Research and writing on a topic of the student’s own devising. Regular meetings with an adviser as the work progresses from prospectus to final form.

**Czech 101b, Czech for Reading.** Karen von Kunes.

MW 4–5:15 Meets RP (37)
Acquisition of skills that allow students to read Czech newspapers and literature of average difficulty. Study of grammar and syntax for reading purposes; basic speaking. Texts include daily news and works by Milan Kundera and Václav Havel. (Formerly Czech 119b)

**Czech 110a, Elementary Czech I.** Karen von Kunes.

TTh 11:35–12:50, MW 7–7:50 P.M. L1 1 ½ C Credits Meets RP (24)
A comprehensive introduction to Czech for students with no previous knowledge of the language. Essentials of grammar, with emphasis on oral proficiency, reading, writing, and listening comprehension. Newspaper articles, annotated excerpts from Čapek's R.U.R., Hašek's Svejk, Kundera's Joke and Unbearable Lightness of Being, and Havel's Private View. Audio- and videotapes. Credit only on completion of CZEC 120b. (Formerly the first term of CZEC 115)

CZEC 120b, ELEMENTARY CZECH II. Karen von Kunes.

TTh 11.35-12.50, MW 7-7.50 p.m. L2 1½ C Credits Meets RP (24)
Continuation of CZEC 110a. After CZEC 110a or equivalent. (Formerly the second term of CZEC 115)

CZEC 130a, INTERMEDIATE CZECH. Karen von Kunes.

TTh 9-10.15, MW 8-8.50 p.m. L3 1½ C Credits Meets RP (22)
Continuation of CZEC 120b. Grammar and usage, with emphasis on idiomatic expressions, syntax, and stylistics. Readings in modern Czech history, prose, and poetry; discussions of economic, political, and social issues. After CZEC 120b or equivalent.

CZEC 140b, ADVANCED CZECH. Karen von Kunes.

TTh 9-10.15, MW 8-8.50 p.m. L4 1½ C Credits Meets RP (22)
Continuation of CZEC 130a. Emphasis on writing skills and spoken literary Czech. After CZEC 130a or equivalent. (Formerly the second term of CZEC 130)

*CZEC 246a/*FILM 3643/*RSEE 240a, MILOS FORMAN AND HIS FILMS.
Karen von Kunes.

Th 1.30-3.20; screenings HTBA Hu (0)
An in-depth examination of selected films by Milos Forman and the representatives of the New Wave, cinéma vérité in Czech filmmaking. Special attention to Forman’s artistic and aesthetic development as a Hollywood director in such films as Hair, One Flew over the Cuckoo’s Nest, Ragtime, and Amadeus. Screenings and discussion in English.

*CZEC 301b/*LITR 220b/*RSEE 300b, MILAN KUNDERA: THE CZECH NOVELIST AND FRENCH THINKER. Karen von Kunes.

Th 1.30-3.20 Hu (26) Tr
Close reading of Kundera’s novels, with analysis of his aesthetics and artistic development. Relationships to French, German, and Spanish literatures and to history, philosophy, music, and art. Topics include paradoxes of public and private life, the irrational in erotic behavior, the duality of body and soul, the interplay of imagination and reality, the function of literary metaphor, and the art of composition. Readings and discussion in English.

PLSH 110a, ELEMENTARY POLISH I. Krystyna Iłłakowicz.

MTWThF 11.35-12.25 L1 1½ C Credits Meets RP (61)
A comprehensive introduction to elementary Polish grammar and conversation, with emphasis on spontaneous oral expression. Reading of original texts, including poetry. Use of video materials. Credit only on completion of PLSH 120b. (Formerly the first term of PLSH 115)

PLSH 120b, ELEMENTARY POLISH II. Krystyna Iłłakowicz.

MTWThF 11.35-12.25 L2 1½ C Credits Meets RP (61)
Continuation of PLSH 110a. (Formerly the second term of PLSH 115)

PLSH 130a, INTERMEDIATE POLISH I. Krystyna Iłłakowicz.

MTWThF 1.30-2.20 L3 1½ C Credits Meets RP (61)
A reading and conversation course conducted in Polish. Systematic review of grammar; practice in speaking and composition; reading of selected texts, including poetry. Use of video materials. *Credit only on completion of PLSH 140b. After PLSH 120b or equivalent.*

**PLSH 140b, Intermediate Polish II.** Krystyna Illakowicz.

MTWRF 1:30-2:20  
L4  
1 1/2 C Credits  Meets RP  
(61)

Continuation of PLSH 130a. (Formerly the second term of PLSH 130)

**PLSH 246b, Polish Communism and Postcommunism in Film.** Krystyna Illakowicz.

MW 2:30-3:45  
HTBA  
Hu  
(0)

The basic social and ethical dilemmas of communist and postcommunist Poland. Intersections between national ethos and issues of identity, censorship, and religion. Reevaluations of Polish-Jewish and Polish-German relations. Films by Wajda, Munk, Polanski, Kieslowski, and Holland, as well as selected documentaries. Texts by Milosz, Konwicki, Rozewicz, and Maslowska. *Readings and discussion in English.*

**GRADUATE COURSES**

Courses in the Graduate School are open to qualified undergraduates with permission of the instructor and of the director of graduate studies. Course descriptions are available at the office of the director of undergraduate studies.

**SOCIOLGY**

Director of undergraduate studies: Hannah Brueckner, Rm. 306, 80 Sachem St., 432-3793, hannah.brueckner@yale.edu

**FACULTY OF THE DEPARTMENT OF SOCIOLOGY**

Professors

Julia Adams, Jeffrey Alexander, Elijah Anderson, James Baron, Scott Boorman, Richard Breen, Hannah Brueckner, Paul Cleary, Deborah Davis, Ron Eyerman, Philip Gorski, Karl Ulrich Mayer, Joel Podolny, Douglas Rae, Ivan Szelenyi

Associate Professor

Philip Smith

Assistant Professors

Averil Clarke, Sigrun Kahl, Vida Maralani, Alondra Nelson, Peter Stamatov

Lecturers

Jasmina Beširević-Regan, Juho Härkönen, Matthew McKeever, Abebe Zegeye

Sociology provides the theoretical and empirical foundation for understanding how societies function and how they change over time. Sociologists are interested in the causes and consequences of processes such as the social construction of groups and identity, the evolution of culture, intersubjective meanings, intergroup relations, and hierarchies and social norms. They conduct research on individual behavior and outcomes such as educational attainment, jobs and careers, religious commitment, and political involvement; interpersonal processes such as intimate relationships, sexuality, social interaction in groups, and social networks; the behaviors of organizations and institutions; the causes and consequences of group differences and social inequality; and social change at the societal and global level.
The Sociology major provides both a solid foundation for students interested in careers in the social sciences and a strong background for a variety of professions in which knowledge about social processes and how societies work is relevant. Many recent graduates have gone on to law school, medical school, or graduate programs in public health, business, education, urban planning, criminology, or sociology. Others work in finance, consulting, publishing, marketing, city planning, teaching, research, and advocacy.

The Sociology department offers two undergraduate programs leading to the B.A. degree. The standard program focuses on sociological concepts, theories, and methods. The combined program provides students with the option to combine sociology with a concentration in another field. For example, students interested in business careers can combine sociology with economics. Students interested in the major are encouraged to contact the director of undergraduate studies early in their academic careers to discuss potential options.

**Admission to the major.** Students interested in the Sociology major should complete either a freshman seminar or at least one introductory course (numbered 110–149) by the end of the sophomore year. This course may be applied toward the requirements of the major. The director of undergraduate studies can waive the introductory course requirement for students who demonstrate adequate preparation for advanced course work in sociology. All students interested in the Sociology major should meet with the director of undergraduate studies no later than the beginning of the junior year to elect a program of study.

**Division of courses.** Courses in Sociology are divided by level, with introductory courses numbered from 110 to 149, courses in sociological theory from 150 to 159, courses in sociological methods from 160 to 169, intermediate courses from 150 to 299, advanced courses in the 300s, and individual study and research courses in the 400s. Freshman seminars are numbered below 100 and count as introductory or intermediate courses. In addition, qualified students may elect to enroll in graduate courses, with permission of the instructor and of the director of graduate studies. A list of graduate courses and descriptions is available from the director of undergraduate studies.

**Program I. The Standard Program**

The requirements for the standard program are:

1. Thirteen term courses in sociology (including the senior colloquium), of which normally no more than two may be drawn from outside the Sociology department. At least one must be an introductory Sociology course or a substitute approved by the director of undergraduate studies, but no more than two introductory courses may count toward this total.

2. Two courses in sociological theory and two in sociological methods, normally completed by the end of the junior year. **Socy 151a**, Foundations of Modern Social Theory, and 152b, Topics in Contemporary Theory, are the required courses for theory. **Socy 160a**, Methods of Inquiry, and one additional Sociology course numbered between 161 and 169 are required for methods. Students planning to study abroad in their junior year are strongly encouraged to begin meeting the theory and methods requirements in their sophomore year. They should also discuss the options for their course of study with the director of undergraduate studies before finalizing their plans.

3. One advanced seminar in Sociology (**Socy 300–399**).
4. For students in the intensive major, a two-term senior essay and colloquium, socy 493. This yearlong biweekly colloquium provides students in the intensive major with an opportunity to share their research experiences. Students in the nonintensive major take one additional 300-level seminar in Sociology and write a one-term senior essay in socy 491a or 492b.

PROGRAM II. SOCIOLOGY WITH ANOTHER SUBJECT

The combined program allows students to unite the study of sociology with the study of another discipline or substantive area. The requirements are:

1. Thirteen term courses (including the senior colloquium), of which at least nine and no more than ten are selected from Sociology, the remainder being chosen from another department or program. At least one must be an introductory Sociology course or a substitute approved by the director of undergraduate studies, but no more than two introductory courses in any department or program may count toward this total. The courses outside Sociology must constitute a coherent unit alone and form a logical whole when combined with the Sociology courses.

2. Two courses in sociological theory and two in sociological methods, normally completed by the end of the junior year. socy 151a, Foundations of Modern Social Theory, and 152b, Topics in Contemporary Theory, are the required courses for theory. socy 160a, Methods of Inquiry, and one additional Sociology course numbered between 161 and 169 are required for methods. Students planning to study abroad in their junior year are strongly encouraged to begin meeting the theory and methods requirements in their sophomore year. They should also discuss the options for their course of study with the director of undergraduate studies before finalizing their plans.

3. One advanced seminar in Sociology (soct 300–399).

4. A one- or two-term senior essay in which the student integrates sociology and the other subject chosen. Students in the intensive major write a two-term senior essay and attend a yearlong biweekly colloquium (soct 493). The colloquium provides students with an opportunity to share their research experiences. Students in the nonintensive major take one additional 300-level seminar in Sociology and write a one-term senior essay in soct 491a or 492b.

The combined program allows students to design a program to satisfy their own substantive interests and future career plans. By the beginning of the junior year, participants in the combined program are expected to consult with the director of undergraduate studies in order to obtain approval for their course of study.

Senior requirement for the nonintensive major. Students electing the non-intensive major take one additional seminar in Sociology (soct 300–399) and write a one-credit senior essay during the senior year (soct 491a or 492b). The senior essay for nonintensive majors is intended to be an in-depth scholarly review and critical analysis based on secondary sources. Students select a controversial topic in any sociological field and write a literature review that evaluates what is known about the topic. All nonintensive majors are required to enroll in soct 491a or 492b to receive credit for the senior essay. To register for this course, students must submit a written plan of study approved by a faculty adviser to the director of undergraduate studies no later than
the end of registration period in the term in which the senior essay is to be written. Nonintensive majors are not eligible to graduate with Distinction in the Major.

**Senior requirement for the intensive major.** The intensive major gives students an opportunity to undertake a yearlong program of original research resulting in a contribution to sociological knowledge. The yearlong project requires substantial independent research and knowledge of a sociological subfield. Students use research methods such as data gathering through participant observation, in-depth interviewing, conducting of small-scale surveys, or secondary analysis of existing data. They may present findings in a variety of forms, from ethnographic narratives to analytical statistics. Students select primary and secondary advisers from the faculty. Students in the intensive major enroll in socy 493, Senior Essay and Colloquium for Intensive Majors, during their senior year. The colloquium provides a forum for discussing the research process and for presenting students’ research at various stages. Intensive majors are eligible to graduate with Distinction in the Major if they meet the grade standards for distinction (see chapter I) and submit a senior essay written in socy 493.

**Admission to the intensive major.** Students should apply to the director of undergraduate studies by the last day of classes in the spring term of their junior year. In special circumstances, applications may be accepted through the end of registration period in the first term of the senior year. Applications should include a one-page statement of interest that includes a list of relevant courses taken and identifies a prospective senior essay adviser. Admission is based on performance and promise. The director of undergraduate studies and the senior essay adviser serve as advisers to candidates for the intensive major.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** 1 intro course (socy 110–149) or equivalent

**Number of courses:** 13 term courses (incl prereq and senior essay)

**Specific courses required:** socy 151a, 152b, 160a, 1 addtl Sociology course numbered 161–169

**Distribution of courses:** Program I—at least 11 term courses in Sociology at intermediate and advanced levels, 1 Sociology sem at 300 level; Program II—9 or 10 term courses in Sociology; at least 1 Sociology sem at 300 level; no more than 2 intro courses in any dept or program

**Senior requirement:** Nonintensive major—1 addtl 300-level Sociology sem and senior essay (socy 491a or 492b); Intensive major—senior essay (socy 493)

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**FRESHMAN SEMINARS**

[socy 015b, Social Relations and Society]

**socy 025b, Reproduction in Global Contexts.** Averil Clarke. Th 2.30-3.45 So (27) Fr sem

Examination of the ways in which societies organize reproduction. Historical and geopolitical differences in fertility levels and in access to family planning services and maternal care; fertility enhancement technologies; abortion prevalence and politics; eugenics and population policy; early and late childbearing, infertility, and adoption. May count toward the Sociology major as an intermediate course. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
[socy 041a, Sociology of Social Control and Criminal Justice]

★socy 086a, Chinese Society since Mao. Deborah Davis.
TTh 2.30-3.45 So (0) Fr sem
An overview of the major social institutions in contemporary China, with a focus on the changing relationship between individual and society. Use of print and visual sources to explore the social consequences of China's recent retreat from socialism and its rapid integration into the global economy. May count toward the Sociology major as an intermediate course. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

INTRODUCTORY COURSES

[socy 115a, Contemporary American Society]

socy 118b, Numbers and Society. Richard Breen, Hannah Brueckner, Vida Maralani.
TTh 2.30-3.20, 1 HTBA (27)
Overview of quantitative approaches in the social sciences. Topics include social networks, demography, and social inequality and mobility.

T 2.30-4.20 So (27)
Introduction to the study of modernity and sociology. Topics include the dramatic rise of capitalism and colonialism, new forms of social inequality, the advent of democracy and bureaucracy, and the contested role of religion in modernity. Readings from contemporary writings on postmodern social life that are informed by, and react against, the classical sociological tradition. Preference to freshmen and sophomores.

[socy 130a, Social Problems]

socy 133a, Computers, Networks, and Society. Scott Boorman.
TTh 1-2.15 So Meets RP (26)
Comparison of major algorithm-centered approaches to the analysis of complex social network and organizational data. Fundamental principles for developing a disciplined and coherent perspective on the effects of modern information technology on societies worldwide. Software warfare and algorithm sabotage; block-modeling and privacy; legal, ethical, and policy issues. No prior experience with computers required.

[socy 141b, Sociology of Crime and Deviance]

socy 143a, Race and Ethnicity. Averil Clarke.
MW 9-10.15 So (32)
An introduction to the study of race and ethnicity from a sociological perspective. Focus on how racial and ethnic differences are constituted and how they affect individual life outcomes. Attention to both local and national communities, as well as to the political and economic bases of ethnic and race relations in the history of the United States.

socy 147b, Introduction to Social Policy Analysis.
Scott Boorman.
TTh 1-2.15 So (26)
An introduction to the analysis of efficiency and equity in complex social and legal structures; comparison of approaches based on social-structural, legal, and economic modes of reasoning.

**socy 148b/plsc 348b, Varieties of Capitalism.** Ivan Szelenyi.

**MW 11.35-12.25, 1 HTBA So (34)**
An introduction to the political economy of dictatorship and democracy, economic growth, and varieties of economic systems around the world and throughout history.

**COURSES IN SOCIOLOGICAL THEORY**

Open to all students without prerequisite.

**socy 150a/arch 385a/ep&e 285a/hist 152a/plsc 279aG, New Haven and the American City.** Alan Plattus, Douglas Rae.
For description see under Political Science.

**socy 151a/hums 302a/plsc 290a, Foundations of Modern Social Theory.** Ivan Szelenyi.

**MW 10.30-11.20, 1 HTBA So (0)**
Major works of social thought from the beginning of the modern era through the 1920s. Attention to social and intellectual contexts, conceptual frameworks and methods, and contributions to contemporary social analysis. Writers include Hobbes, Locke, Rousseau, Montesquieu, Adam Smith, Marx, Weber, and Durkheim.

**socy 152b, Topics in Contemporary Theory.** Ron Eyerman.

**W 9.25-11.15 WR, So (0)**
Overview of developments in social theory since the 1950s, including structural functionalism, hermeneutical approaches, interactionist and phenomenological perspectives, rational choice, network theory, the new institutionalism, and theories of globalization. Examination of the work of influential theorists.

**COURSES IN SOCIOLOGICAL METHODS**

**socy 160a, Methods of Inquiry.** Julia Adams.

**WF 9-10.15 So (32)**
The theory, philosophy, and practice of research design in the social sciences. Modes of observation that social scientists employ; measuring and sampling techniques; debates over how to “do” social science; ethical quandaries involved in social research. *No background in social research assumed.*

**socy 161b, Survey Methods.** Matthew McKeever.

**TH 2.30-3.45 So (0)**
Theory and practice of survey design, including conceptualization, measurement issues, sample design, questionnaire construction, interviewing, data analysis, publication of results, and limitations and ethical aspects of survey research.

**socy 166a, Method and Practice of Field Work.** Elijah Anderson.

**M 1.30-3.20 WR, So (0)**
A practical introduction to theoretical and methodological issues in qualitative sociology. *Recommended preparation: socy 160a.*

[socy 168b, Historical Approaches in Sociology]
INTERMEDIATE COURSES

The prerequisite for intermediate courses is one introductory Sociology course or permission of the instructor.

**socy 188b/INTS 389b/PLSC 415b, Religion and Politics.** Sigrun Kahl. For description see under Political Science.

**socy 198b/AFAM 229b/AMST 229b/ER&M 231b/WGSS 229b, Health Social Movements.** Alondra Nelson. For description see under African American Studies.

| [socy 210a, Sociology of the Welfare State: Life Course and Social Policy] |
| [socy 216a/WGSS 314a, Social Movements] |
| [socy 219a, Economic Sociology] |

**socy 221b/WGSS 314b, Sex and Romance in Adolescence.** Hannah Brueckner.

M 1.30-3.20 So (0)

Sexuality—making decisions about when and with whom to have sex, understanding of risk, and measures taken to reduce risk—analyzed as a fundamentally social aspect of human development. Themes include cultural, socioeconomic, institutional, and relational determinants of adolescent sexual development and behavior; courtship processes; relationship formation and dissolution; sociological versus biological perspectives on sexual orientation; review and evaluation of interventions to promote sexual health. *Enrollment limited to sophomores except with permission of instructor.*

**socy 224b/WGSS 345b, Marriage and Family.** Averil Clarke.

M 3.30-5.20 So (37)

Sociological approaches to the study of the family, emphasizing both historical and recent change. Social, economic, demographic, and cultural dimensions of family life; families and households in a global perspective; influence of public policy on family life; alternative institutional arrangements for sexual and emotional care and reproductive labor; family roles, responsibilities, and obligations over the life span.

ADVANCED COURSES

Courses in this category are open to students who have completed one intermediate course and any other specified requirement, or by permission of the instructor. Preference is given to Sociology majors in their junior and senior years.

**socy 314b, Social Inequality.** Juho Härkönen.

T 3.30-5.20 So (0)

A study of social and economic inequalities based on race, gender, and social class; such inequalities as a dimension of individual life chances and life aspirations as well as of the structure and organization of societies. Discussion of theoretical, political, empirical, and methodological issues.

**socy 324a/AFAM 326a, African Americans and Social Thought.** Alondra Nelson.

For description see under African American Studies.
Civil Society in China. Deborah Davis.

Discussion of the social and political consequences of China’s entry into the global economy. Focus on patterns of inequality and the success of individuals and communities seeking greater social autonomy and political freedoms. Prerequisite: at least one course focused on China after 1911. Knowledge of modern Chinese desirable but not necessary. Optional discussion section conducted in Chinese.

Civil Society and Democracy

Civil Society and Poverty and Policy. Ivan Szelenyi.

Aspects of urban poverty such as unemployment, homelessness, welfare dependence, isolation, and educational deprivation in the context of recent, current, and proposed policies.

Building Social Theory for Empirical Analysis.

Richard Breen.

Approaches to developing explanatory theories aimed at addressing specific empirical questions in contemporary sociology. Rational choice, game theory, and social (or endogenous) interaction models. The use of agent-based models and other simulation techniques in building models of social phenomena. Testing of explanatory models against empirical data.

Religious Pluralism and Democratic Politics

Consumption and Chinese Popular Culture

Material Culture and Iconic Consciousness. Jeffrey Alexander.

Exploration of how and why modern and postmodern societies have continued to sustain material symbolism and iconic consciousness. Study of theoretical approaches to debates about icons and symbols in philosophy, sociology, linguistics, psychoanalysis, and semiotics. Use of case studies to analyze modern iconography in advertisements and branding, food and bodies, nature, fashion, celebrities, popular culture, art, and politics.

Technology, Identity, and Culture.

Alondra Nelson.

For description see under African American Studies.

Genocide and Ethnic Conflict.

Jasmina Beširević-Regan.

Genocide and violent ethnic conflict in the past fifty years, including contributory historical and political elements. Consideration of ways to prevent or resolve such conflicts. Discussion of identity, religion, class, and nationhood as related to violence and conflict. Rwanda and the former Yugoslavia used as case studies to develop an analytical framework.

Race, Racisms, and Social Theory.

Alondra Nelson.
Historical and theoretical issues deriving from the comparative study of races and racisms, with special attention to the relationship between the category of “race” and the development of the human sciences. A core consideration of “race” as a problem in the sociology of knowledge is supplemented by material from other disciplines: history, philosophy, economics, politics, and literature.

[socy 367b, Citizenship and Civic Engagement]

* socy 369b/*ints 354b/*plsc 446b, Welfare States across Nations. Sigrun Kahl.
  For description see under Political Science.

* socy 385b/*ep&e 309b/*wgss 437b, Race, Gender, and the African American Experience. Averil Clarke.
  Th 9.25-11.15 So (0)
  Social constructs of race and gender as they affect individual and collective black experiences within social institutions such as education, family, criminal justice, media and entertainment, politics, and the economy. Ways in which these institutions produce and are constituted by race and gender inequality. Focus on theories of discrimination and on social movements that both differentiate and unite the black experience along gender lines.

* socy 395a/*east 408a/*ep&e 308a, Wealth and Poverty in Modern China. Deborah Davis.
  W 1.30-3.20 So Meets RP (0)
  Discussion of how access to property, capital, education, and political power has affected poverty and the distribution of wealth in China since 1911, with emphasis on contemporary inequality and social stratification. Extensive use of documentary and online sources. Optional discussion section conducted in Chinese.

INDIVIDUAL STUDY AND RESEARCH COURSES

* socy 471a and 472b, Individual Study. Consult the director of undergraduate studies.
  HTBA (0)
  Individual study for qualified juniors and seniors under faculty supervision. To register for this course, each student must submit a written plan of study approved by the adviser to the director of undergraduate studies.

* socy 491b and 492b, Senior Essay and Colloquium for Nonintensive Majors. Ivan Szelenyi [F], Hannah Brueckner [Sp].
  Alt. T 3.30-5.20 (0)
  Independent library-based research under faculty supervision. To register for this course, students must submit a written plan of study approved by a faculty adviser to the director of undergraduate studies no later than the end of registration period in the term in which the senior essay is to be written. The course meets biweekly, beginning on Tuesday, September 9, in the fall term and Tuesday, January 13, in the spring term.

* socy 493, Senior Essay and Colloquium for Intensive Majors. Ivan Szelenyi.
  Alt. T 3.30-5.20 (0)
  Independent research under faculty direction, involving empirical research and resulting in a substantial paper. Workshop meets biweekly to discuss various stages of the research process and to share experiences in gathering and analyzing data. The first meeting is on Tuesday, September 16, in the fall term and Tuesday, January 20, in the spring term.
SOUTH ASIAN STUDIES

Director of undergraduate studies: Mridu Rai, 206 HGS, 432-1354, mridu.rai@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF SOUTH ASIAN STUDIES

Professors
Akhil Amar (Law School), E. Annamalai (Anthropology) (Visiting), William Burch (Forestry & Environmental Studies), Michael Dove (Forestry & Environmental Studies, Anthropology), Sara Suleri Goodyear (English), Phyllis Granoff (Religious Studies), Stanley Insler (Linguistics), Gustav Ranis (Emeritus) (Economics), Kalyanakrishnan Sivaramakrishnan (Anthropology), T. N. Srinivasan (Economics), Shyam Sunder (School of Management), Mimi Yiengpruksawan (History of Art)

Associate Professors
Bernard Bate (Anthropology), Nihal de Lanerolle (School of Medicine), William Deresiewicz (English), Mridu Rai (History)

Assistant Professors
Shameem Black (English), Jacob Dalton (Religious Studies), Ashwini Deo (Linguistics), Mayur Desai (Public Health), Ravi Durvasula (School of Medicine), El Mokhtar Ghambou (English), Karuna Mantena (Political Science), David Mellins (South Asian Studies) (Visiting), Kishwar Rizvi (History of Art), Sarah Weiss (Music)

Senior Lecturers
Carol Carpenter (Forestry & Environmental Studies, Anthropology), Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies), Koichi Shinohara (Religious Studies)

Lecturers
Hugh Flick, Jr. (Religious Studies), Zareena Grewal (Ethnicity, Race, & Migration)

Senior Lecturer
Seema Khurana

The program in South Asian Studies combines the requirements of a discipline-based first major with significant course work in South Asian studies. South Asian Studies can be taken only as a second major. The major is intended to provide students with a broad understanding of the history, culture, and languages of South Asia as well as the region’s current social, political, and economic conditions. Work in a discipline-based major coupled with a focus on South Asia prepares students for graduate study, employment in non-governmental organizations, or business and professional careers in which an understanding of South Asia is essential.

The South Asian Studies major permits students to choose courses from a wide range of disciplines. Programs should provide a balance between courses in the humanities and those in the social sciences. The proposed course of study must be approved each term by the director of undergraduate studies. Students should also identify a faculty adviser from the South Asian Studies faculty in their area of specialization as early as possible.

Permission to complete two majors must be secured from the Committee on Honors and Academic Standing. Application forms are available from the residential college deans and must be submitted prior to the student’s final term.

Requirements of the major. In addition to fulfilling the requirements of the primary major, a student choosing South Asian Studies as a second major must complete seven term courses, not including the senior requirement, and meet the major’s language requirement. Four courses must be chosen from Group A; of these, two must address premodern South Asia. The
three remaining courses may be chosen from either Group A or Group B. At least two of the seven required courses should be seminars.

**Language requirement.** The language requirement encourages both depth and breadth of language study. Courses are regularly offered in Hindi, Tamil, and Sanskrit. One South Asian language must be studied at the advanced level (courses designated L5); a second South Asian language must be completed through the beginning level (courses designated L2). Courses to fulfill this requirement must be taken while the student is at Yale. Students who matriculate with proficiency in Hindi or Tamil may take a different modern language (Bengali, Urdu, Telugu, or Kannada) through the Directed Independent Language Study program. Students are encouraged to pursue intensive language study through courses or work abroad.

**Senior requirement.** The senior requirement may be fulfilled by completion of a seminar that culminates in a senior essay. Alternatively, the requirement may be fulfilled by completion of a one-credit, two-term senior research project in SAST 491. The use of primary materials in the languages of the region is encouraged in senior essay projects.

**REQUIREMENTS OF THE MAJOR**

- **Prerequisites:** None
- **Number of courses:** 7 (excluding senior req and lang req)
- **Specific courses required:** None
- **Distribution of courses:** 4 term courses from Group A, 2 in premodern; 3 term courses from Group A or Group B; at least 2 seminars
- **Language requirement:** Advanced study in 1 South Asian lang; study through beginning level in another South Asian lang
- **Senior requirement:** Senior essay in sem, or research project in SAST 491

**LANGUAGE AND LITERATURE COURSES**

**HNDI 110aG, Elementary Hindi I.** Seema Khurana.

**TTTh 1-2.15, W 2.30-3.45, M 1 HTBA L1 1 1/2 C Credits** (0)

An in-depth introduction to modern Hindi, including the Devanagari script. A combination of graded texts, written assignments, audiovisual material, and computer-based exercises provides cultural insights and increases proficiency in understanding, speaking, reading, and writing Hindi. Emphasis on spontaneous self-expression in the language. *No prior background in Hindi assumed. Credit only on completion of HNDI 120b.* (Formerly the first term of HNDI 115)

**HNDI 120bG, Elementary Hindi II.** Seema Khurana.

**TTTh 1-2.15, W 2.30-3.45, M 1 HTBA L2 1 1/2 C Credits** (0)

Continuation of HNDI 110a. (Formerly the second term of HNDI 115)

**HNDI 130aG, Intermediate Hindi I.** Seema Khurana.

**TTTh 2.30-3.45, W 4-5.15 L3 1 1/2 C Credits** (0)

The first half of a two-term sequence designed to develop proficiency in the four language skill areas. Extensive use of cultural documents including feature films, radio broadcasts, and literary and nonliterary texts to increase proficiency in understanding, speaking, reading, and writing Hindi. Focus on cultural nuances and Hindi literary traditions. Emphasis on spontaneous self-expression in the language. *After HNDI 120b or equivalent.*

**HNDI 140bG, Intermediate Hindi II.** Seema Khurana.

**TTTh 2.30-3.45, W 4-5.15 L4 1 1/2 C Credits** (0)
Continuation of HNDI 130a, focusing on further development of proficiency in the four language skill areas. After HNDI 130a or equivalent. (Formerly HNDI 131b)

TTH 4-5.15 L5 (o)
An advanced language course aimed at enabling students to engage in fluent discourse in Hindi and to achieve a comprehensive knowledge of formal grammar. Introduction to a variety of styles and levels of discourse and usage. Emphasis on the written language, with readings on general topics from newspapers, books, and magazines. Prerequisite: HNDI 140b or permission of instructor. (Formerly HNDI 140a)

TTH 4-5.15, 1 HTBA L5 (o)
An advanced language course that develops language skills through selected readings of Hindi literature and the study of popular culture. Focus on the adaptations of literary works of Prem Chand, Mannoo Bhandhari, Sharat Chandra, and Amrita Pritam in popular culture, cinema, theater, and television dramas. Prerequisite: HNDI 150a.

*LING 115G, Elementary Sanskrit. Ashwini Deo [F], David Mellins [Sp].
M 1.30-3.20 L3 (o)
An intensive reading course in Sanskrit for students who have some knowledge of the language. Selections from the Mahabharata and the Ramayana.

*TAML 110aG, Introductory Tamil I. E. Annamalai.
5 HTBA L1 1 ½ C Credits (50)
An in-depth introduction to modern Tamil, focusing on comprehension, speaking, reading, and writing skills as well as on cultural understanding. Course work includes graded texts, written assignments, audiovisual material, and computer-based exercises. No prior background in Tamil assumed. Credit only on completion of TAML 120b. (Formerly TAML 115a)

*TAML 120bG, Introductory Tamil II. E. Annamalai.
5 HTBA L2 1 ½ C Credits (50)
Continuation of TAML 110a. After TAML 110a. (Formerly TAML 116b)

5 HTBA L3 1 ½ C Credits Meets RP (50)
The first half of a two-term sequence designed to develop proficiency in comprehension, speaking, reading, and writing through the use of visual media, newspapers and magazines, modern fiction and poetry, and public communications such as pamphlets, advertisements, and government announcements. Prerequisite: TAML 120b or equivalent.
TAML 140bG, INTERMEDIATE TAMIL II. E. Annamalai.

5 hTRA 4 1 1/ C Credits Meets RP (50)
Continuation of TAML 130a, focusing on further development of proficiency in the four language skill areas. Prepares students to conduct fieldwork in Tamil. Prerequisite: TAML 130a or equivalent. (Formerly TAML 131b)

* TAML 150bG, ADVANCED TAMIL. E. Annamalai.

MW hTRA 5 Meets RP (50)
An advanced language course designed to help students understand speech from the public platform, conduct interviews in Tamil, and analyze texts through critical reading, discussion, writing, and translation. Texts may include creative literature of the modern period, contemporary cultural and political writings, and other genres as determined by student interests. Prerequisite: TAML 140b or equivalent.

* TAML 198aG or bG, ADVANCED TUTORIAL. E. Annamalai.

F 2.30-4.20 (0)
For students with advanced Tamil language skills who wish to engage in concentrated reading and research on material not otherwise included in the curriculum. The work is supervised by the instructor and culminates in a term paper or its equivalent. Permission to enroll requires submission of a detailed proposal and its approval by the instructor and the director of undergraduate studies.

GROUP A

* ANTH 325aG, SOCIETY AND POLITICS IN MODERN INDIA. Kalyanakrishnan Sivaramakrishnan.

* ECON 478a, ECONOMIC DEVELOPMENT OF INDIA AND SOUTH ASIA. T. N. Srinivasan.

HIST 310a, HISTORY OF MODERN SOUTH ASIA. Mridu Rai.

* LING 111a/ HUMS 385a/ LITR 150a, SAN SKRIT CLASSICS IN TRANSLATION. Stanley Insler.
For description see under Linguistics.

LITR 160b, CLASSICAL INDIAN DRAMA AND DRAMATURGY. David Mellins.

* RLST 009a, SIVA AND MAHA KALA. Phyllis Granoff.

RLST 181b, BUDDHIST MASTERS OF THE HIMALAYA. Jacob Dalton.

* RLST 182a, DEATH, DREAMS, AND VISIONS IN INDO-TIBETAN BUDDHISM. Jacob Dalton.

* RLST 185b, THE MAHABHARATA. Hugh Flick, Jr.

* RLST 191b, RITUAL AND SALVATION IN INDIA. Phyllis Granoff.

* TAML 190bG/LITR 261b, LITERATURES OF SOUTH INDIAN LANGUAGES. E. Annamalai.

MW 2.30-3.45 Hu (0) Tr
Introduction to literature in translation from four South Indian languages, Tamil, Malayalam, Kannada, and Telugu. Works from the modern colonial and postcolonial periods are illustrative of South Indian society and, more broadly, South Asian society. Readings and discussion in English.
*WGSS 449b, Fictions of Indian Women. Geetanjali Singh Chanda.

GROUP B

For description see under Economics.

econ 325b/ints 352b, Economics of Developing Countries. Dean Karlan.
For description see under Economics.

*ENGL 343a/AFST 343a/LITR 269a, Introduction to Postcolonial Literatures. El Mokhtar Ghambou.
For description see under English Language & Literature.

For description see under Ethnicity, Race, & Migration.

HIST 137b/AMST 230b/ER&M 223b, International History of the United States in the Twentieth Century. Seth Fein.
For description see under History.


*MUSI 353b/AFST 353b, Topics in World Music. Michael Veal.
For description see under Music.

For description see under Theater Studies.

*WGSS 295b, Globalizing Gender. Geetanjali Singh Chanda.

*WGSS 327a/MMES 311a, Constructing the Self: From Autobiography to Facebook. Geetanjali Singh Chanda.
For description see under Women’s, Gender, & Sexuality Studies.

For description see under Women’s, Gender, & Sexuality Studies.

SENIOR ESSAY COURSE

SAST 491, Senior Essay. Consult the director of undergraduate studies.

HTBA (○) Cr/Year only
A yearlong research project completed under faculty supervision and resulting in a substantial paper.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Graduate courses in South Asian Studies are open to qualified undergraduates. Descriptions of courses are listed in the Graduate School bulletin and are available in the South Asian Studies program office. Permission of the instructor and of the director of graduate studies is required.
SOUTHEAST ASIA STUDIES

Language studies coordinator: J. Joseph Errington, Southeast Asia Studies Council, 311 LUCE, 432-3431, seasc@yale.edu, www.yale.edu/seas

FACULTY ASSOCIATED WITH THE COUNCIL ON SOUTHEAST ASIA STUDIES

Professors
- William Burch (Forestry & Environmental Studies), Lisa Curran (Forestry & Environmental Studies), Michael Dove (Forestry & Environmental Studies), J. Joseph Errington (Chair) (Anthropology), Robert Evenson (Economics), William Kelly (Anthropology), Benedict Kiernan (History), James Scott (Political Science), Mimi Yiengpruksawan (History of Art)

Assistant Professors
- Erik Harms (Anthropology), Sarah Weiss (Music)

Lecturers
- Carol Carpenter (Forestry & Environmental Studies, Anthropology), Amity Doolittle (Forestry & Environmental Studies)

Senior Lector II
- Quang Phu Van

Senior Lector
- Indriyo Sukmono

The Council on Southeast Asia Studies oversees an interdisciplinary program that brings together faculty and students sharing an interest in Southeast Asia and supplements the undergraduate curriculum with an annual seminar series, periodic conferences, and special lectures. Yale does not offer a degree in Southeast Asia studies. Majors in any department may consult with Council faculty regarding a senior essay on a Southeast Asian topic, and in certain circumstances students who have a special interest in the region may consider a Special Divisional Major. Students planning to undertake field research or language study in Southeast Asia may apply to the Council for summer fellowship support.

Courses featuring Southeast Asian content are offered within a variety of departments each year, including Anthropology, Economics, History, Music, and Political Science. A list of courses for the current year can be obtained through the Council office or Web site. Yale maintains extensive library and research collections on Southeast Asia.

Language instruction is offered in two Southeast Asian languages, Indonesian and Vietnamese. The Council on Southeast Asia Studies supports language tables and tutoring in other Southeast Asian languages by special arrangement.

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INDN 110aG, Elementary Indonesian I. Indriyo Sukmono.

5 HTBA L1 1 1/3 C Credits (61)
An introductory course in standard Indonesian with emphasis on developing communicative skills through a systematic survey of grammar and graded exercises. Credit only on completion of INDN 120b. (Formerly the first term of INDN 115)

INDN 120bG, Elementary Indonesian II. Indriyo Sukmono.

5 HTBA L2 1 1/3 C Credits (61)
Continuation of INDN 110a. Introduction to reading, leading to mastery of language patterns, essential vocabulary, and basic cultural competence. (Formerly the second term of INDN 115)
3 HTBA L3 (61)
Continued practice in colloquial Indonesian conversation and reading and discussion of texts. After INDN 120b or equivalent.

*INDN 140bG, Intermediate Indonesian II. Indriyo Sukmono.
3 HTBA L4 (61)
Continuation of INDN 130a. (Formerly the second term of INDN 130)

*INDN 470a and 471b, Independent Tutorial. Consult the language studies coordinator.
HTBA (0)
For students with advanced Indonesian language skills who wish to engage in concentrated reading and research on material not otherwise offered in courses. The work must be supervised by an adviser and must terminate in a term paper or its equivalent. Permission to enroll requires submission of a detailed project proposal and its approval by the language studies coordinator.

VIET 110aG, Elementary Vietnamese I. Quang Phu Van.
MTWThF 9.25-10.15 L1 1 ½ C Credits Meets RP (32)
Students acquire basic working ability in Vietnamese, developing skills in speaking, listening, writing (Roman script), and reading. Discussion of aspects of Vietnamese society and culture. Credit only on completion of VIET 120b. No previous knowledge of Vietnamese assumed. (Formerly the first term of VIET 115)

VIET 120bG, Elementary Vietnamese II. Quang Phu Van.
MTWThF 9.25-10.15 L2 1 ½ C Credits Meets RP (32)
Continuation of VIET 110a. (Formerly the second term of VIET 115)

MTWThF 10.30-11.20 L3 1 ½ C Credits Meets RP (33)
An integrated approach to language learning aimed at strengthening students’ listening, speaking, reading, and writing skills in Vietnamese. Communicative activities such as conversations, performance simulation, drills, role plays, and games. Discussion of aspects of Vietnamese society and culture. After VIET 120b or equivalent.

MTWThF 10.30-11.20 L4 1 ½ C Credits Meets RP (33)
Continuation of VIET 130a. (Formerly the second term of VIET 130)

TH 1-2.15 Hu (0) Tr
Introduction to Vietnamese culture and values. Topics include cultural and national identity, aesthetics, the meaning of life, war, and death. Selected readings from Zen poems, folklore, autobiographies, and religious and philosophical writings. Readings in translation. No previous knowledge of Vietnamese required.

*VIET 470a and 471b, Independent Tutorial. Consult the language studies coordinator.
HTBA (0)
For students with advanced Vietnamese language skills who wish to engage in concentrated reading and research on material not otherwise offered in courses. The work must be supervised by an adviser and must terminate in a term paper or its equivalent. Permission to enroll requires submission of a detailed project proposal and its approval by the language studies coordinator.
SPANISH

Director of undergraduate studies: Noël Valis, 82–90 Wall St., 432-1135, noel.valis@yale.edu; language director: Sonia Valle, Rm. 210, 82–90 Wall St., 432-1159, sonia.valle@yale.edu

FACULTY OF THE DEPARTMENT OF SPANISH AND PORTUGUESE

Professors
- Rolena Adorno (Chair), Aníbal González, Roberto González Echevarría, K. David Jackson, María Rosa Menocal, Noël Valis

Assistant Professors
- Susan Byrne, Jason Cortés, Ernesto Estrella, Paulo Moreira

Senior Lecturer
- Priscilla Meléndez

Senior Lectors
- Sybil Alexandrov, Marta Almeida, Teresa Carballal, Mercedes Carreras, Sebastián Díaz, María Jordán, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Terry Seymour, Margherita Tórtora, Sonia Valle

Lectors
- Pilar Asensio, Christine Atkins, Yovanna Cifuentes, Ame Cividanes, Maripaz García, Oscar González-Barreto, Tania Martuscelli, Bárbara Safille

The Department of Spanish and Portuguese provides instruction in the languages, literatures, and cultures of the Hispanic and Luso-Brazilian worlds. Courses in Portuguese and the requirements of the major are described under “Portuguese”; the names of faculty teaching Portuguese courses are in the list above.

The major in Spanish is a liberal arts major that offers a wide range of courses in the language, literatures, and cultures of the twenty Spanish-speaking countries in Europe and Latin America. Today Spanish is the second language of the United States and one of the three most important and widely spoken languages in the world. The program in Spanish provides students with the opportunity to acquire thorough linguistic proficiency as well as in-depth knowledge of both cultural and literary topics.

The major in Spanish is complementary to interests in a wide range of other disciplines including anthropology, international studies, history, Latin American studies, comparative literature, economics, environmental studies, humanities, and political science, among others. Students majoring in these or other areas, as well as those considering a career in medicine or law, are encouraged to consider completing the Spanish major as one of two majors.

Among the Spanish offerings, Group A includes beginning and intermediate language courses designed to help students develop fluency in understanding, speaking, reading, and writing Spanish. Group B courses seek to provide students with a broad but solid introduction to the fields of Hispanic literatures and cultures, and to strengthen their linguistic competence through courses in advanced grammar and composition. Group C allows students to perfect their linguistic and critical skills with courses organized around a specific problem or issue, e.g., a literary genre, a type of literary or cultural representation, or a specific writer or text. It is strongly recommended that students complete SPAN 243a or b, 244a or b, and at least one other Group B course before enrolling in any Group C courses taught in Spanish. Students desiring more information about either language or literature offerings should consult the director of undergraduate studies.
Beginning students ordinarily enroll in SPAN 110a or 125a or b. Students who take SPAN 110a must continue with 120b in the following term, and no credit is awarded for 110a until 120b has been successfully completed.

Freshmen offering Spanish for admission are placed according to their scores on the Advanced Placement tests in Spanish Language and/or Literature or on the Yale Spanish departmental placement examination, given at the beginning of the fall term. Students with a score of 5 on either of the Spanish Advanced Placement tests, or an appropriate score on the departmental placement examination, may enroll in any Group B or C course or in SPAN 150a or 151b.

Students wishing to take intensive Spanish may, with the instructor's permission, enroll in SPAN 125a or b, which covers the same material as SPAN 110a and 120a or b, but in one term. Students wishing to take intensive intermediate Spanish may, with the instructor's permission, enroll in SPAN 145a or b, which covers the same material as SPAN 130a or b and 140a or b, also in one term. SPAN 132a and 142b are designed for heritage speakers and are open only to them; interested students should contact the instructor.

Regardless of previous Spanish study, students without a score of 5 on either of the Advanced Placement tests must take the departmental placement examination in order to enroll in any course above SPAN 110a or 125a or b.

The standard major, for which the prerequisite is SPAN 140a or b or the equivalent, consists of twelve term courses from Groups B and C, including the senior requirement. Students are required to take SPAN 243a or b, 244a or b, two courses chosen from SPAN 261a, 262b, 266b, or 267b, and at least five courses from Group C. With prior permission of the director of undergraduate studies, two relevant courses from other departments may be applied toward the major. Successful completion of a special examination given at the beginning of each term may exempt Spanish majors from SPAN 243a or b; details about the examination may be obtained from the course instructor.

Juniors and seniors majoring in Spanish may, with the permission of the instructor and the director of graduate studies, enroll in graduate literature courses in Spanish. A list of pertinent graduate courses is available at the office of the director of undergraduate studies.

Senior requirement. Seniors write the senior essay in SPAN 491b in the spring of their senior year under the individual direction of a faculty adviser. Students expecting to complete their degree requirements in December write the senior essay in SPAN 491a in the fall of their senior year. Seniors in SPAN 491b or 491a are expected to submit their completed essay to the director of undergraduate studies at 82–90 Wall Street by 4 P.M. on April 17 in the spring term, or by 4 P.M. on December 5 in the fall term. If the essay is submitted late without an excuse from the student’s residential college dean, the penalty is one letter grade, though no essay that would otherwise pass will be failed because it is late. Students in the intensive major both present the essay and take the departmental examination.

Study abroad. Students are encouraged to apply to the eight-week summer language courses offered by Yale Summer Session in New Haven and Bilbao, Spain, and Quito, Ecuador. A five-week Spanish course at the L3 level is also offered in Buenos Aires, Argentina. More information about Yale Summer Session is available on the Web at www.yale.edu/summer. For information about the Year or Term Abroad program, refer to chapter III of this bulletin.

Departmental placement examination. The placement examination will be given on Sunday, August 31, from 11 A.M. to 1 P.M. and from 3:30 to 5:30 P.M. in
LC 101 and 102. No preregistration is required. A makeup examination will be given on Tuesday, September 2, from 10 A.M. to noon. All students, including native speakers, who wish to enroll in a Spanish course above SPAN 110a or 125a or b and who have not earned a score of 5 on either of the Spanish Advanced Placement tests must take the placement examination. Students who have already taken one year or more of Spanish instruction before coming to Yale are required to take the placement examination before enrolling in a Spanish course. The results of the placement examination are valid for one year from the date on which it was taken.

REQUIREMENTS OF THE MAJOR

Prerequisite: SPAN 140a or b, 142b, 145a or b, or equivalent
Number of courses: 12 term courses from Groups B and C (incl senior req)
Specific courses required: SPAN 243a or b, 244a or b; 2 from SPAN 261a, 262b, 266b, 267b
Distribution of courses: At least 5 courses in Group C
Substitution permitted: Up to 2 relevant courses in other depts, with DUS permission
Senior requirement: Senior essay (SPAN 491a or b)
Intensive major: Senior req and dept exam

COURSES FOR FRESHMEN

*SPAN 060a, Freshman Colloquium: Literary Studies in Spanish. Susan Byrne.
TTH 9-10.15 L5, Hu (o) Fr sem
Introduction to the study of literature in general and to some of the most important texts in Hispanic literature. Selected texts in Spanish include narratives (Borges, García Márquez, Fuentes, Unamuno), essays (Paz, Fuentes, Sor Juana), lyric (Neruda, Paz, Valle-Inclán), and theater (Lope de Vega, García Lorca). Conducted in Spanish. Counts toward the requirements for the Spanish major. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*SPAN 070a/*HUMS 075a, The Cultures of Medieval Spain. María Rosa Menocal.
For description see under Humanities.

GROUP A COURSES

SPAN 110a, Elementary Spanish I. Maripaz García.
MTWThF 1 HTBA For sections see www.yale.edu/courseinfo
L1 1 1/2 C Credits Meets RP (61)
For students who wish to begin study of the Spanish language. Development of basic skills in understanding, speaking, reading, and writing through a functional approach to the teaching of Spanish grammar. Includes an introduction to the cultures (traditions, art, literature, music) of the Spanish-speaking world. Audiovisual materials are incorporated into class sessions. Conducted in Spanish. To be followed immediately by span 120b. Credit only on completion of span 120b. (Formerly span 115a)

SPAN 120a or b, Elementary Spanish II. Juliana Ramos-Ruano and staff.
MTWThF 1 HTBA For sections see www.yale.edu/courseinfo
L2 1 1/2 C Credits Meets RP (61)
Further development of understanding, speaking, reading, and writing skills. Class sessions incorporate short authentic texts in Spanish, audiovisual materials, and film. Cultural topics of the Spanish-speaking world (traditions, art, literature, music) are included. Conducted in Spanish. After span 110a or in accordance with placement results. Admits to span 130a or b or 145a or b. (Formerly span 116a or b)

*span 125a or b, Intensive Elementary Spanish.

Juliana Ramos-Ruano, Maripaz García.

M T W T H F 2 HTBA L1–L2 2 C Credits Meets RP (61)

An intensive beginning course in spoken and written Spanish that covers the material of span 110a and 120a or b in one term. Conducted in Spanish. Admits to span 130a or b or 145a or b. Not open to students who have completed span 110a or 120a or b. (Formerly span 117a or b)

span 130a or b, Intermediate Spanish I. Lissette Reymundi, Ame Cividanes.

M T W T H F 1 HTBA For sections see www.yale.edu/courseinfo

L3 1 ½ C Credits Meets RP (61)

Development of language proficiency in listening, speaking, reading, and writing through communicative activities rather than a sequence of linguistic units. Authentic Spanish language texts, films, and videos serve as the basis for the functional study of grammar and the acquisition of a broader vocabulary. Cultural topics are presented throughout the term. Conducted in Spanish. Admits to span 140a or b.

*span 132a, Spanish for Heritage Speakers I. Sybil Alexandrov.

M W F 10.30-11.20 L2–L3 (33)

A language course designed for students who have been exposed to Spanish—either at home or by living in a Spanish-speaking country—but who have little or no formal training in the language. Practice in all four communicative skills (comprehension, speaking, reading, writing), with special attention to basic grammar concepts, vocabulary building, and issues particular to heritage speakers. Admission in accordance with placement results. (Formerly span 135a)

span 140a or b, Intermediate Spanish II. Ame Cividanes.

M T W T H F 1 HTBA For sections see www.yale.edu/courseinfo

L4 1 ½ C Credits Meets RP (61)

Continuation of span 130a or b. Development of increased proficiency in the four language skills. Greater precision in grammar usage, vocabulary enrichment, and expanded cultural awareness are achieved through communicative activities based on authentic Spanish-language texts, including a short novel. Conducted in Spanish. Admits to L5 courses. (Formerly span 131a or b)

*span 142b, Spanish for Heritage Speakers II. Sybil Alexandrov.

M W F 10.30-11.20 L4 (33)

Continuation of span 132a. Examination of complex grammar structures; consideration of problems particular to heritage speakers through the reading of both literary and journalistic texts. Practice in all communicative skills (comprehension, speaking, reading, writing). After span 132a or in accordance with placement results. (Formerly span 136b)

*span 145a or b, Intensive Intermediate Spanish. Lissette Reymundi and staff.

M T W T H F 2 HTBA L3–L4 2 C Credits Meets RP (61)
An intensive intermediate course in spoken and written Spanish that covers the material of SPAN 130a or b and 140a or b in one term. Conducted in Spanish. Admits to L5 courses. Not open to students who have completed SPAN 130a or b or 140a or b. (Formerly SPAN 132a or b)

SPAN 150a and 151b, ADVANCED CONVERSATIONAL SPANISH.
Teresa Carballal and staff.
MWF 1 HTBA For sections see www.yale.edu/courseinfo
L5 Meets RP (o)

Intended to improve active command of the language through readings, discussions, and reports. Conversational skills are stressed. Reading selections include commentaries on political and social problems as well as cultural topics. Prepares students for practical situations and for literature courses. Conducted in Spanish. May be taken for credit by students who have completed courses with higher numbers. Does not count toward the major. After SPAN 140a or b or 145a or b, or in accordance with placement results. Not open to students who have completed SPAN 132a or 142b. Admits to Group B and C courses. (Formerly SPAN 138a and 139b)

GROUP B COURSES

Open to all students who have placed into L5 courses. Unless otherwise noted, all courses in this group are conducted in Spanish.

*SPAN 220a, THEATER AND POETRY WORKSHOP. Bárbara Safille.
TTH 1-2.15 L5 (o)
The dynamics of figurative language, advanced linguistic structures, and aural comprehension through close reading of original Latin American and Spanish dramatic and poetic texts reflecting on time, memory, identity, and love. Students participate in performance and creation of short dramatic and poetic texts.

*SPAN 222a, LEGAL SPANISH. Mercedes Carreras.
222a–1: MW 9-10.15 L5 (o)
222a–2: TTH 9-10.15 L5 (o)

An introduction to Spanish and Latin American legal culture with a focus on the specific traits of legal language and on the development of advanced language competence. Issues such as human rights, the death penalty, the jury, contracts, statutory instruments, and rulings by the constitutional courts are explored through law journal articles, newspapers, the media, and mock trials.

*SPAN 223b, SPANISH IN FILM: AN INTRODUCTION TO THE NEW LATIN AMERICAN CINEMA. Margherita Tórtora.
MW 1-2.15 L5 (o)
Development of proficiency in Spanish through the analysis of critically acclaimed Latin American films. Includes basic vocabulary of film criticism in Spanish as well as discussion and language exercises.

*SPAN 224b, SPANISH IN POLITICS, INTERNATIONAL RELATIONS, AND THE MEDIA. Teresa Carballal.
MW 1-2.15 L5 (o)
Issues of domestic and international politics are integrated with advanced usage of the Spanish language. A cross-cultural approach is used to analyze Spanish (vocabulary, style, content, and objectives) in political discourse, diplomatic relations, and the media.

SPAN 225b, SPANISH FOR THE MEDICAL PROFESSIONS.
Mercedes Carreras.
MW 9-10.15 L5 (32)
Topics in health and welfare. Conversation, reading, and writing about medical issues for advanced Spanish-language students, including those considering careers in medical professions.

**span 226b, The Unity and Diversity of Spanish.**
Lissette Reymundi.

**TTh 11.35-12.50 L5 Meets RP (24)**
A sociolinguistic survey of the Spanish-speaking world (Africa, the Americas, Asia, and Europe). Exploration of the unity and diversity of the Spanish language and Spanish-speaking people through the study of such topics as types of language variation, language and identity, language and society, and multilingualism (including Spanish in the United States).

**SPAN 227a, Creative Writing.** María Jordán.

**MW 1-2.15 L5 (0)**
An introduction to the craft and practice of creative writing (fiction, poetry, and essays). Focus on the development of writing skills and awareness of a variety of genres and techniques through reading of exemplary works and critical assessment of student work. Emphasis on the ability to write about abstract ideas, sentiments, dreams, and the imaginary world.

**SPAN 235a, Advanced Spanish for Heritage Speakers.**
Sonia Valle.

**MW 1-2.15 L5 (0)**
Intended for heritage speakers with some previous training in Spanish grammar and writing. Development and refinement of reading, writing, and oral skills in standard Spanish to native-level fluency. Through literature, film, newspapers, and the Internet, an examination of different aspects of the Hispanic world. *May be taken alone or as a continuation of span 132a or 142b.*

**SPAN 243a or b, Advanced Spanish Grammar.** Terry Seymour and staff.

**MWF 1 HTBA For sections see www.yale.edu/courseinfo L5 (61)**
A comprehensive, in-depth study of Spanish grammar intended to improve students’ spoken and written command of Spanish. Linguistic analysis of literary selections; some English-to-Spanish translation.

**SPAN 244a or b, Writing in Spanish.** Margherita Tórtora and staff.

**3 HTBA For sections see www.yale.edu/courseinfo L5 (61)**
Intensive instruction and practice in writing as a means of developing critical thinking. Recommended for students considering courses in literature. Analysis of fiction and nonfiction forms, techniques, and styles. Classes conducted in a workshop format.

**SPAN 245a/PORT 246a, Latin American Film: Brazil, Mexico, and Argentina.** Paulo Moreira.
For description see under Portuguese.

**SPAN 246a, Cultural Studies: Spain.** Ernesto Estrella.

**MW 9-10.15 L5, Hu (32)**
Study of various aspects of Spanish culture, including its continuing relation to the societies of Latin America. Examination of Spanish politics, history, religions, art forms, music, and literatures, from ancient times to the present. Primary sources and critical studies are read in the original.

**SPAN 247b/ER&M 265b, Cultural Studies: Latin America.** Staff.

**MW 1-2.15 L5, Hu (0)**
A cross-disciplinary and thematic approach to Latin American cultural studies. Examination of politics, history, religions, art forms, literatures, music, cinema, and popular culture, from pre-Columbian civilizations to the present. Primary sources and critical texts are read in the original.

span 261a, Studies in Spanish Literature I.  Susan Byrne.
TTh 11.35-12.50  L5, Hu (24)
An introduction to Spanish prose, drama, and lyric poetry from their medieval multicultural origins through the Golden Age in the seventeenth century. Readings include El Cid, La Celestina, Conde Lucanor, Don Quijote, and La vida es sueño.

span 262b, Studies in Spanish Literature II.  Ernesto Estrella.
TTh 11.35-12.50  L5, Hu (24)
An introduction to Spanish prose, drama, and lyric poetry from the eighteenth century to the present. Texts by Unamuno, García Lorca, Clarín, Jiménez, Cernuda, and others.

span 266b, Studies in Latin American Literature I.  Susan Byrne.
MW 9-10.15  L5, Hu (32)
An introduction to Spanish American literature from the Conquest to the nineteenth century. Writings of adventurers, poets, and patriots who won the New World in the sixteenth century, forged new cultural identities in the seventeenth and eighteenth centuries, and fought for independence in the nineteenth century.

span 267b, Studies in Latin American Literature II.
Priscilla Meléndez.
MW 11.35-12.50  L5, Hu (34)
An introduction to Latin American literature from the nineteenth century to the present. Readings include works by Borges, García Márquez, Paz, Neruda, Cortázar, and others.

GROUP C COURSES

Open to students who have placed into L5 courses. It is strongly recommended that students take span 243a or b, 244a or b, and at least one other Group B course before enrolling in any Group C course taught in Spanish. Unless otherwise noted, all courses in Group C are conducted in Spanish.

span 300aG/litr 189aG, Cervantes’ Don Quijote.
Roberto González Echevarría.
TTh 2.30-3.45  Hu (27)  Tr
A detailed study of the Quijote in the aesthetic and historical context of Renaissance and baroque Spain. Topics include the significance of the Quijote for modern European and Latin American fiction. Readings also include Cervantes’ Exemplary Stories and Elliott’s Imperial Spain. Conducted in English; a section in Spanish available depending on demand.

*span 325b, Poetry of the Spanish Civil War.  Ernesto Estrella.
TTh 9-10.15  L5, Hu (0)
Dramatic changes in poetic practice and discourse as a result of the Spanish Civil War. Themes include the avant-garde and the autonomy of poetry in the period preceding the war; poetry, politics, and propaganda during the war; and exiled Spanish poets and the intellectual debate fostered by encounters with other Hispanic cultures.

*SPAN 345A, Twentieth-Century Spanish American Revolutions. Priscilla Meléndez. MW 1-2.15 L5, Hu (o) Exploration of the relationship between revolution and the visual arts in the Mexican muralist movement (Orozco, Rivera, Siqueiros); the development of revolutionary poetry in Nicaragua (Cardenal, Belli); and Cuban postrevolutionary film (Solás, Gutiérrez Alea). Discussion of ways that radical political changes interact with the exploration of artistic interpretations of reality.


*SPAN 350A, Borges: Literature and Power. Aníbal González. TH 1-2.15, 1 HTBA L5, Hu (o) An introduction to the work of Jorge Luis Borges, focusing on the relation between literature and power as portrayed in selected stories, essays, and poems. Topics include Borges and postmodernity; writing and ethics; and Borges’s politics. Works include Ficciones, Otras inquisiciones, El aleph, Elacedor, El informe de Brodie, and Obra poética.

SPAN 351A, Politics and Culture in Contemporary Mexican Narrative. Priscilla Meléndez. MW 2.30-3.45 L5, Hu (o) A study of politics and culture in Mexican novels and short stories from the 1960s to the present. Focus on the changes in narrative after the 1968 Tlatelolco massacre. Authors include Jorge Volpi, Paloma Villegas, David Toscana, Carmen Boullsosa, Eloy Urroz, and Ignacio Padilla.

*SPAN 396A, Madrid from Monarchy to Movida. Noël Valis. MW 11.35-12.30 L5, Hu (o) The cultural history and changing image of Madrid from the sixteenth century to the present. Poems by Quevedo, Góngora, and Dámaso Alonso; paintings of Velázquez, Goya, and Maruja Mallo; films by Almodóvar; prose works by Larra, Pardo Bazán, Clarín, Valle-Inclán, Baroja, Almodóvar, Muñoz Molina, and other contemporary writers.

*SPAN 478A and 479B, Directed Readings and/or Individual Research. Consult the director of undergraduate studies. HTBA (o) Individual study under faculty supervision. The student must submit a bibliography and a written plan of study approved by the faculty adviser to the director of undergraduate studies. No reading or research course credit is granted without prior approval from the director of undergraduate studies. The student must meet with the instructor at least one hour a week. A final examination or essay is required.
**span 491a or b, The Senior Essay.** Consult the director of undergraduate studies.

A research project completed under faculty supervision and resulting in a paper of considerable length, in Spanish.

**GRADUATE COURSES OF INTEREST TO UNDERGRADUATES**

Graduate courses in Spanish are open to qualified undergraduates. Descriptions of courses are listed in the Graduate School bulletin and are available in the Spanish department office. Permission of the instructor and of the director of graduate studies is required.

**SPECIAL DIVISIONAL MAJORS**

Director of undergraduate studies: Jasmina Beširević-Regan, Dean’s Office TC, 432-0722, jasmina.besirevic@yale.edu

A Special Divisional Major affords an alternative for students whose academic interests cannot be met by an existing departmental or special major. Students may, with the approval of the Committee on Honors and Academic Standing, design majors of their own in consultation with members of the faculty and in accordance with the procedures outlined below.

Special Divisional Majors differ so widely in content that there is no uniform format, but two patterns prevail. Some majors combine two disciplines (e.g., music and English, religious studies and anthropology), while others draw from several departments to focus on a particular culture, period, or problem (e.g., French studies, medieval studies, urban studies). A Special Divisional Major may not be offered as one of two majors.

Students considering a Special Divisional Major should be aware of its particular demands and risks. They face the challenges of interdisciplinary work and must grapple with the conceptual processes of disparate disciplines. They must establish criteria for selecting courses and organize their courses in order to obtain an adequate base in the fields necessary for advanced work on a specific topic.

Students in a Special Divisional Major may get little help in designing their programs. Because they are in separate, independent programs, they forfeit some of the services normally provided as part of a departmental or special major. They must, for example, find their own advisers. They need to ask the help of faculty members already committed to other departments and programs who may not share their interdisciplinary interests. They must acquire the necessary background and sustain their interest without the help of any special seminar. They may lose other advantages of departmental affiliation, such as priority for acceptance in restricted-enrollment courses, opportunities to meet students and faculty members with similar interests, and participation in a program easily understood by graduate schools and others. Their transcripts will carry only the notation “Special Divisional Major,” without specifying the student’s field of concentration.

Before applying for a Special Divisional Major, students are urged to consult the directors of undergraduate studies in their fields of major interest, who can advise them whether a Special Divisional Major is necessary. Special interests can usually be accommodated within an existing major.
Application. Students considering a Special Divisional Major are invited to talk with directors of undergraduate studies and with their residential college deans at any stage in their planning. Candidates may apply for admission as early as their fourth term of enrollment, but must have done so no later than one month after their seventh term of enrollment begins. The committee’s experience suggests that the last term of the sophomore or the first term of the junior year is the best time to apply.

Lucidity, coherence, and completeness in an application are of primary importance to a student’s candidacy, since they are indications of a thoughtfully prepared program of study and of the qualities of eagerness and initiative essential to a successful Special Divisional Major. The committee expects that applicants will have worked in close collaboration with the director of undergraduate studies of the Special Divisional Major in developing their proposals, and it will normally view failure to do so as grounds for rejection of the application.

Application forms are available at the Trumbull College dean’s office. They are submitted, along with letters of support from faculty advisers, to the Committee on Honors and Academic Standing in care of the Trumbull College dean’s office. The committee meets to consider proposals several times a year. All students in good standing are eligible, although the committee must be satisfied that candidates have particular aptitude and preparation for the work they propose.

In approving or rejecting proposals for a Special Divisional Major, the committee looks principally at the quality of the student’s planning. What are the objectives of the program? What are the principles for selecting courses and organizing material? Is the program comparable in breadth and depth to other majors in Yale College? What provisions have been made to guide and evaluate the student’s progress? What sort of senior project would focus and integrate the program? Finally, are the objectives of the program best served by a Special Divisional Major? The committee will not approve a major if the student can accomplish the desired aims in an existing major; the committee may consult directors of undergraduate studies and other faculty members to judge whether or not this is the case.

Requirements of the major. Because of the variety of programs, there are no uniform prerequisites. All students must satisfy their prospective advisers and the committee that they have obtained adequate preparation for the advanced courses and senior projects they propose.

The major ordinarily comprises at least twelve advanced term courses and a senior project. Advanced courses include all but prerequisites for majors, beginning language courses, and comparable courses. When appropriate, approval is granted for graduate courses, tutorials, and residential college seminars. No distinction is made in the Special Divisional Major between standard and intensive majors.

The director of undergraduate studies in the Special Divisional Major presents proposals for the major to the Committee on Honors and Academic Standing. General problems connected with a student’s program may be discussed with the director of undergraduate studies. Students who revise their original proposal or change faculty advisers must obtain the committee’s approval. The committee advises the Yale College Faculty whether or not the student has completed a major and may not be able to recommend students for the degree who have changed their programs without proper consultation.
Senior requirement. No later than midterm of their seventh term of enrollment, and after consultation with their faculty advisers, students provide the committee with an outline of their plans for the senior project. There are several options: a written or oral examination, a senior essay or project, or, in some circumstances, a graduate course or a tutorial. A senior essay usually offers the most effective means of integrating material from more than one discipline, and students in a Special Divisional Major typically request one course credit in each term of the senior year in SPEC 491a, 492b, The Senior Project.

Students who offer a yearlong senior project must, in order to continue the course into the second term, provide their advisers with substantial written evidence of their progress (i.e., a draft or detailed outline) by the end of their seventh term. The project must be completed no later than two weeks before the last day of classes in the student’s eighth term of enrollment. At least two faculty members evaluate it.

Advisers. Candidates must arrange for faculty advisers before applying. Directors of undergraduate studies or department chairs can usually suggest advisers. The committee expects each student to obtain a primary adviser from the department that forms the principal component of the major as well as one or more adjunct advisers from other fields. The primary adviser must be a regular member of the Yale College faculty. Members of the faculties of other schools of the University and visiting faculty members may serve as adjunct advisers.

Both advisers and students assume special responsibilities when designing and completing a major that falls outside existing programs. The special nature of the program and the student’s loss of departmental affiliation make it particularly important for the faculty adviser to meet regularly with the student to help plan the program and to supervise its completion, including the senior project.

The primary adviser assumes chief responsibility for reporting the student’s progress to the committee and for assigning a grade to the senior project. The primary adviser also consults the student’s other advisers and works with them in directing, evaluating, and grading the senior project.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite:** Approval of 2 faculty advisers and Committee on Honors and Academic Standing

**Number of courses:** 13 term courses (incl one-term senior essay) or 14 term courses (incl two-term senior essay)

**Distribution of courses:** Advanced courses in 2 or more appropriate depts; grad courses, college sems, or tutorials with DUS permission

**Senior requirement:** Senior essay or project (SPEC 491a and/or 492b), or, with DUS permission, written or oral exam, or grad course, or tutorial

**SPEC 491a and 492b, The Senior Project.** Director of undergraduate studies.

**HTBA (0)**

An essay or project, prepared during one or two terms by senior Special Divisional Majors. Conducted under the supervision of the student’s primary adviser and with the approval of the Committee on Honors and Academic Standing in connection with an approved Special Divisional Major. Spring-term essays are due no later than two weeks before the last day of classes.
Statistics is the science and art of prediction and explanation. The mathematical foundation of statistics lies in the theory of probability, which is applied to problems of making inferences and decisions under uncertainty. Practical statistical analysis also uses a variety of computational techniques, methods of visualizing and exploring data, methods of seeking and establishing structure and trends in data, and a mode of questioning and reasoning that quantifies uncertainty.

The Statistics program at Yale is a blend of the mathematical theory of probability and statistical inference, the philosophy of inference under uncertainty, computational techniques, the practice of data analysis, and statistical analysis applied to economics, biology, medicine, engineering, and other areas. Statistical methods are widely used in the sciences, medicine, industry, business, and government; graduates can work in these areas or go on to graduate study.

Interested students are invited to consider the Statistics concentration within the Applied Mathematics major. This program requires three courses in Statistics in addition to the introductory courses in probability and data analysis required of all Applied Mathematics majors. Courses may be chosen from STAT 230b, 251b, 312a, 330b, 361a, 364b, and 365b, as well as from graduate courses. Applied Mathematics majors with a concentration in Statistics have access to the research facilities of the department. Further information is available from the director of undergraduate studies.

stat 100b, Introductory Statistics. Andrew Barron.
MWF 10.30-11.20 QR (33)
An introduction to statistical reasoning. Topics include numerical and graphical summaries of data, data acquisition and experimental design, probability, hypothesis testing, confidence intervals, correlation and regression. Application of statistical concepts to data; analysis of real-world problems.

A basic introduction to statistics, including numerical and graphical summaries of data, probability, hypothesis testing, confidence intervals, and regression. Each course focuses on applications to a particular field of study and is taught jointly by two instructors, one specializing in statistics and the other in the relevant area of application. The first seven weeks of classes are attended by all students together,
as general concepts and methods of statistics are developed. The remaining weeks are divided into field-specific sections that develop the concepts with examples and applications. Computers are used for data analysis. These courses are alternatives; they do not form a sequence and only one may be taken for credit. No prerequisites beyond high school algebra. May not be taken after STAT 100b.

**STAT 101aG/E&EB 210aG/MCDB 215a, INTRODUCTION TO STATISTICS: LIFE SCIENCES.**  Jonathan Reuning-Scherer and staff.

**STAT 102aG/E&EB 203a/PLSC 452a, INTRODUCTION TO STATISTICS: POLITICAL SCIENCE.**  Jonathan Reuning-Scherer, Alan Gerber.

**STAT 103aG/E&EB 209a/PLSC 453a, INTRODUCTION TO STATISTICS: SOCIAL SCIENCES.**  Jonathan Reuning-Scherer.

**STAT 105a, INTRODUCTION TO STATISTICS: MEDICINE.**  Jonathan Reuning-Scherer, David Salsburg.

**STAT 106aG, INTRODUCTION TO STATISTICS: DATA ANALYSIS.**  Jonathan Reuning-Scherer, Mokshay Madiman.

**STAT 128b, REAL-WORLD STATISTICS.**  John Emerson.

**STAT 129a, STATISTICS AS A WAY OF KNOWING.**  Nelson Donegan.

**STAT 150a, RATIONAL CHOICES.**  John Hartigan.
wealth. Examination of whether individual choices conform to this theory, especially in cases where outcomes are uncertain. Some attention to probability theory and game theory.

**stat 23obG/math 235b, Introductory Data Analysis.**
Hannes Leeb.
MW 2:30-3:45 QR (0)
Survey of statistical methods: plots, transformations, regression, analysis of variance, clustering, principal components, contingency tables, and time series analysis. The S computing language and Web data sources are used.

MWF 2:30-3:20 QR (37)
Fundamental principles and techniques of probabilistic thinking, statistical modeling, and data analysis. Essentials of probability, including conditional probability, random variables, distributions, law of large numbers, central limit theorem, and Markov chains. Statistical inference with emphasis on the Bayesian approach. Introduction to regression and linear models. Computers are used for calculations, simulations, and analysis of data. After MATH 118a or b or 120a or b. Some acquaintance with matrix algebra and computing assumed.

**stat 241aG/math 241a, Probability Theory.** Hannes Leeb.
MWF 9:25-10:15 QR (32)
Introduction to probability theory. Topics include probability spaces, random variables, expectations and probabilities, conditional probability, independence, discrete and continuous distributions, central limit theorem, Markov chains, and probabilistic modeling. After or concurrently with MATH 120a or b or equivalent.

**stat 244bG/math 244b, Theory of Statistics.** Harrison Zhou.
MWF 9:25-10:15 QR (32)
Study of the principles of statistical analysis. Topics include maximum likelihood, sampling distributions, estimation, confidence intervals, tests of significance, regression, analysis of variance, and the method of least squares. Some statistical computing. After or concurrently with or after MATH 222a or b or 225a or b, or equivalents.

**stat 251bG/math 251b, Stochastic Processes.** David Pollard.
MW 1-2:15 QR (0)
Introduction to the study of random processes, including Markov chains, Markov random fields, martingales, random walks, Brownian motion, and diffusions. Techniques in probability, such as coupling and large deviations. Applications to image reconstruction, Bayesian statistics, finance, probabilistic analysis of algorithms, and genetics and evolution. After STAT 241a or equivalent.

**stat 312aG, Linear Models.** Joseph Chang.
TTTh 9-10:15 QR (22)
The geometry of least squares; distribution theory for normal errors; regression, analysis of variance, and designed experiments; numerical algorithms (with particular reference to S-PLUS); alternatives to least squares. Generalized linear models. Linear algebra and some acquaintance with statistics assumed. After STAT 242b and MATH 222a or b or 225a or b.

**Stat 313b, Experimental Design.** Timothy Gregoire,
Jonathan Reuning-Scherer.
M 2:30-4:30 QR (0)
Principles of design for planned experiments, coupled with methods of analysis of experimental data. Strengths and weaknesses of block, split-plot, and completely randomized designs; extensive analysis of data that these designs produce. Some attention to questions of sample size estimation. **Prerequisite: an introductory course in statistics.**

**STAT 330b**/**MATH 330b, ADVANCED PROBABILITY.** David Pollard.  
**TTh 2.30-3.45 QR (0)**  
Measure theoretic probability, conditioning, laws of large numbers, convergence in distribution, characteristic functions, central limit theorems, martingales. Some knowledge of real analysis assumed.

**STAT 361a**/**AMTH 361a, DATA ANALYSIS.** Lisha Chen.  
**MW 2.30-3.45 QR (0)**  
Through analysis of data sets using the S statistical computing language, study of a selection of statistical topics such as linear and nonlinear models, maximum likelihood, resampling methods, curve estimation, model selection, classification, and clustering. Weekly sessions in the Statistical Computing laboratory. **After STAT 242b and MATH 222a or b or 225a or b, or equivalents.**

**STAT 363b, MULTIVARIATE STATISTICS FOR SOCIAL SCIENCES.** Jonathan Reuning-Scherer.  
**TTh 1-2.15 QR (0)**  
A practical introduction to the analysis of multivariate data as applied to examples from the social sciences. Topics include multivariate analysis of variance, principal components analysis, cluster analysis, canonical correlation, multidimensional scaling, factor analysis, discriminant analysis, and structural equations modeling. Extensive use of SAS, SPSS, or R statistical programming software. **Prerequisite: an introductory course in statistics.**

**STAT 364b**/**AMTH 364b/ENGG 454b, INFORMATION THEORY.** Hannes Leeb.  
**TTh 9-10.15 QR (22)**  
Foundations of information theory in communications, statistical inference, statistical mechanics, probability, and algorithmic complexity. Quantities of information and their properties: entropy, conditional entropy, divergence, mutual information, channel capacity. Basic theorems of data compression and coding for noisy channels. Applications in statistics, communication networks, and finance. **After STAT 241a.**

**STAT 365b, DATA MINING AND MACHINE LEARNING.** Lisha Chen.  
**MW 11.35-12.50 QR (0)**  
Techniques for data mining and machine learning from both statistical and computational perspectives, including support vector machines, bagging, boosting, neural networks, and other nonlinear and nonparametric regression methods. Discussion includes the basic ideas and intuition behind these methods, a more formal understanding of how and why they work, and opportunities to experiment with machine learning algorithms and to apply them to data. **After STAT 242b.**

**GRADUATE COURSES OF PARTICULAR INTEREST TO UNDERGRADUATES**

Courses in the Graduate School are open to qualified undergraduates. Descriptions of graduate courses in Statistics are available in the department office. Permission of the instructor and of the director of graduate studies is required.
STUDY OF THE CITY

STCY 176b, INTRODUCTION TO THE STUDY OF THE CITY.
Alexander Garvin.

T 6:45-9:15 P.M.  So (27)

An examination of forces shaping American cities and strategies for dealing with them. Topics include housing, commercial development, parks, zoning, urban renewal, landmark preservation, new towns, and suburbs. The course includes games, simulated problems, fieldwork, lectures, and discussion.

SWAHILI

(See under African Studies.)

SYRIAC

(See under Near Eastern Languages and Civilizations.)

TAMIL

(See under South Asian Studies.)

TEACHER PREPARATION AND EDUCATION STUDIES

Director: Jonathon Gillette, 35 Broadway, 432-4631, jonathon.gillette@yale.edu; www.yale.edu/tprep

COMMITTEE OF THE TEACHER PREPARATION PROGRAM

Jill Campbell (English), Gordon Geballe (Forestry & Environmental Studies), Jonathon Gillette (Sociology), Joseph Gordon (Yale College Dean's Office), Judith Hackman (Yale College Dean's Office), Roger Howe (Mathematics), Matthew Jacobson (History), Frank Keil (Psychology, Linguistics), Michael Morand (Office of New Haven & State Affairs), Robert Wyman (Molecular, Cellular, & Developmental Biology)

The Teacher Preparation and Education Studies program offers a variety of courses on educational issues including school reform, policy, pedagogy, and instructional design. Courses are organized around two different tracks, education studies and teacher preparation.

Education studies. Courses in the education studies track are designed to examine the system of education as a civic institution. The goal is to introduce ways of challenging and disciplining thinking about educational issues from a historical or sociological perspective. Courses are open to all students.

Teacher preparation. The program also offers a course of study for those interested in teaching. Completion of the full course of study, begun in the sophomore year, fulfills the requirements for a license to teach in any American public school either in an early childhood setting (birth through kindergarten) or in a secondary school setting (grades seven through twelve). Those who complete part of the program have a strong basis for teaching in a private or alternative setting such as Teach for America. For students considering elementary education, the program offers a flexible noncertified course of study called Elementary Explorations for either private school teaching or preparation for graduate school certification programs.
The teacher preparation course of study emphasizes the ability to think about teaching and the creation of learning environments for a wide range of students. Experiences in local schools and classrooms provide opportunities to explore students’ individual styles of teaching. Most graduates of the program, especially in the early education area, move into positions of leadership at either the school or the policy level. Courses are offered on a space-available basis to students not enrolled in the program.

Undergraduates interested in the program should consult the director during the freshman year or early in the sophomore year in order to plan a schedule that includes both the required courses and sufficient time for student teaching. Applications close in early April of each year; students are informed by the Admissions Committee of its decisions by mid-April.

To be eligible for certification, participants must complete the following program: secondary school teachers—a major in an academic field, sufficient course work in a subject taught in middle and high schools (English, history, modern languages, Latin, science, mathematics, music), and certain required professional courses; early childhood teachers—a major in an academic field, a designated series of courses for early childhood preparation, and certain required professional courses. The usual secondary school sequence is:

**Junior Year**
- TPRP 190a
- TPRP 194a
- TPRP 195b
- TPRP 199b

**Senior Year**
- TPRP 290a–296a
- TPRP 299a or b

The usual early childhood sequence is:

**Junior Year**
- TPRP 125a
- TPRP 127a
- TPRP 128b
- TPRP 299a or b
- TPRP 190a
- TPRP 191b
- TPRP 192a
- TPRP 195b
- Electives in Psychology

**Senior Year**
- TPRP 127a
- TPRP 299a or b

Changes in a student’s schedule must be approved by the director. All courses in the program must be taken for a letter grade. Students are encouraged to elect courses that complement their work in teacher preparation and provide links with their academic major.

**EDUCATION STUDIES**

**TPRP 150b, EXAMINING EDUCATION.**  Jonathon Gillette.

MW 2.30-3.45  So (0)

Introduction of a number of ways to challenge and discipline thinking about educational issues. Topics are presented through a series of disciplinary lenses beginning with a historical perspective and moving to psychology, political science, and sociology. Examination of one particular topic—the role of race in education—from two different disciplinary vantage points, psychology and anthropology. A comparison between China and the United States illuminates the American system. Issues of school reform are presented using a variety of interdisciplinary approaches.
TEACHER PREPARATION

*TPRP 125a*/CHLD 125a*/PSYC 125a, CHILD DEVELOPMENT.  Nancy Close and staff.
For description see under Child Study Center.

*TPRP 127a*/CHLD 127a*/PSYC 127a, EARLY CHILDHOOD METHODS.
Carla Horwitz.
For description see under Child Study Center.

*TPRP 128b*/CHLD 128b*/PSYC 128b, LANGUAGE, LITERACY, AND PLAY.
Nancy Close, Carla Horwitz.
For description see under Child Study Center.

*TPRP 190aG, SCHOOLS, COMMUNITIES, AND THE TEACHER.
Jonathon Gillette.
TH 1-2.15 So Meets RP (0)
An introduction to the study of schooling in America. The cultural and historical context of schools, and major philosophies of education, discussed along with consideration of contemporary developments in schooling.

*TPRP 191a or b*/CHLD 126a or b, CLINICAL CHILD DEVELOPMENT AND ASSESSMENT OF YOUNG CHILDREN.  Nancy Close.
2 HTBA So ½ C Credit (0)
Exposure to both conceptual material and clinical observations on the complexity of assessing young children and their families.

*TPRP 192a and 193b, OBSERVATION.  Jonathon Gillette.
4 HTBA ½ C Credit per term Meets RP (0)
Supervised and directed observation in a middle or high school associated with the program or in an appropriate preschool or kindergarten setting.

*TPRP 194a*/PSYC 194a, EDUCATIONAL PSYCHOLOGY.  Burton Saxon.
W 2.30-4.20 So (0)
Important theories of learning and child and adolescent development and their applications to teaching and learning contexts. Topics include cognitive development; personal, gender, social, and moral development; individual and group differences; and motivation and assessment. Designed for students in the Teacher Preparation and Education Studies program; open to others who wish to examine the interaction of theory and practice.

*TPRP 195b*/PSYC 461b, ISSUES IN SPECIAL EDUCATION.  Barbara Shiller.
W 2.30-4.20 So Meets RP (0)
An examination of contemporary issues in the field of special education from systemic and developmental perspectives. Policy, assessment and classification, and instruction and intervention are reviewed.

*TPRP 199b, TEACHING AND LEARNING IN SECONDARY SCHOOLS.
Linda Cole-Taylor.
T 1.30-3.20 So Meets RP (0)
A philosophical and practical forum in which prospective educators enact and evaluate their philosophy of education from the “classroom out.” Expansion of a number of topics arising in TPRP 190a; exploration of specific challenges that face educators and students today. Prospective teachers work together in a Collaborative Teaching Lab to develop and teach formal lessons at a local high school. Recommended preparation: TPRP 190a.
tprp 290–296, The Methods of Teaching. Readings, discussions, and case studies focusing on all aspects of instruction—objectives, motivation, evaluation, short- and long-term planning, management, and curriculum. Specialists from public school systems assist in particular subject instruction.

  M 2.30-4.20 Meets RP (0)

  M 2.30-4.20 Meets RP (0)

  M 2.30-4.20 Meets RP (0)

  M 2.30-4.20 Meets RP (0)

  M 2.30-4.20 Meets RP (0)

  M 2.30-4.20 Meets RP (0)

*tprp 299G or bG, Student Teaching. Staff.
  HTBA 3 C Credits Meets RP (0)
  Teaching for a ten-week period, full time, in a local middle or high school or in an early childhood program, under the direction of a master teacher and the Yale supervisor.

*tprp 471G or b, Independent Study. Staff.
  2 HTBA Meets RP (0)
  Readings in educational topics, history, policy, or methodology; weekly tutorial and a substantial term essay.

THEATER STUDIES

Director of undergraduate studies: Marc Robinson [F]; Toni Dorfman [Sp], 220 York St., 432-1310, theater@pantheon.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF THEATER STUDIES

Professors
  Thomas DeFrantz (Visiting) (Theater Studies, African American Studies), Richard Lalli (Adjunct) (Music, Theater Studies), §Lawrence Manley (English), Donald Margulies (Adjunct) (Theater Studies, English), J. D. McClatchy (Adjunct) (Theater Studies, English), §Charles Musser (Film Studies, American Studies, Theater Studies), §Joseph Roach (English, African American Studies, Theater Studies), §Marc Robinson (School of Drama, Theater Studies, English), §Robert Stepto (African American Studies, English, American Studies)

Associate Professors
  Awam Amkpa (Visiting) (Theater Studies, School of Drama), §Murray Biggs (Adjunct) (Theater Studies, English), Daphne Brooks (Visiting) (Theater Studies, African American Studies), §Toni Dorfman (Adjunct) (Theater Studies), Joan MacIntosh (Adjunct) (Theater Studies, School of Drama), §Deb Margolin (Adjunct) (Theater Studies)

Assistant Professors
  Reginald Jackson (Theater Studies, East Asian Languages & Literatures), Paige McGinley (Theater Studies, American Studies), Julia Prest (French)
Lecturers
Emily Coates, Connie Grappo, Annette Jolles, Polina Klimovitskaya, Michael Korie, Kathryn Krier, Tina Landau, Daniel Larlham, Sandra Luckow, Paul McKinley, Lonny Price, Stephen Quandt, Timothy Robinson, Ilona Somogyi, Michael Tracy, Reggie Wilson, Robert Woodruff
§Member of the Executive Committee for the program.

As a branch of the humanities and as a complex cultural practice, theater claims a rich history and literature and an equally rich repertoire of embodied knowledge and theory. Theater Studies emphasizes the reciprocal relationship between practice and scholarly study. The major combines practical training with theory and history, while stressing creative critical thinking. Students are encouraged to engage intellectual and physical approaches to explore diverse cultural forms, historical traditions, and contemporary life.

The study of theater is interdisciplinary in scope and global in perspective. Students are expected to take courses in cognate disciplines such as history, philosophy, anthropology, political science, film, art, literature, and foreign languages. Faculty members are affiliated with a range of departments; their diverse expertise lends breadth and depth to course offerings and enables students to devise a course of study reflective of their developing interests.

Special features of the program are the production seminars (THST 211b, 224a, 230a or b, 233b, 237, 300a, 315b, 318b, 320a, 322b, 324b, 327b, 335a, 337b, 341b, 358a, 373b, 379a, 386a, 387b, 404b, 414a or b, 418a) and guided independent study projects (THST 411a, 412b, and 491a or b). Each production seminar concentrates on study, through practice, of one aspect of work in the theater; examples are approaches to acting, directing, writing, dance, or design. Each seminar involves numerous projects that grow out of the term’s work. For example, the project may be production of a play or several plays, adaptation or translation of existing works, or creation of original plays, performance pieces, or set design. Independent study projects give the student freedom to pursue individual and group-generated projects under the guidance of a Theater Studies faculty member. All production seminars require permission of the instructor (by application or audition). Independent study project courses are open only to majors.

Although students need not formally declare an intention to major in Theater Studies until the second term of the sophomore year, the requirements of the major may be difficult to complete in two years. Students intending to apply for admission to the major must have completed THST 110a and 111b before applying, which they must do by the end of the sophomore year. Information about the application process and advice about the program can be sought at any time from the director of undergraduate studies. Interested students are urged to consult the director of undergraduate studies early in their academic careers.

The major: The major consists of ten term courses beyond the introductory prerequisites (THST 110a, 111b), one of which must be THST 210a. Students are encouraged to enroll in a balanced combination of courses involving studio work and courses with literature, history, and theory content. Of the ten required term courses, four must be chosen from four periods of dramatic literature or theater history or from four cultures. A suggested scheme might be one course in each of four of the following categories: Shakespeare, African American theater, Greek drama, melodrama, British drama, modern American drama, contemporary American drama, German drama, or other courses in dramatic literature and theater history. At least one of the four
courses should include dramatic literature originating in a language other than English. Students are urged to read plays in the original languages whenever possible.

Students are encouraged to choose additional courses to develop the perspectives achieved in the production and literature courses. These courses may be selected (1) as a study of material that has influenced or provided sources for a playwright or theater; (2) as a study of the historical, political, or religious context of a particular playwright, theater, or literature; (3) as a study of forms of expression contemporary with a particular theater or author, for example, courses in music, art history, architecture, or film; or (4) as a study of theoretical aspects of the theater through courses in such areas as linguistics, aesthetics, psychology, or the history of criticism.

Senior requirement. Majors satisfy the senior requirement in one of two ways. They may undertake a one-term senior project (THST 491a or b), or, with the approval of the director of undergraduate studies, they may take one of the courses listed in the dramatic literature and theater history section as a senior seminar. Senior projects may take the form of directing, designing, or writing a play, performing a role, choreographing a dance piece, or writing a critical essay. Performance-oriented projects are in addition to a senior essay, which is an integral requirement of THST 491a or b. Students wishing to undertake a senior project must submit a proposal before the deadline announced by the director of undergraduate studies. Each proposal is submitted to a faculty committee for approval.

Students interested in mounting a production as part of their senior project are encouraged to develop collaborative proposals among actors, writers, directors, designers, dancers, or dramaturgs. Students proposing a collaborative production project have priority for rehearsal time and production slots in the Whitney Theater Space, 53 Wall Street.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** THST 110a, 111b

**Number of courses:** 10 term courses beyond prereqs (incl senior req)

**Specific course required:** THST 210a

**Distribution of courses:** 4 courses in dramatic lit or theater hist, each from a different period or culture as specified (1 with reading in lit other than English)

**Senior requirement:** Senior sem or senior project (THST 491a or b)

**CORE CURRICULUM IN THEATER STUDIES**

**note:** All performance-oriented classes that hold auditions during the first week of the term are marked with a dagger (†). Yearlong courses hold auditions once only at the beginning of the fall term. Other starred (★) courses, limited in enrollment, are seminars intended primarily for juniors and seniors in the Theater Studies major. When openings are available, sophomores and nonmajors may be admitted with the permission of the instructor. All students interested in taking starred courses must preregister during the reading period of the preceding term. Cross-listed courses in dramatic literature and theater history or those double-titled with another department may require earlier preregistration.

Preregistration and audition information is available at the office of the director of undergraduate studies, 220 York Street.
THST 110a and 111b, Survey of Theater and Drama. Marc Robinson.
TH 2:30-3:20, 1 HTBA Hu (27)
An introduction to theater history, plays, aesthetic theories, and performance
techniques. From antiquity to Elizabethan Renaissance in the fall and continuing
through to the present in the spring.

**THST 210a, Introduction to Performance Concepts.**

210a-1: MW 1:30-3:20 Meets RP (o) Daniel Larlham
210a-2: TTh 1:30-3:20 Meets RP (o) Connie Grappo
210a-3: MW 3:30-5:20 Meets RP (o) Deb Margolin

A studio introduction to the basic techniques of acting, including the actor's
vocabulary and performance tools. Improvisation, performance exercises, and
scene work based on Stanislavsky, Vakhtangov, Michael Chekhov, Strasberg,
Adler, Meisner, and Hagen.

†Admission by audition. Open to Theater Studies majors only. Required for Theater
Studies majors in the year immediately following THST 110a, 111b.

**Production Seminars**

Production seminars concentrate on study through practice of a single aspect
of work in the theater, for example, acting, directing, designing, dancing,
or writing for the stage. Unless otherwise indicated, production seminars are
open to junior and senior majors, and to nonmajors with permission of the
instructor. Application procedures are given in the course descriptions. Note
the information above on both performance-oriented (†) and limited-
enrollment (★) courses. Additional information is available at the office of
the director of undergraduate studies.

**THST 211b, Intermediate Acting.**

Hu Meets RP (o)
211b-1: MW 1:30-3:20 Polina Klimovitskaya
211b-2: MW 3:30-5:20 Daniel Larlham

Continued study of acting as an art, building on performance concepts intro-
duced in THST 210a. Various approaches to the actor's task, requiring deeper
understanding of conceptual issues and increasing freedom and individuality in
building a character. Exercises, monologues, and scene work.

†Admission by audition. Prerequisite: THST 210a.

[THST 220b, Physical Techniques of Performance]

**THST 224a or b/MUSI 228a or b, Performing and Directing
Musical Theater.** Annette Jolles [F], Lonny Price [Sp].
For description see under Music.

**THST 230a or b, Advanced Acting and Scene Study.**
Joan MacIntosh [F], Deb Margolin [Sp].
MW 1:30-3:20 Meets RP (o)
Combination of exercises and scene study to deepen the understanding and play-
ing of action.

†Admission by audition. Open to junior and senior Theater Studies majors only.
May be taken more than once. Prerequisite: THST 211b.

**THST 235b, Dance Theater.** Michael Tracy.
TTh 1:30-3:20 Hu (o)
An introduction to physical techniques and choreography from American concert dance history, leading to the creation of solo and group dance pieces. Focus on different movement vocabularies and repertoires, including modern and post-modern dance. Processes by which choreographers work. Collaboration, music, text, voice, props, and interdisciplinary discourse in relation to movement. Open to students of all levels and majors.

**THST 237, DESIGN FOR THE THEATER.**  Kathryn Krier.
**TTh 9.25-11.15** Meets RP (o)  Cr/Year only
An intensive introduction to design for the theater. General principles such as script analysis, historical research, and personal interpretation. Specific techniques and responsibilities associated with various design disciplines (scenery, costume, lighting, sound). Attention to the history and theory of theater design.

**THST 300a, THE DIRECTOR AND THE TEXT I.**  Connie Grappo.
**TTh 3.30-5.20** Hu Meets RP (o)
Basic exercises in approaching dramatic or other literary texts from the director’s perspective. Particular attention to the many roles and functions of the director in production. Rehearsal and production of workshop scenes.

Written applications are due at the Theater Studies office before the first class meeting. Open to junior and senior Theater Studies majors only. May be taken more than once. Prerequisite: THST 210a.

**THST 301b, THE DIRECTOR AND THE TEXT II**

**THST 315b, SHAKESPEARE ACTED.**  Murray Biggs.
**TTh 4.30-6.15** Hu Meets RP (o)
An attempt to realize some of Shakespeare’s texts through performance. Emphasis on problems of language: how to give language meaning, clarity, and form, while making it suggestive and natural, in alliance with other acting considerations. Close work with sonnets and monologues, with duologues, and finally with scenes.

†Admission by January audition only; preference to seniors and juniors; open to non-majors.

**THST 318b/ MUSI 322b, ANALYZING, DIRECTING, AND PERFORMING EARLY OPERA.**  Richard Lalli.
For description see under Music.

**THST 320a/ ENGL 453a, PLAYWRITING.**  Donald Margulies.
For description see under English Language & Literature.

**THST 321a, PRODUCTION SEMINAR: PLAYWRITING.**  Deb Margolin.
**MW 1.30-3.20** Meets RP (o)
A seminar and workshop in playwriting. Stress on developing an individual voice. Scenes read and critiqued in class. Admission by application, with priority to Theater Studies majors. A writing sample and statement of purpose should be submitted to the instructor before the first class meeting.

**THST 322b, ADVANCED PLAYWRITING.**  Deb Margolin.
**MW 3.30-5.20** Meets RP (o)
A seminar and workshop in advanced playwriting that furthers the development of an individual voice. Study of contemporary and classical plays to understand new and traditional forms. Students write two drafts of an original one-act play or adaptation for critique in workshop sessions. Familiarity with basic playwriting tools is assumed. Open to juniors and seniors, nonmajors as well as majors, on the basis of their work; priority to Theater Studies majors. Writing samples should
be submitted to the instructor before the first class meeting. Prerequisite: THST 320a or 321a, or a college seminar in playwriting, or equivalent experience.

**THST 324b, Playwright-Director Laboratory.** Toni Dorfman.

M 9.25-11.15, W 10.30-11.20 Meets RP (o)

An exploration of the collaboration between the director and the playwright in the creation of new work. Particular attention to the shaping of dramatic action, structure, and characters. Short scenes are written, staged, critiqued, and revised. Prerequisites: THST 210a; for directors: THST 300a; for playwrights: THST 320a, 321a, or with permission of instructor.

**THST 327b/*ENGL 468b, Advanced Playwriting Workshop.** Donald Margulies.

For description see under English Language & Literature.

**THST 335a*/AFST 435a, Contemporary Dance of African Expression.** Reggie Wilson.

Th 1.30-3.20 Hu Meets RP (o)

Contemporary African concert dance forms and their influences. Dance as a meaningful form of expression and communication in Africa and its diaspora. Comparison of traditional dance forms and contemporary choreographies. The influence of these new choreographies on contemporary dance both locally and globally. Prerequisite: THST 235b, or with permission of instructor.

[**THST 336b, Bodies in Cultural Landscapes**]

**THST 337b, Space, Character, and Design.** Ilona Somogyi.

T 7-8.50 p.m. Meets RP (o)

A theoretical and practical approach to the transformation of drama into theater via scenic and costume design. Translation of dramatic text into visual imagery. Prerequisites: THST 210a and 237, or with permission of instructor.

**THST 341b, Comedy in Performance.** Daniel Larlham.

MW 1.30-3.20 (o)

Comic performance explored through discussion, exercises, and collaborative projects, with an emphasis on improvisation, playfulness, and physical engagement. Use of circus, commedia dell’arte, clowning, and other body-based techniques to extend physical and imaginative capabilities and expressiveness. Experimentation with the language of comedic storytelling through devised performance projects.

[**THST 356a/WGSS 349a, Gay and Lesbian Theater**]

**THST 358a, Introduction to Lighting Design.**

Stephen Quandt.

MW 3.30-5.20 Meets RP (o)

Conceptualization of a play into a sequence of visual ideas, incorporating both text and subtext. Expression and testing of those ideas within a space large enough to bring together performers and audience. Priority to Theater Studies majors. Prerequisite: THST 237.

**THST 373b, Acting for the Camera.** Sandra Luckow.

M 7-8.50 p.m. (o)

Considerations and techniques, artistic problems, and technical challenges specific to acting for the camera. The history of film acting, including parallels to developments in stage acting. Scene work, film screenings, and technical workshops.
**THST 379a/AFAM 351a, Production Seminar: Cane.**
Thomas DeFrantz.

TuTh 3:30-5:20 Hu (o)

A workshop that explores the issues of “translating” prose and poetry into dance theater. Focus on the creation of performance materials in response to Jean Toomer’s *Cane* (1923), poems and short stories about African American life in the rural South and urban North. Study of contextual theory, history, and biography. Students compose and stage creative work.

**THST 386a, Advanced Dance Repertory.** Emily Coates.

TuTh 9:25-11:15 Hu Meets RP (o)

A studio exploration of American concert dance through the repertory of two key choreographers: Yvonne Rainer and Twyla Tharp. Emphasis on each artist’s historical context, evolving aesthetic, and performance techniques. The course culminates in a final performance.  
†Admission by audition. Prerequisites: THST 235b and either 335a or 336b, or with permission of instructor.

**THST 387b, Advanced Dance Composition.** Emily Coates.

TuTh 9:25-11:15 Hu Meets RP (o)

A seminar and workshop in dance-theater composition. Focus on tools for generating and interpreting movement, basic choreographic devices, and dance in dialogue with media, music, and other art forms. Choreographic projects developed over the course of the term are presented in a final performance. Admission by application. A summary of past choreographic experience and a statement of purpose (250 words maximum) should be submitted to the instructor before the first class meeting. Prerequisites: THST 235b and either 335a or 336b, or with permission of instructor.

**THST 404b, Elements of Composition for the Stage.**
Robert Woodruff.

Tu 3:30-5:30 Hu (o)

Workshop focused on enhancing directors’ theoretical foundations and theatrical skills. Exploration of elements that serve as sources of inspiration in creating live performance. Historical and contemporary performance theory as it deals with time, visual arts, text, and music. Specific artists who have contributed to the development of contemporary performance. Prerequisites: THST 210a and 300a or 301b, or with permission of instructor.

**THST 414a or b, Writing for Musical Theater and Opera.**
Tina Landau [F], Michael Korie [Sp].

F 1:30-3:20 Meets RP (o)

A practical introduction to the art and craft of libretto writing for musical theater and opera. Study and analysis of books for musicals and libretti for opera from Da Ponte to Hammerstein to today. Exercises in writing one-act musical books. The possibility of collaboration with student composers.

**THST 418a, Actors and the Art of Acting.** Daniel Larlham.

MWF 3:30-5:20 Meets RP (o)

Investigation of the actor’s various modes of concentration, imaginative projection, and physical awareness. A laboratory environment combines rigorous conceptual analysis and practical experiment. Intellectual and physical engagement with texts and techniques of acting theory from Quintilian and Zeami to Boal and Anne Bogart.  
†Admission by audition only. Preference to Theater Studies majors. Prerequisites: THST 210a, 211b, and 230a or b, or with permission of instructor.
DRAMATIC LITERATURE AND THEATER HISTORY

*THST 218b/*CLCV 218b/*HUMS 258b/*LITR 161b, Drama and Demos.
Timothy Robinson.
For description see under Classics.

THST 223b/ENGL 360b/HUMS 243b/LITR 223b, The Foundations of Modern Drama.
Murray Biggs.
MW 10.30-11.20, 1 HTBA Hu (33)
Three representative plays by each of the seven principals of early modern Western drama: Ibsen, Strindberg, Chekhov, Shaw, O’Neill, Pirandello, Brecht.

*THST 243a/*FREN 245a, Twentieth-Century French Theater.
Julia Prest.
For description see under French.

*THST 303b/*ENGL 336b/*LITR 323b, The Opera Libretto.
J. D. McClatchy.
For description see under English Language & Literature.

*THST 328b/*AMST 328b/*FILM 354b, Stage and Screen.
Charles Musser.
M 3.30-5.20; screenings su 7 p.m. Hu (0)
Exploration of the ways in which filmmakers have reworked plays for the screen. The changing nature of cinema’s relationship to and place in theatrical culture. Screenings focus on silent films of the 1920s and sound films from the post–World War II era. Plays include both American works and European classics.

Reginald Jackson.
For description see under East Asian Languages & Literatures.

*THST 344b, Theaters of the Black Atlantic.
Awam Amkpa.
Th 1.30-3.20 Hu Meets RP (0)
A comparative study of drama and theater produced by African, African American, Black British, and Caribbean practitioners. Close examination of dramatic texts, theatrical groups, and movements. Exploration of how conventions of drama and theater, as cultural practices, offer sites for performing identity and subjectivity.

*THST 345b, Dramatic Theory and Criticism.
Paul McKinley.
F 1.30-3.20 Hu Meets RP (36)
Examination of theater and dramatic criticism in connection with Greek tragedy, the Italian Renaissance, French neoclassicism, the German Enlightenment, comedy, naturalism, expressionism, realism, absurdism, feminism, and performance theory. Texts include works by Plato, Aristotle, Diderot, Lessing, Hegel, Zola, and Brecht.

*THST 348a/*ENGL 383a/*LITR 275a, The Common Wealth of Drama.
Murray Biggs.
MW 4-5.15 Hu (0)
Study of plays in English from or about former British colonies, both before and after independence, including Ireland, Canada, Australia, South Africa, Nigeria, Ghana, the West Indies, and the Indian subcontinent.
The Cinema of War.  
Murray Biggs.  
For description see under Film Studies.

The Drama of War

Dance Theory: Corporeality and Presence.  
Thomas DeFrantz.  
T 3.30-5.20 Hu (0)  
Exploration of the theoretical tools that scholars bring to bear on the study of dance, with discussion of which tools are most effective. Readings explore how dance studies has been constituted as a field. Approaches from phenomenology, historiography, and performance studies.

African American Theater.  
Paige McGinley.  
T 3.30-5.20 WR, Hu (0)  
Intensive study of African American dramatic literature and theater history. Topics include the theater of the Harlem Renaissance, Federal Theater Project, and Black Arts Movement, and plays by Bonner, Hansberry, Kennedy, Bullins, Shange, Wilson, Parks, and Corthron.

Black Performance Theory.

Thomas DeFrantz.  
T 7-8.50 p.m.  
Hu (0)  
Exploration of scholarly writings on the theory, history, and practice of African American expressive cultures. Attention to forms of expression such as gospel music, concert dance, hip hop music, and church oratory. Readings from the fields of anthropology, religious studies, ethnography, performance theory, theater history, dance studies, and cultural studies.

Concert Dance in the Africanist Tradition.  
Thomas DeFrantz.  
T 7-8.50 p.m.  
Hu (0)  
The work of African American choreographers explored in relation to aesthetic theory and historical treatments of black concert dance in America. Dances by Donald Byrd, Bebe Miller, Abdel Salaam, and Ulysses Dove. Critical engagement with the developing fields of African American dance documentation and interpretation.

Reginald Jackson.  
w 9.25-11.15  
Hu Meets RP (0)  

Black Feminist Musical Subcultures.  
Daphne Brooks.  
For description see under African American Studies.

Shakespeare: Comedies and Romances.  
Lawrence Manley.
**engl 201a**: *Shakespeare: Histories and Tragedies.*
David Scott Kastan.

**film 150a**: *Introduction to Film Studies.*
Aaron Gerow.

**film 350a or b**: *Screenwriting.*
Marc Lapadula.

**hums 228a**: *Shakespeare and the Canon: Histories, Comedies, and Poems.*
Harold Bloom.

**hums 229b**: *Shakespeare and the Canon: Tragedies and Romances.*
Harold Bloom.

**litr 122b**: *World Poetry and Performance.*

**musi 213a**: *The Composition of Musical Theater I.*
Andrew Gerle.

**musi 243a**: *Opera.*
Gundula Kreuzer.

**musi 313b**: *The Composition of Musical Theater II.*
Joshua Rosenblum.

**musi 459a**: *History and Theory of Performance.*
Gundula Kreuzer.

**nelc 151b/G/mmes 151b**: *Drama and Theater in the Arab World.*
Hala Khamis Nassar.
For description see under Near Eastern Languages & Civilizations.

**rlst 185b**: *The Mahabharata.*
Hugh Flick, Jr.

**span 348b**: *Politics and Violence in Latin American Theater.*
Priscilla Meléndez.

**SPECIAL PROJECTS**

**thst 471a and 472b**: *Directed Independent Study.*
Marc Robinson [F], Toni Dorfman [Sp].

HTBA (0)
An independent study should generally conform to the standards and procedures of the senior project, THST 491a or b, even when not undertaken by a senior. If the independent study is a performance or directing project, the adviser visits rehearsals and performances at the mutual convenience of adviser and student. The project must be accompanied by an essay of about 15 pages, worth about half the final grade. Although the paper’s requirements vary with the project and its adviser, it must be more than a rehearsal log. The paper typically engages interpretative and performance issues as revealed in other productions of the work (if they exist). The writing should be concomitant with rehearsal, to enable each to inform the other, and a draft must be presented to, and commented on by, the adviser at least a week before—not after—the final performance. The final version of the paper, incorporating adjustments and reflections, should be turned in to the adviser no later than 10 days after the performance closes, and no later than the first day of the final examination period. An essay project entails substantial reading, at least four meetings with the adviser, and a paper or papers totaling at least 20 pages.

A playwriting project normally requires 20 new script pages every two weeks of the term and regular meetings with the adviser. A final draft of the entire script is the culmination of the term's work.
Application forms are available from the director of undergraduate studies. Juniors may use one term of these courses to prepare for their senior projects. Open to juniors and seniors. Prerequisites: THST 210a and one seminar.

**THST 473a and 474b, Directed Independent Study: Eugene O’Neill.** Murray Biggs and staff.

Individual or small-group study focused on the works of Eugene O’Neill. The course of study is planned by the student under faculty supervision; work may include one or more performances and/or written projects.

**THST 491a or b, Senior Project in Theater Studies.**
Daniel Larlham [F], Toni Dorfman [Sp], Kathryn Krier.

Students must submit proposals for senior projects to the Theater Studies office by the deadline announced by the director of undergraduate studies. Attendance at weekly section meetings is required for all students undertaking production projects. Application forms are available in the Theater Studies office, 220 York St. Prerequisite: THST 237 for all students enrolling as directors or designers.

**Courses in the School of Drama**

Undergraduate enrollment in School of Drama courses requires the consent of the instructor and of the associate dean of the School of Drama. For a description of these courses, see the director of undergraduate studies. Meeting times and places are posted in the Green Room, UT, on the first day of the term. Undergraduates may not enroll in acting or directing courses offered by the School of Drama. Majors in Theater Studies, however, are encouraged to consider taking selected courses in design, dramaturgy, and theater management.

Students enrolling in School of Drama courses should note that only four term courses given in the professional schools may be offered toward the bachelor’s degree. Permission to count any School of Drama course toward the major in Theater Studies must be obtained from the director of undergraduate studies at the beginning of the term in which the course is taken. Students also should note that the academic calendars of the School of Drama and of Yale College differ. The School of Drama calendar should be consulted for scheduling.

Unless otherwise specified in individual course descriptions, courses in the School of Drama are not open to the Credit/D/Fail option.

**Turkish**

*(See under Near Eastern Languages and Civilizations.)*

**Urban Studies**

**Faculty Associated with Urban Studies**

Professors

Katerina Clark (Comparative Literature, Slavic Languages & Literatures), Kathryn Dudley (Anthropology, American Studies), Dolores Hayden (School of Architecture, American Studies), Matthew Jacobson (History, American Studies), Jennifer Klein (History), Alan Plattus (School of Architecture), Douglas Rae (School of Management, Political Science), Helen Siu (Anthropology), Robert Solomon (Law School), Ivan Szelenyi (Sociology), Jay Winter (History)
Courses related to urban studies may be found in a number of different departments and programs, particularly African American Studies; American Studies; Anthropology; Architecture; Environmental Studies; Ethics, Politics, and Economics; History; Humanities; Political Science; and Sociology. The course Introduction to the Study of the City is offered each year; details may be found under the heading “Study of the City” in this bulletin.

Urban studies can be incorporated into a number of major programs. The Architecture major includes an urban studies track. American Studies and Ethics, Politics, and Economics majors are required to select an area of concentration, and urban studies meets this requirement. Political Science majors who select the optional interdisciplinary concentration may focus on urban studies. The Political Science department offers two seminars, Perspectives on the City (PLSC 228b) and Poverty, Politics, and Policy in the American City (PLSC 280b), for qualified students.

Students interested in pursuing a concentration in urban studies within a particular major are encouraged to contact their director of undergraduate studies. Faculty members listed above are available to help students identify appropriate sequences and combinations of courses and may also be willing to meet with students who are writing senior essays on interdisciplinary urban topics.

**VIETNAMESE**

*(See under Southeast Asia Studies.)*

**WOMEN’S, GENDER, AND SEXUALITY STUDIES**

Director of undergraduate studies: Maria Trumpler, 100 Wall St., 432-0847, maria.trumpler@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF WOMEN’S, GENDER, AND SEXUALITY STUDIES**

**Professors**

Julia Adams (Sociology), Elizabeth Alexander (African American Studies), Hannah Brueckner (Sociology), Jill Campbell (English), Hazel Carby (African American Studies, American Studies), Kang-i Sun Chang (East Asian Languages & Literature), George Chauncey (History), Deborah Davis (Sociology, East Asian Studies), Glenda Gilmore (History), Dolores Hayden (School of Architecture, American Studies), Margaret Homans (English, Women’s, Gender, & Sexuality Studies), Paula Hyman (History, Religious Studies), Marianne LaFrance (Psychology, Women’s, Gender, & Sexuality Studies), Joanne Meyerowitz (History), Frances Rosenbluth (Political Science), Cynthia Russett (History), William Summers (Molecular Biophysics & Biochemistry), Emilie Townes (African American Studies, Religious Studies), Michael Warner (English), Laura Wexler (Women’s, Gender, & Sexuality Studies, American Studies)
ASSOCIATE PROFESSORS
Bernard Bate (Anthropology), Alicia Schmidt Camacho (American Studies), Kamari Clarke (African American Studies, Anthropology), Janet Henrich (School of Medicine), Deb Margolin (Adjunct) (Theater Studies), Jean-Jacques Poucel (French), Naomi Rogers (History of Science, History of Medicine)

ASSISTANT PROFESSORS
Francesca Cadel (Italian), Averil Clarke (Sociology), Shannon Craigo-Snell (Religious Studies), Moira Fradinger (Comparative Literature), Terri Francis (Film Studies, African American Studies), Lillian Guerra (History), Alyssa Mt. Pleasant (American Studies, History), Karen Nakamura (Anthropology), Hala Khamis Nassar (Near Eastern Languages & Civilizations), Alondra Nelson (African American Studies), Sarah Weiss (Music)

SENIOR LECTURERS
Geetanjali Singh Chanda, Ron Gregg, Maria Trumpler

LECTURERS
Melanie Boyd, Kathleen Cleaver, Shana Goldin-Perschbacher, Graeme Reid, Jennifer Wood

The program in Women’s, Gender, and Sexuality Studies focuses on gender and sexuality as fundamental categories of social and cultural analysis. Drawing on history, literature, cultural studies, social science, and natural science, it offers interdisciplinary perspectives from which to study the diversity of human experience. Gender—the social meaning of the distinction between the sexes—and sexuality—sexual identities, discourses, and institutions—are critically explored, with particular attention to the ways that they intersect with class, race, ethnicity, nationality, and transnational movements. Students majoring in Women’s, Gender, and Sexuality Studies choose one of two tracks: women’s and gender studies (w&gs) or lesbian, gay, bisexual, transgender, and queer studies (lgbtq). The major includes a core curriculum of required courses as well as an area of individual concentration that students develop in consultation with program faculty and the director of undergraduate studies.

Students in the women’s and gender studies track focus on the history, expression, and diversity of women’s experiences and on the historical and theoretical construction of the category of woman. They work toward completing a senior essay broadly concerned with women as social actors, feminist theory and methodology, and gender as a significant category of social organization and meaning. Students in the lgbtq track analyze social, historical, and theoretical constructions of sexuality and identity, including (but not limited to) gay, lesbian, bisexual, transgendered, and queer. They work toward completing a senior essay broadly concerned with the construction of sexual difference as a significant category of social organization and meaning. Students in both tracks select from a wide range of social science, humanities, and natural science courses in developing their program of study.

Requirements of the major: Women’s, Gender, and Sexuality Studies may be taken either as a primary major or as one of two majors. The major requires twelve term courses. Students take one gateway course, one intermediate course, one disciplinary methods course, the junior sequence, and the senior sequence. At least one of the twelve courses in the major must focus on women, gender, and/or sexuality in Africa, Asia, Latin America, or the Middle East. (wgss 295b does not fulfill this requirement.) All majors define and develop an area of concentration consisting of five electives in a particular area of interest. With permission of the director of undergraduate studies, majors may make an appropriate substitution for one course counting
toward the required twelve term courses; students who are completing two majors may make a second substitution.

A gateway course, wgss 110a, 120a, 200a, or 253b, is required for all majors, and students are encouraged to take that course in their freshman or sophomore year. In addition, all majors must take either Globalizing Gender (wgss 295b) or Introduction to LGBT Studies (wgss 296a), preferably after the gateway course and prior to the junior sequence. Wgss 295b is required for majors specializing in the W&GS track, while wgss 296a is required for those choosing the LGBTQ track. All majors are encouraged to take both wgss 295b and 296a.

Methods requirement. Students are required to take a methods course, which can be chosen from a variety of designated electives in Women’s, Gender, and Sexuality Studies. In special circumstances, the director of undergraduate studies may allow a student to fulfill the methods course requirement by counting a course that is not listed among the designated WGSS electives. Majors should choose a methods course that will provide them with the analytical tools necessary to carry out the senior essay. Students are advised to complete the methods requirement in their sophomore or junior year. A list of courses that fulfill the methods requirement is available from the director of undergraduate studies.

Junior sequence. The two-term junior sequence consists of History of Feminist Thought (wgss 340a) and the Junior Seminar: Theory and Method (wgss 398b).

Senior sequence and senior essay. The senior sequence consists of two courses. In the fall term of the senior year, all majors take the Senior Colloquium (wgss 490a) and begin researching and writing a senior essay. The senior essay, which should reflect the student’s area of concentration, is written under the guidance and supervision of a faculty member with expertise in that area; students are expected to meet with their essay adviser on a regular basis. Students typically complete the senior essay in the spring term of the senior year while enrolled in the Senior Essay (wgss 491a or b).

Area of concentration. All students majoring in Women’s, Gender, and Sexuality Studies, in consultation with the director of undergraduate studies, design an individual area of concentration consisting of five courses in a single disciplinary topic or substantive area of interest. Examples include but are not exhausted by the following: women’s health and public policy; science, technology, and feminist theory; gay and lesbian arts and intellectual history; transgender history; transnational feminism; gender and development in South Asia; gender, race, and visual culture; masculinity studies; and postcolonial women writers.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** None

**Number of courses:** 12 term courses (incl senior req)

**Specific courses required:** Either wgss 295b or 296a; wgss 340a, 398b

**Distribution of courses:** 1 gateway course; 5 electives in area of concentration; 1 course on women, gender, and/or sexuality in a non-Western context; 1 methods course

**Senior requirement:** Senior colloq and senior essay (wgss 490a, 491a or b)

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**GATEWAY COURSES**

[wgss 110a/socy 134a, GENDER AND SEXUALITY IN SOCIETY]
wgss 120a, Women, Food, and Culture.  Maria Trumpler.
TTh 1.30-2.20, 1 HTBA  So  (o)
Interdisciplinary exploration of the gendering of food production, preparation, and consumption in cross-cultural perspective. Topics include agricultural practices, cooking, pasteurization, kitchen technology, food storage, home economics, hunger, anorexia, breast-feeding, meals, and ethnic identity.

wgss 200a/AMST 135a/HIST 127a, U.S. Lesbian and Gay History.
George Chauncey.
For description see under History.

wgss 253b, Women’s Health: Global Issues.  Naomi Rogers, Janet Henrich.
MW 9.25-10.15, 1 HTBA  So  (32)
Review of medical findings on gender-specific diseases (e.g., breast cancer, eating disorders); examination of the cultural context of studies on women’s health. Issues include reproduction; weight, body image, and eating; and the impact of violence against women.

INTERMEDIATE COURSES

*WGSS 295b, Globalizing Gender.  Geetanjali Singh Chanda.
TTh 11.35-12.50  WR, Hu  (o)
The use of gender as an analytical tool to understand a wide range of contemporary issues. Themes include nature versus culture, daily life, economic globalization, war, and fundamentalism; emphasis on connections between women’s experiences across national borders. Authors include Woolf, Enloe, Kincaid, Freedman, Mernissi, and Heilbrun.

*WGSS 296a, Introduction to LGBT Studies.  Graeme Reid, Shana Goldin-Perschbacher.
TTh 11.35-12.50  Hu  (o)
Study of works that have as their theme gay and lesbian experience and identity since the late nineteenth century. Works include fiction and autobiographical texts, historical and sociological materials, texts on queer theory, and films. Focus on modes of representing sexuality and on the intersections between sexuality and race, ethnicity, class, gender, and nationality.

JUNIOR SEMINARS

*WGSS 340a, History of Feminist Thought.  Margaret Homans, Laura Wexler.
TTh 1-2.15  Hu  (o)
Key writings on feminism from the late eighteenth century to the present. The intellectual history of feminism placed in national and transnational contexts, with emphasis on the intersecting histories of social theory, human rights, gender, and organized women’s movements. Additional sections offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

*WGSS 398b, Junior Seminar: Theory and Method.
Melanie Boyd.
T 7-8.30 P.M.  Hu, So  (o)
An interdisciplinary approach to studying gender and sexuality. Exploration of a range of theoretical frameworks and methodologies relevant to contemporary feminism. Prepares students for the senior essay.
**SENIOR COURSES**

*wgss 490a, The Senior Colloquium. Maria Trumpler.
  T 3.30-5.20 (0)
A research seminar taken in the first term of the senior year. Students with diverse research interests and experience discuss common problems and tactics in doing independent research.

*wgss 491a or b, The Senior Essay. Maria Trumpler.
  HTBA (0)
Independent research on, and writing of, the senior essay.

**ELECTIVES**

*wgss 032b, History of Sexuality. Maria Trumpler.
  TH 1-2.15 Hu (0) Fr sem
Exploration of scientific and medical writings on sexuality over the past century. Focus on the tension between nature and culture in shaping theories, the construction of heterosexuality and homosexuality, the role of scientific studies in moral discourse, and the rise of sexology as a scientific discipline. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

*wgss 045b, Cross-Cultural Narratives of Desire.
  William Summers.
  MW 2.30-3.45 Hu (0) Fr sem
Discourses of desire as reflected in literature, history, popular culture, medicine, and science, with both Western and non-Western examples. Connections with shifting notions of gender and sexuality; intersections with race, class, and culture. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

*wgss 221b/*socy 221b, Sex and Romance in Adolescence.
  Hannah Brueckner.
  For description see under Sociology.

wgss 229b/afam 229b/amst 229b/er&m 231b/socy 198b, Health Social Movements. Alondra Nelson.
  For description see under African American Studies.

*wgss 239a/*engl 239a, Women Writers from the Restoration to Romanticism. Jill Campbell.
  For description see under English Language & Literature.

*wgss 247a/*hums 262a/*litr 341a/*mgrk 210a/*rlst 212a, Religion and Literature: Irreverent Texts. George Syrimis.
  For description see under Hellenic Studies.

*wgss 248b/*clcv 211b/*hums 263b/*litr 335b/*mgrk 211b, Literature and War in the Greek Tradition. George Syrimis.
  For description see under Hellenic Studies.

wgss 255b, Biology of Gender and Sexuality. William Summers.
  TH 10.30-11.20, 1 HTBA Sc, So Meets RP (23)
A critical examination of current biological thinking about gender differences and their origins; male-female sexual dimorphisms and their variations; the continuum from essentialism to constructionism; the mental and cognitive aspects...
of sexuality; theories of eroticism and sex-object choice; physiology of sexual responses; and genetic factors in the biology of behavior.

**WGSS 262A/FILM 264A/FREN 239A, French Women Filmmakers.**
Jean-Jacques Poucel.
For description see under French.

**WGSS 308B/ANTH 308BG, Queer Ethnographies.**
Karen Nakamura.
For description see under Anthropology.

**WGSS 315A/PSYC 342A, Psychology of Gender.** Marianne LaFrance.
For description see under Psychology.

**WGSS 323B/AFST 323B/ANTH 356B, HIV and AIDS in Africa.**
Graeme Reid.

Th 1:30-3:20 So (0)
The social and cultural context in which the AIDS epidemic emerged and spread in southern Africa. How people and organizations experience, conceptualize, and respond to AIDS, and how AIDS is constructed through discourse and representation.

**WGSS 327A/MMES 311A, Constructing the Self: From Autobiography to Facebook.** Geetanjali Singh Chanda.

T 1:30-3:20 WR, Hu (0)
Autobiography in its evolving form as literary genre, historical archive, and individual and community narrative in a changing geographical context. Women's life stories from Afghanistan, China, Cambodia, Indonesia, India, Iran, Egypt, Jordan, and Vietnam illustrate the dialectic relationship between the global and the local. What the reading and writing of autobiographies tells us about oneself and one's place in society; how it can be considered a horizontal community formation.

**WGSS 342A/AFAM 279A/AMST 273A, Black Women's Literature.**
Naomi Pabst.
For description see under African American Studies.

**WGSS 344AG/AFAM 435A/THST 420A, Concert Dance in the Africanist Tradition.** Thomas DeFrantz.
For description see under Theater Studies.

**WGSS 345B/SOCY 224B, Marriage and Family.** Averil Clarke.
For description see under Sociology.

**WGSS 348A/MUSI 348A, Gender and Sexuality in Popular Music.**
Shana Goldin-Perschbacher.

W 3:30-5:20 Hu (0)
Identity issues of our time as they are played out in popular music. Issues of gender identity, sexuality, and race in Anglophone popular music from 1940 to the present, with emphasis on current American popular music. No background in music required.

**WGSS 352B/ENGL 359B, Feminist Perspectives on Literature.**
Jill Campbell.

Th 2:30-3:45 WR, Hu, So (0)
Feminist and queer methods in literary criticism. Topics include the sexual politics of literary traditions; gender and sexuality in relation to plot, narrative, authorship, language, and theories of reading and popular culture; voice, silence,
**wgss 362a, Reading Gender and Sexuality in the Archive.**
Graeme Reid.
W 1.30-3.20 Hu (0)
Discussion of a wide range of theoretical approaches to research on gender and sexuality studies, including historicism, psychoanalysis, deconstruction, ideology critique, and postcolonial theory. Frequent library visits to examine various collections, databases, and finding tools. **Fulfills the methods requirement.**

**wgss 363b afst 363b anth 358b, Beauty, Fashion, and Self-Styling.** Graeme Reid.
W 1.30-3.20 So (0)
Beauty, fashion, and style as aspects of self-identification and embodiment in everyday life. The relationship between the individual and society in different cultural and historical contexts, as interpreted by social science scholarship about the human body and its adornment.

**wgss 369a engl 369a er&m 367a, Adoption Narratives.**
Margaret Homans.
For description see under English Language & Literature.

**wgss 370a, Cultural Narratives of Violence against Women.**
Melanie Boyd.
TTh 1-2.15 (0)
Examination of key feminist theories of violence against women, considering the ways in which they have both illuminated and altered broader cultural narratives of sexual violence. Ways in which these theories are themselves shaped by cultural presumptions, particularly those grounded in race, class, and sexual orientation.

**wgss 371a amst 322a, Gender, Family, and Cultural Identity in Asia and the United States: A Dialogue.**
Geetanjali Singh Chanda.
MW 1-2.15 WR, Hu (0)
A cross-cultural dialogue focusing on family, gender, and identity. An exploration of how specific Asian countries and people approach issues of religion, dress, education, and food as identity markers; U.S. perceptions and reactions to similar issues.

**wgss 375a amst 375a film 375a, Introduction to Queer Cinema.**
Ron Gregg.
For description see under Film Studies.

**wgss 383b hist 244Jb jdst 385b rlst 225b, Women and Judaism.**
Paula Hyman.
For description see under Religious Studies.

**wgss 410b afam 410b, Interdisciplinary Approaches to African American Studies.** Deborah Thomas.
For description see under African American Studies.

**wgss 420b musi 420b, Gendering Musical Performance.**
Sarah Weiss.
For description see under Music.

**wgss 421b thst 366b, Dance Theory: Corporeality and Presence.** Thomas DeFrantz.
For description see under Theater Studies.
**wgss 427b/**hist 127Jb, Witchcraft in Colonial America. Rebecca Tannenbaum. For description see under History.

**wgss 428b/**hist 120Jb, Labor and Democracy in the Twentieth-Century United States. Jennifer Klein. For description see under History.

**wgss 437b/**ep&e 309b/**socy 385bG, Race, Gender, and the African American Experience. Averil Clarke. For description see under Sociology.

**wgss 449b, Fictions of Indian Women. Geetanjali Singh Chanda. W1.30-3.20 WR, Hu (o) An exploration of Indian womanhood through novels and short stories by Indian women. Focus on postindependence women’s writings in English in India, and on concepts of nation, home, and identity.


**wgss 453a/**afam 367a/**amst 431a/**er&m 344a, Representation and the Black Female. Hazel Carby. For description see under African American Studies.

**wgss 466b/**psyc 414b, Gender Images: A Psychological Perspective. Marianne LaFrance. For description see under Psychology.

**wgss 470b/**hist 370Jb, Gender, Nation, and Sexuality in Modern Latin America. Lillian Guerra. For description see under History.

**wgss 471a or b, Independent Directed Study. Consult the director of undergraduate studies.

HTBA (o) For students who wish to explore an aspect of women’s, gender, and sexuality studies not covered by existing courses. The course may be used for research or directed readings and should include one lengthy or several short essays. Students meet with their adviser regularly. To apply for admission, students present a prospectus to the director of undergraduate studies including a bibliography of the work proposed and a letter of support from the adviser.


**yorùbá (See under African Studies.)

**zulu (See under African Studies.)
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