Continued on next page
### BUILDING ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKW</td>
<td>Arthur K. Watson Hall</td>
</tr>
<tr>
<td>BASS</td>
<td>Bass Center for Molecular and Structural Biology</td>
</tr>
<tr>
<td>BASSLB</td>
<td>Bass Library</td>
</tr>
<tr>
<td>BCMM</td>
<td>Boyer Center for Molecular Medicine</td>
</tr>
<tr>
<td>BCT</td>
<td>Becton Engineering and Applied Science Center</td>
</tr>
<tr>
<td>BK</td>
<td>Berkeley College</td>
</tr>
<tr>
<td>BM</td>
<td>Charles W. Bingham Hall</td>
</tr>
<tr>
<td>BML</td>
<td>Brady Memorial Laboratory</td>
</tr>
<tr>
<td>BR</td>
<td>Branford College</td>
</tr>
<tr>
<td>BRBL</td>
<td>Beinecke Rare Book and Manuscript Library</td>
</tr>
<tr>
<td>C</td>
<td>Connecticut Hall</td>
</tr>
<tr>
<td>CC</td>
<td>Calhoun College</td>
</tr>
<tr>
<td>CRB</td>
<td>Class of 1954 Chemistry Research Building</td>
</tr>
<tr>
<td>CSC</td>
<td>Child Study Center</td>
</tr>
<tr>
<td>D</td>
<td>Durfee Hall</td>
</tr>
<tr>
<td>DAVIES</td>
<td>Davies Auditorium, Becton Center</td>
</tr>
<tr>
<td>DC</td>
<td>Davenport College</td>
</tr>
<tr>
<td>DL</td>
<td>Dunham Laboratory</td>
</tr>
<tr>
<td>EAL</td>
<td>Electron Accelerator Laboratory</td>
</tr>
<tr>
<td>EM</td>
<td>Edwin McClellan Hall</td>
</tr>
<tr>
<td>ES</td>
<td>Ezra Stiles College</td>
</tr>
<tr>
<td>ESC</td>
<td>Class of 1954 Environmental Science Center</td>
</tr>
<tr>
<td>F</td>
<td>Farnam Hall</td>
</tr>
<tr>
<td>GML</td>
<td>Greeley Memorial Laboratory</td>
</tr>
<tr>
<td>GREEN</td>
<td>Holcombe T. Green, Jr., Hall</td>
</tr>
<tr>
<td>HEN</td>
<td>Hendrie Hall</td>
</tr>
<tr>
<td>HGS</td>
<td>Hall of Graduate Studies</td>
</tr>
<tr>
<td>JE</td>
<td>Jonathan Edwards College</td>
</tr>
<tr>
<td>JWG</td>
<td>Josiah Willard Gibbs Research Laboratories</td>
</tr>
<tr>
<td>K</td>
<td>Kirtland Hall</td>
</tr>
<tr>
<td>KBT</td>
<td>Kline Biology Tower</td>
</tr>
<tr>
<td>KCL</td>
<td>Kline Chemistry Laboratory</td>
</tr>
<tr>
<td>KGL</td>
<td>Kline Geology Laboratory</td>
</tr>
<tr>
<td>KROON</td>
<td>Kroon Hall</td>
</tr>
<tr>
<td>L</td>
<td>Lawrence Hall</td>
</tr>
<tr>
<td>LC</td>
<td>Linsly-Chittenden Hall</td>
</tr>
<tr>
<td>LEIGH</td>
<td>Abby and Mitch Leigh Hall</td>
</tr>
<tr>
<td>LEITOBS</td>
<td>Leitner Observatory</td>
</tr>
<tr>
<td>LOM</td>
<td>Leet Oliver Memorial Hall</td>
</tr>
<tr>
<td>LORIA</td>
<td>Loria Center</td>
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<tr>
<td>LUCE</td>
<td>Henry R. Luce Hall</td>
</tr>
<tr>
<td>LWR</td>
<td>Lanman-Wright Memorial Hall</td>
</tr>
<tr>
<td>MARSH</td>
<td>Marsh Hall</td>
</tr>
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<td>Morse College</td>
</tr>
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<td>MEC</td>
<td>Malone Engineering Center</td>
</tr>
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<td>ML</td>
<td>Mason Laboratory</td>
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<tr>
<td>OML</td>
<td>Osborn Memorial Laboratories</td>
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<td>PC</td>
<td>Person College</td>
</tr>
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<td>PH</td>
<td>Phelps Hall</td>
</tr>
<tr>
<td>PM</td>
<td>Peabody Museum</td>
</tr>
<tr>
<td>PWG</td>
<td>Payne Whitney Gymnasium</td>
</tr>
<tr>
<td>ROSE</td>
<td>Rose Center</td>
</tr>
<tr>
<td>RTH</td>
<td>Ray Tompkins House</td>
</tr>
<tr>
<td>RUDOLPH</td>
<td>Rudolph Hall</td>
</tr>
<tr>
<td>SB</td>
<td>Sage Hall</td>
</tr>
<tr>
<td>SCL</td>
<td>Sterling Chemistry Laboratory</td>
</tr>
<tr>
<td>SDQ</td>
<td>Sterling Divinity Quadrangle</td>
</tr>
<tr>
<td>SHM</td>
<td>Sterling Hall of Medicine</td>
</tr>
<tr>
<td>SLB</td>
<td>Sterling Law Buildings</td>
</tr>
<tr>
<td>SM</td>
<td>Silliman College</td>
</tr>
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<td>SMH</td>
<td>Sprague Memorial Hall</td>
</tr>
<tr>
<td>SML</td>
<td>Sterling Memorial Library</td>
</tr>
<tr>
<td>SPL</td>
<td>Sloane Physics Laboratory</td>
</tr>
<tr>
<td>SSS</td>
<td>Sheffield-Sterling-Strathcona Hall</td>
</tr>
<tr>
<td>ST</td>
<td>Street Hall</td>
</tr>
<tr>
<td>STOECK</td>
<td>Stoeckel Hall</td>
</tr>
<tr>
<td>SY</td>
<td>Saybrook College</td>
</tr>
<tr>
<td>TAC</td>
<td>The Anlyan Center</td>
</tr>
<tr>
<td>TC</td>
<td>Trumbull College</td>
</tr>
<tr>
<td>TD</td>
<td>Timothy Dwight College</td>
</tr>
<tr>
<td>UT</td>
<td>University Theatre</td>
</tr>
<tr>
<td>V</td>
<td>Vanderbilt Hall</td>
</tr>
<tr>
<td>W</td>
<td>Welch Hall</td>
</tr>
<tr>
<td>WEIR</td>
<td>Weir Hall</td>
</tr>
<tr>
<td>WHH</td>
<td>William L. Hawkness Hall</td>
</tr>
<tr>
<td>WNSL</td>
<td>Wright Laboratory</td>
</tr>
<tr>
<td>WNSL-W</td>
<td>Wright Laboratory West</td>
</tr>
<tr>
<td>WOOD</td>
<td>Woodbridge Hall</td>
</tr>
<tr>
<td>WOOL</td>
<td>Woolsey Hall</td>
</tr>
<tr>
<td>YCBA</td>
<td>Yale Center for British Art</td>
</tr>
<tr>
<td>YUAG</td>
<td>Yale University Art Gallery</td>
</tr>
</tbody>
</table>
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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 III.

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 II.)

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 II, 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. HTBA after a meeting time usually denotes a discussion section.

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

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 4, 2009, appear on line at www.yale.edu/courseinfo.
A Message from the Dean of Yale College

We call this book the *Yale College Programs of Study*, but generations of students and faculty have known this volume simply as the Blue Book. A compendium of roughly 2,000 courses to be offered in Yale College in 2009–2010, the Blue Book is a book to use. Turn down pages you wish to return to; bend the spine so it opens to subjects you find yourself called to. Let this book be your key to the renowned faculty at Yale, through whose courses you will develop the intellectual knowledge, skills, and sense of citizenship that will serve you all the days of 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.

Mary Miller
*Dean of Yale College*
*Sterling Professor of History of Art*
Yale College Calendar with Pertinent Deadlines

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

2009

**FALL TERM**

**August**

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

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

**September**

1 Tues. Required registration meetings for upperclassmen.

2 Wed. Fall-term classes begin.

11 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).

14 Mon. Course schedules due for the Class of 2013.*

15 Tues. Course schedules due for the Classes of 2012 and 2011.*

16 Wed. Course schedules due for the Class of 2010.* 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.)

26 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**

14 Wed. Deadline to apply for a spring-term 2010 Term Abroad (section K).

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

23 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).

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

6 Fri. Last day to convert from the Credit/D/Fail option in a fall-term course to a letter grade (section B).
21 Sat. Fall recess begins, 9 P.M.
30 Mon. Classes resume.

Last day to relinquish on-campus housing for the spring term without charge (Undergraduate Regulations, chapter 7).

December

4 Fri. Classes end; reading period begins.

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

11 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.

12 Sat. Final examinations begin, 9 A.M.†
19 Sat. Examinations end, 5:30 P.M.; winter recess begins.
20 Sun. Residences close, 12 noon.

2010 SPRING TERM

January

6 Wed. Residences open, 9 A.M.

10 Sun. Required freshman registration meetings, 9 P.M.

11 Mon. Spring-term classes begin.

Registration for sophomores, juniors, and seniors.

15 Fri. Friday classes do not meet; Monday classes meet instead.

18 Mon. Martin Luther King, Jr., Day; classes do not meet.

20 Wed. Course schedules due for the Class of 2013.*

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).

21 Thurs. Course schedules due for the Classes of 2012 and 2011.*

22 Fri. Course schedules due for the Class of 2010.*

Last day for students in the Class of 2010 to petition for permission to complete the requirements of two majors.

† Please note that examinations will be held on Saturday and Sunday, December 12, 13, and 19, 2009.

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

5 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

5 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 2010 Term Abroad or a 2010–2011 Year Abroad (section K).

22 Mon. Classes resume.

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

April

26 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 Sat. Applications for fall-term Leaves of Absence due (section J).

3 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.

4 Tues. Final examinations begin, 9 a.m.†

11 Tues. Examinations end, 5:30 p.m.

12 Wed. Residences close for underclassmen, 12 noon.

14 Fri. Deadline to complete applications for financial aid for the fall and spring terms, 2010–2011 (Undergraduate Regulations, chapter 8).

24 Mon. University Commencement.

25 Tues. Residences close for seniors, 12 noon.

† Please note that examinations will be held on Saturday and Sunday, May 8 and 9, 2010.
FINAL EXAMINATION SCHEDULES

Rules governing the conduct of final examinations are given in section G of chapter II. (See “Reading Period” and “Final Examinations.”)

An examination group number appears in the data line for each course in chapter III. 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 HTBA, 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 2009–2010 are:

<table>
<thead>
<tr>
<th>2009</th>
<th>9 A.M.</th>
<th>2 P.M.</th>
<th>7 P.M.</th>
<th>2010</th>
<th>9 A.M.</th>
<th>2 P.M.</th>
<th>7 P.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 Dec. Sa</td>
<td>(32)</td>
<td>(22)</td>
<td></td>
<td>4 May Tu</td>
<td>(69)</td>
<td>(36)</td>
<td></td>
</tr>
<tr>
<td>13 Dec. Su</td>
<td>(63)</td>
<td></td>
<td></td>
<td>5 May W</td>
<td>(61)</td>
<td>(26)</td>
<td></td>
</tr>
<tr>
<td>14 Dec. M</td>
<td>(61)</td>
<td>(36)</td>
<td></td>
<td>6 May Th</td>
<td>(24)</td>
<td>(37)</td>
<td></td>
</tr>
<tr>
<td>15 Dec. Tu</td>
<td>(24)</td>
<td>(26)</td>
<td></td>
<td>7 May F</td>
<td>(33)</td>
<td>(27)</td>
<td>(31)</td>
</tr>
<tr>
<td>16 Dec. W</td>
<td>(69)</td>
<td>(23)</td>
<td>(31)</td>
<td>8 May Sa</td>
<td>(22)</td>
<td>(64)</td>
<td></td>
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<tr>
<td>17 Dec. Th</td>
<td>(34)</td>
<td>(27)</td>
<td></td>
<td>9 May Su</td>
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<td>(63)</td>
<td></td>
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<tr>
<td>18 Dec. F</td>
<td>(33)</td>
<td>(37)</td>
<td></td>
<td>10 May M</td>
<td>(34)</td>
<td>(23)</td>
<td></td>
</tr>
<tr>
<td>19 Dec. Sa</td>
<td>(64)</td>
<td></td>
<td></td>
<td>11 May Tu</td>
<td>(32)</td>
<td></td>
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</tr>
</tbody>
</table>

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 II, “Postponement of Final Examinations.”)
Yale College

ADMINISTRATIVE OFFICERS

Richard C. Levin, Ph.D., President of the University
Peter Salovey, Ph.D., Provost of the University
Mary Miller, Ph.D., Dean of Yale College
Joseph W. Gordon, Ph.D., Deputy Dean; Dean of Undergraduate Education
Susan E. Cahan, Ph.D., Associate Dean for the Arts
Jane Edwards, Ph.D., Associate Dean for International Affairs
W. Marichal Gentry, M.S.W., Associate Dean; Dean of Student Affairs
Judith D. Hackman, Ph.D., Associate Dean for Assessment
Penelope Laurans, Ph.D., Associate Dean for Institutional Affairs
John R. Meeske, B.A., Associate Dean; Dean for Physical Resources and Planning
Mark J. Schenker, Ph.D., Associate Dean; Dean of Academic Affairs
William A. Segraves, Ph.D., Associate Dean for Science Education
Jill Cutler, B.A., Assistant Dean of Academic Affairs
Saveena Dhall, Ed.M., Assistant Dean; Director of Asian American Cultural Center
Rosalinda V. Garcia, M.A., Assistant Dean; Director of Latino Cultural Center
Pamela Y. George, M.S., Assistant Dean; Director of Afro-American Cultural Center
Philip Jones, M.S., Assistant Dean; Director of Undergraduate Career Services
Edgar Letriz, M.A., Assistant Dean of Student Affairs
George G. Levesque, Ph.D., Assistant Dean of Academic Affairs
Raymond Ou, M.S., Assistant Dean for Freshman Affairs
William Whobrey, Ph.D., Assistant Dean; Dean of Yale Summer Session and Special Programs
Kirk Hooks, M.S.W., Acting Director of Native American Cultural Center; Special Assistant for Intercultural and Intergroup Relations
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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BERKELEY COLLEGE, Kevin M. Hicks, Ph.D.
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.
PERSIAN COLLEGE, Amerigo Fabbri, Ph.D.
SAYBROOK COLLEGE, Paul S. McKinley, M.F.A.
SILLMAN COLLEGE, Hugh M. Flick, Jr., Ph.D.
EZRA STILES COLLEGE, Jennifer Wood, Ph.D.
TRUMBULL COLLEGE, Jasmina Beširević-Regan, Ph.D.

ADMISSIONS AND FINANCIAL AID OFFICERS

Jeffrey B. Brenzel, Ph.D., Dean of Undergraduate Admissions
Margit A. Dahl, B.A., Director of Undergraduate Admissions
Amin Abdul-Malik, B.A., Associate Director of Undergraduate Admissions
Peter C. Chemery, M.A., Associate Director of Undergraduate Admissions
Alicie Daniels, B.A., Associate Director of Undergraduate Admissions
Debra Johns, M.A., Associate Director of Undergraduate Admissions
Marcia L. Landesman, J.D., Associate Director of Undergraduate Admissions
Jean Lee, M.A., Associate Director of Undergraduate Admissions
Harry M. Levit, Ed.D., Associate Director of Undergraduate Admissions
Patricia Wei, B.A., Associate Director of Undergraduate Admissions
Ernest 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
Susana Gerber, M.B.A., Director of Student Financial Services Operations
Diane Frey, Director of Student Financial Services Center
Kerry Worsencroft, B.S., Associate Director of Student Financial Services
Matthew Long, Ed.D., Associate Director of Student Financial Services
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 distributional 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 the Center for International Experience 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.
Distributional 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 II 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 II, 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 III. 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 III. 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 III. The department or program concerned sets the requirements for each major, which are explained in chapter III.

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 III. 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 Center for International Experience, www.yale.edu/yalecollege/international. 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. Students on financial aid may be eligible for summer funding through the International Summer Award program, www.yale.edu/yalecollege/international/funding/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 II, section K. Additional information is available from the Center for International Experience, www.yale.edu/yalecollege/international.

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 at www.yale.edu/yaleinlondon, or from the Yale-in-London office at the Yale Center for British Art, or by e-mail to yaleinlondon@yale.edu.

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. Course descriptions and further information are available at www.yale.edu/yaleinlondon, or from the Yale-in-London office at the Yale Center for British Art, or by e-mail to yaleinlondon@yale.edu.

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 AND ENGINEERING

Perspectives on Science and Engineering 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 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 forty-five 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 III. 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.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 at [www.yale.edu/collegeseminar](http://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. The next set of DeVane Lectures will be offered in fall 2009. Akhil Amar, Sterling Professor of Law and professor of Political Science, will offer “A Guided Tour of the Constitution.” Details of the course are listed in chapter III under DeVane Lecture Course. Supplementary meetings are held for students taking the lectures for credit.

**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 2009–2010 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 for 2009–2010 is Louise Glück.

**YALE JOURNALISM INITIATIVE**

The Yale Journalism Initiative brings a distinguished writer to campus each term to teach an advanced journalism seminar, ENGI 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 2009–2010 are Steven Brill (fall 2009) and Jill Abramson (spring 2010). For more information on the initiative or on becoming a Journalism Scholar, see [www.yale.edu/writing/journalism](http://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 III.

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 III 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 II, 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 III.

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 II, 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>Letter 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>D+</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>E</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.
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.
II

Academic Regulations

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. 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 III 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 30.

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 III of this bulletin.

Students who have taken the Advanced Placement examination in French, German, Latin, or Spanish and who present a score 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 III 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 5 on the Advanced Placement test in French, German, Latin, or 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 III 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 III 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 III 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 III 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 III 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 fourth term of a foreign language must successfully complete one term of instruction in that language, designated L4 in chapter III 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 III 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 III. 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 III 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, 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.
This chart illustrates the most common paths for fulfilling the language requirement. Refer to the text of this chapter for complete information.
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 junior year nor for the distributional requirements for the bachelor's degree.

5. **Independent study courses.** A student may not apply any course credit earned through independent study courses toward satisfaction of any of the distributional requirements.

6. **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.

7. **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.

8. **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.

9. **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.

10. **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).

11. **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.

12. 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 residential college dean and, where applicable, that of the director of undergraduate studies in the student’s major, should be filed no later than the date on which the student’s course schedule is due in the sixth term of enrollment; in no case will a petition be accepted later than the date of midterm 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 III. 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:

- **A** Excellent
- **A–**
- **B+**
- **B** Good
- **B–**
- **C+**
- **C** Satisfactory
- **C–**
- **D+**
- **D** Passing
- **D–**
- **F** Fail

**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 junior year nor toward satisfaction of the distributional requirements for the bachelor’s degree.

6. Requirements of the major. Program descriptions in chapter III 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 Credit/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 Credit/Year only courses in which a student receives a separate letter grade for each of the two terms, each term of the course will be governed by the enrollment option the student elected for that term. For Credit/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, 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 6, 2009, in the fall term (two weeks after midterm), and until March 29, 2010, 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 www.yale.edu/yalecollege/freshmen/academics/acceleration or appendix A of the Freshman Handbook).

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 and are counted in the calculation of grade point average. These include passing grades earned in the first term of a Cr/Year only course in which the
second term is not completed, even though such grades do not count toward the 36-course-credit requirement for graduation. 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 23, 2009, in the fall term; March 5, 2010, 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 4, 2009, in the fall term, and April 26, 2010, 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 III 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 committee. 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 online 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 transcript 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 student’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 discussions 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, numbered 120a or b, is also successfully completed. Except in intensive, double-credit courses in which the equivalent of one year of language study is covered 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 (Withdrawn) 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; included in this total are any independent study courses completed in Yale Summer Session that are applied to the Yale College transcript. In the petition the student must give sound academic reasons for exceeding these limits and provide evidence that the additional work in independent study will not be done at the expense of the breadth and depth of study being pursued in regular Yale College courses.
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 28, 2009. Upperclassmen must attend the
registration meeting conducted by the office of the residential college dean on Tuesday, September 1, 2009. 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 10, 2010. 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 11, 2010. 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 23, 2009, in the fall term; March 5, 2010, 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 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.** Students placed by a language program or by their score on the Advanced Placement examination 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 college 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 residential college dean.

3. **Withdrawal before midterm.** If a student formally withdraws from a course by midterm (October 23, 2009, in the fall term; March 5, 2010, in the spring term), then after the registrar has recorded the withdrawal, the transcript 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 (Withdrawn) for the course. The deadlines for such withdrawals are December 4, 2009, in the fall term, and April 26, 2010, 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 University 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 permitted 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 Examinations” 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. Consequently, as of the date of the withdrawal, such a student cannot continue
to attend classes or complete work that was assigned in the term in which the withdrawal occurred, even if the deadline for such assignments 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 student 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 student 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 student’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 III 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, 2010; 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 e-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 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.

*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.
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 college dean, has been absent from a course to an excessive degree and without 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 exclusion 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 unsatisfactory. 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 notification of Academic Warning to students whose records show these deficiencies, 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 discretion disqualify a student on Academic Warning from participation in recognized 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 dismissal 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 academic 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; no such recommendation can be made in the absence of documentation provided to the Yale University Health Services that the student has had successful treatment from an appropriate health clinician.

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
derer 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 fol-
lowing their readmission. A student who fails to meet this condition is ordi-
narily 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 pro-
gram 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 lan-
guage 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. Appli-
cants 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 Center for International Experience, www.yale.edu/yalecollege/
international. A complete application includes all of the following: the appli-
cation form; an approval form from the student’s director(s) of undergrad-
uate studies; an evaluation form from the student’s residential college dean;
a foreign language evaluation form (if applicable); and a statement con-
cerning 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 2009–2010 are due on October 14, 2009. Applications for study in the fall term of the academic year 2010–2011 or for the full academic year 2010–2011 are due on March 5, 2010. 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 Center for International Experience. 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 Center for International Experience. 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 Center for International Experience 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 Center for International Experience 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 Center for International Experience 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 a Year Abroad may not apply any other credits from outside Yale toward the 36-course-credit requirement. Students receiving credit for a Term Abroad may apply up to two other course credits from outside Yale toward the 36-course-credit requirement.

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

*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 III. 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 III.
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 23, 2009, in the fall term, and March 5, 2010, 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 494a 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 undergraduates 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 downloaded from www.yale.edu/sfas/registrar. 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 III. 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 III. 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 both by 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.
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 II. Students admitted prior to 2009 fulfill distributional requirements according to regulations for the Class of 2008, as listed in previous editions of this bulletin.

Candidates for a bachelor’s degree must fulfill the requirements of one of the major programs listed at the beginning of chapter III. 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. 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. Students admitted prior to the fall term 2007 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.

3. Tuition and financial aid. Tuition for the 2009–2010 academic year for Eli Whitney students admitted before the fall term 2007 is $2,800 per course credit; these students are not eligible for financial aid. Tuition for the 2009–2010 academic year for Eli Whitney students admitted since the fall term 2007 is $4,055 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 Center for International Experience. 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.

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. Auditing is not permitted in the Nondegree Students program. 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 2009–2010 is $4,000 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 23, for fall 2009, and Friday, March 5, for spring 2010) 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 26, 2009, for fall 2009, and February 7, 2010, for spring 2010. 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, 2009, for spring term 2010, and on May 1, 2010, for fall term 2010. For students who are currently enrolled in another college, the deadline is October 1, 2009, for the spring term and July 1, 2010, 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.

(g) In order for credit to be given for a course completed at another college or university, the number of contact hours for the course must equal or exceed the number of contact hours for an equivalent course offered in Yale College during the fall or spring term, and the length of term (from the first to the last day of classes) must be at least four consecutive weeks.

2. Residential college seminars. Residential college seminars are, by definition, courses that extend beyond the Yale College curriculum. They are not used as comparables for credit for outside courses, whether in Year or Term Abroad or for other considerations for outside credit.

3. 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.

4. 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.

5. 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.

6. 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.

7. 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.

8. Year or Term Abroad. Students receiving credit for foreign study on a Year Abroad are not eligible to apply additional credit from outside Yale toward the 36-course-credit requirement. Students receiving such credit on a Term Abroad may apply up to two course credits from outside Yale toward the 36-course-credit requirement.

Students receiving credit for foreign study on a Year or Term Abroad 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 5 and 7 above).

9. 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.

10. 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.

11. 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 [www.yale.edu/yalecollege/freshmen/academics/acceleration](http://www.yale.edu/yalecollege/freshmen/academics/acceleration) or appendix A of the Freshman Handbook. 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:
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 Center for International Experience 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:

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<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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<td>9</td>
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</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.
### MAJORS IN YALE COLLEGE

A subject marked with an asterisk may be taken only as a second major.

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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: Khalilah Brown-Dean, Rm. 103, 81 Wall St., 432-1170, khalilah.brown-dean@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, Michael Veal

Associate Professor
Kamari Clarke

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

Lecturers
Kathleen Cleaver, Flemming Norcott, Deborah Thomas

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 II, 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 095b, 112a, 172b, 178b, 191a, 233a, 242b, 279a, 295b, 352a, 408a, 411b, or 437a), one course in the social sciences relevant to African American studies (e.g., AFAM 243a, 250b, 271a, 332b, 347a, or 414b), 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.** Senior majors 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)
African American Studies

*afam 040a/*film 040a, Spike Lee. Terri Francis. For description see under Film Studies.

*afam 090b/*amst 001b/*hist 001b, African American Freedom Movements in the Twentieth Century. Glenda Gilmore. For description see under History.

afam 110a/amst 161a, Freedom and Identity in Black Cultures. Elizabeth Alexander.

MW 10.30-11.20, 1 HTBA Hu, So (33) 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.


[afam 160a/hist 184a, African American History: 1500–1888]


MW 10.30-11.20, 1 HTBA 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.


*afam 181b/*socy 166b, Method and Practice of Field Work. Elijah Anderson. For description see under Sociology.

*afam 191a/*ast 320a/*fren 230a/*litr 266a, Francophone African and Caribbean Literature. Christopher L. Miller. For description see under French.

[afam 220b/amst 229b/er&m 231b/socy 198b/wgss 229b, Health Social Movements]

afam 231a/anth 211a/wgss 436a, Sex and Gender in the Black Diaspora. Jafari Allen.

TRB 1-2.15 So (0) A critical survey of images, rhetorics, experiences, and practices of gender and sexuality formation of black subjects in Africa, the Caribbean, western Europe, and the United States. Construction of class, nationality, race, color, sexuality, and gender.
*afam 233a/amst 219a/thst 219a, Performing American Identities. Paige McGinley.
For description see under American Studies.

*afam 242b/film 370b, Media, the Movies, and Black Folk.
Terri Francis.
For description see under Film Studies.

*afam 243a/plsc 216a, African American Politics.
Khalilah Brown-Dean.
For description see under Political Science.

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 271a/afst 350a/anth 350a, Transnational and Religious Movements.
Kamari Clarke.
For description see under Anthropology.

*afam 279a/amst 273a/wgss 342a, Black Women’s Literature. Naomi Pabst.
M 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]

[afam 294a/engl 294a, African American Literature I: 1740–1900]

Robert Stepto.
TH 1-2.15 Hu (0)
An examination of modern African American literature, concentrating on the short story and novel. Topics include the shape of the narrative; major literary themes such as migration and urbanization, racial oppression, representation of women, and identity; the literary “renaissances” of the twentieth century; and canon formation and genre practices. Authors include Gwendolyn Brooks, Charles Chesnutt, Langston Hughes, Zora Neale Hurston, Toni Morrison, Jean Toomer, and August Wilson.

W 3.30-5.20 WR, Hu (0)
Analysis of Toni Morrison’s speeches, interviews, essays, and eight novels. Examination of race, gender, class, sexuality, identity, and memory in Morrison’s work.

[afam 307b/amst 452b, Harlem Renaissance]

[afam 326a/socy 324a, African Americans and Social Thought]

W 2.30-4.20 So (0)
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.

African American Studies 85

**AFAM 352A/AMST 438A/ER&M 291A/LITR 295A/WGSS 343A, CARIBBEAN DIASPORIC LITERATURE.** Hazel Carby.

An examination of contemporary literature written by Caribbean writers who have migrated to, or who journey between, different countries around the Atlantic rim. Focus on literature written in English in the twentieth and twenty-first centuries, both fiction and nonfiction. Writers include Caryl Phillips, Nalo Hopkinson, and Jamaica Kincaid.

**AFAM 354A/SOCY 353A, TECHNOLOGY, IDENTITY, AND CULTURE**

**AFAM 365B/FREN 375B/LITR 211B, CREOLE CULTURES OF THE CARIBBEAN.** Christopher L. Miller.

For description see under French.

**AFAM 367A/AMST 431A/ER&M 344A/WGSS 455A, REPRESENTATION AND THE BLACK FEMALE**

**AFAM 368A/AMST 321A, INTERRACIALITY AND HYBRIDITY.** Naomi Pabst.

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 374B/AMST 374B/ER&M 332B, BLACK TRAVEL AND TRANSCONTINENTALITY.** Naomi Pabst.

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.


For description see under American Studies.


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 (o) Junior sem

An interdisciplinary, thematic approach to the study of race, nation, and ethnicity in the African diaspora. Topics include class, gender, color, and sexuality; the dynamics of reform, Pan-Africanism, neocolonialism, and contemporary black nationalism. Use of a broad range of methodologies.

**AFAM 411B/AMST 426B/ER&M 413B/WGSS 411B, THE FICTION OF IMAGINARY OR IMMINENT FUTURES.** Hazel Carby.

Mo 9:25-11:15 Hu (o)

Consideration of the nature of utopian and dystopian ideas and the relation between early science fiction and the political project of colonization. Readings of speculative fiction and critical essays from the middle of the twentieth century to the present, including a survey of writing by African American authors.

**AFAM 414B/WGSS 412B, WOMEN, LAW, AND THE BLACK FREEDOM MOVEMENT.** Kathleen Cleaver.

Th 1:30-3:20 So (o)

Writings and scholarship of women are used to examine struggles against slavery, racial segregation, economic exploitation, and gender discrimination in the United States. Focus on women who were abolitionists, civil rights leaders, and freedom fighters.


For description see under Political Science.

**AFAM 428A/AMST 335A/THST 406A, DANCE AND BLACK POPULAR CULTURE.** Thomas DeFrantz.

For description see under Theater Studies.

**AFAM 436B/G/ENGL 436B/G, CONTEMPORARY AFRICAN AMERICAN POETRY.** Elizabeth Alexander.

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

African American poetry from 1960 to the present, including theoretical approaches to poetry and poetics. Authors include Gwendolyn Brooks, Robert Hayden, Amiri Baraka, Lucille Clifton, Audre Lorde, Yusef Komunyakaa, Rita Dove, and Michael Harper.


For description see under English Language & Literature.

**AFAM 465B/AFST 477B/MUSI 487B, TRADITIONAL AND CONTEMPORARY MUSIC OF SUB-SAHARAN AFRICA.** Michael Veal.

For description see under Music.

**AFAM 471A AND 472B, INDEPENDENT STUDY: AFRICAN AMERICAN STUDIES.** Staff.

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.

★afam 480a, Senior Colloquium: African American Studies.
Deborah Thomas.
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 491a or b, The Senior Essay.
Khalilah Brown-Dean.
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

★plsc 245a, Urban Politics and Policy. Cynthia Horan.

plsc 381a/afst 381a, Government and Politics in Africa.
David Simon.
For description see under Political Science.

★thst 335a/afst 435a, Contemporary Dance of African Expression.
Lacina Coulibaly.
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: Kiarie 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), Lea Brilmayer (Law School), John Darnell (Near Eastern Languages & Civilizations), Owen Fiss (Law School), William Foltz (Emeritus) (Political Science), Robert Harms (History), Andrew Hill (Anthropology), Roderick McIntosh (Anthropology), Christopher L. Miller (French), Nicoli Nattrass (Ethics, Politics, & Economics) (Visiting), Lamin Sanneh (History, Divinity School), Jeremy Seekings (International Affairs) (Visiting), Ian Shapiro (Political Science), Robert Thompson (History of Art), Christopher Udry (Economics), Michael Veal (Music), David Watts (Anthropology), Elisabeth Wood (Political Science)
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, management, medicine, 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 464b, 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), Yoruba (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 464b); senior essay (AFST 491a or b) or addtl senior sem in another dept

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

MTWHF 9-25-10-15 L1 1½ C Credits (50)
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 120b, Introduction to an African Language II.**
Kiarie Wa’Njogu and staff.

5 HTBA L2 1½ C Credits (50)
Continuation of AFST 110a. After AFST 110a. (Formerly AFST 199b)
AFST 170b/PLSC 170b, African Poverty and Western Aid.
Christopher Blattman.
For description see under Political Science.

AFST 180bG, Nigeria and Its Diaspora.
Oluseye Adesola.
MW 4-5:15, WR, So (0)
Nigerians in the modern diaspora, both those who endured forced migration and those who migrated voluntarily. Specific reference to the Igbo and the Yorùbás. The preservation and maintenance of Nigerian culture, history, dance, literature, traditional education, theater, politics, art, music, film, religion, and folklore, especially in African American and Nigerian American contexts.

Robert Thompson.
For description see under History of Art.

AFST 272b/ANTH 272b/ARCg 272b, African Prehistory.
Roderick McIntosh.
For description see under Anthropology.

AFST 288a/ANTH 288a, The State in Africa.
Michael McGovern.
For description see under Anthropology.

AFST 290b/ANTH 290b/WGSS 290b, Gender and Sexuality in Africa.
Emily Wentzell.
For description see under Anthropology.

AFST 323b/ANTH 239b/ARCg 323b, HIV and AIDS in Africa.
Graeme Reid.
For description see under Women’s, Gender, & Sexuality Studies.

*AFST 330a*/AFAM 191a*/FREN 230a*/Litr 266a, Francophone African and Caribbean Literature.
Christopher L. Miller.
For description see under French. (Formerly AFST 218a)

AFST 336b/HIST 336b, Africa since 1800.
Michael R. Mahoney.
For description see under History.

AFST 339b/HIST 339b, History of Southern Africa.
Michael R. Mahoney.
For description see under History.

AFST 347b/PLSC 347b, Post-Conflict Politics.
David Simon.
For description see under Political Science.

*AFST 350a*/AFAM 271a*/ANTH 350a, Transnational and Religious Movements.
Kamari Clarke.
For description see under Anthropology.

*AFST 353b*/Musi 353b, Topics in World Music.
Sarah Weiss.
For description see under Music.

AFST 356a/INTS 326a/PLSC 356a/Socy 247a, Collective Action and Social Movements.
Elisabeth Wood.
For description see under Political Science.

AFST 363B/ANTH 388B/WGSS 363B, Beauty, Fashion, and Self-Styling. Graeme Reid. For description see under Women's, Gender, & Sexuality Studies.


AFST 387A/HIST 386J, Women and Gender in African History. Michael R. Mahoney. For description see under History.


AFST 403A, Research Methods in African Studies. Ann Biersteker. W 1:30-3:20 (0) Junior sem 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 421B, Comparative Perspectives on African Literatures. Ann Biersteker. W 1:30-3:20 Hu (0) 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 435A/THST 335A, Contemporary Dance of African Expression. Lacina Coulibaly. For description see under Theater Studies.

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.

**Independent Study.**

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.

**Traditional and Contemporary Music of Sub-Saharan Africa.**

For description see under Music.

**Slavery and the Slave Trade in Africa.**

For description see under History.

**West African Islam: Jihad Tradition and Its Pacifist Opponents.**

For description see under History.

**International Development in Historical Perspective.**

For description see under History.

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.

**Elementary Kiswahili I.**

A beginning course with intensive training and practice in speaking, listening, reading, and writing. Initial emphasis is on the spoken language and conversation. Credit only on completion of swah 120b.

**Elementary Kiswahili II.**
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  1 2/3 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  1 2/3 C Credits (34)  
Continuation of swah 130a. After swah 130a.

**swah 150a**, Advanced Kiswahili I.  
Ann Biersteker.  
TH 11.35-12.50  L5  (24)  
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 160b**, Advanced Kiswahili II.  
Ann Biersteker.  
TH 11.35-12.50  L5  (24)  
Continuation of swah 150a. After swah 150a.

**swah 170a** or **b**, Topics in Kiswahili Literature.  
Ann Biersteker.  
TH 11.35-12.50  L5, Hu  (24)  
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 110a**, Elementary Yorùbá I.  
Oluseye Adesola.  
MTWTHF 10.30-11.20  L1  1 2/3 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 120b**, Elementary Yorùbá II.  
Oluseye Adesola.  
MTWTHF 10.30-11.20  L2  1 2/3 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.

**yoru 130a**, Intermediate Yorùbá I.  
Oluseye Adesola.  
MTWTHF 11.35-12.25  L3  1 2/3 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 140b**, Intermediate Yorùbá II.  
Oluseye Adesola.  
MTWTHF 11.35-12.25  L4  1 2/3 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. \textit{After Yorùbá 130a.}

\textbf{YORU 150a\textsuperscript{G}, ADVANCED YORÚBÁ I.} Oluseye Adesola.

\textit{3} HTBA \textit{L}\textsuperscript{5} (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 (\textit{ewì}); and music. \textit{After Yorùbá 140b.}

\textbf{YORU 160b\textsuperscript{G}, ADVANCED YORÚBÁ II.} Oluseye Adesola.

\textit{3} HTBA \textit{L}\textsuperscript{5} (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. \textit{After Yorùbá 150a.}

\textbf{YORU 170a\textsuperscript{G} or b\textsuperscript{G}, TOPICS IN YORÚBÁ LITERATURE AND CULTURE.} Oluseye Adesola.

\textit{TH} 4-5.15 \textit{L}\textsuperscript{5}, \textit{Hu} (27)

Advanced readings and discussion concerning Yorùbá literature and culture. Focus on Yorùbá history, poetry, novels, movies, dramas, and oral folklore, especially from Nigeria. Insight into Yorùbá philosophy and ways of life. \textit{Prerequisite: Yorùbá 160b.}

\textbf{ZULU 110a\textsuperscript{G}, ELEMENTARY ISIZULU I.} Sandra Sanneh.

\textit{MTWRF} 11.35-12.25 \textit{Li} 1\tfrac{1}{2} \textit{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. \textit{Credit only on completion of isiZulu 120b.}

\textbf{ZULU 120b\textsuperscript{G}, ELEMENTARY ISIZULU II.} Sandra Sanneh.

\textit{MTWRF} 11.35-12.25 \textit{L}\textsuperscript{2} 1\tfrac{1}{2} \textit{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. \textit{Prerequisite: isiZulu 110a.}

\textbf{ZULU 130a\textsuperscript{G}, INTERMEDIATE ISIZULU I.} Sandra Sanneh.

\textit{MTWRF} 9.25-10.15 \textit{L}\textsuperscript{3} 1\tfrac{1}{2} \textit{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. \textit{After isiZulu 120b.}

\textbf{ZULU 140b\textsuperscript{G}, INTERMEDIATE ISIZULU II.} Sandra Sanneh.

\textit{MTWRF} 9.25-10.15 \textit{L}\textsuperscript{4} 1\tfrac{1}{2} \textit{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. \textit{After isiZulu 130a.}
zulu 150a, 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 160b, 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.

COURSE OF INTEREST IN ANOTHER DEPARTMENT
*ep&e 240a/plsc 428a, Comparative Welfare Policy in Developing Countries. Jeremy Seekings.
For description see under Ethics, Politics, & Economics.

AKKADIANS
(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), Ned Blackhawk (History), 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 (Emeritus) (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 Promez (Divinity School), Joseph Roach (English, Theater Studies), Michael Roemer (School of Art), Stephen Skowronek (Political Science), Robert Stepto (English, African American Studies), Harry Stout (Religious Studies, History), Michael Veal (Music, African American Studies), John Warner (History of Medicine), Michael Warner (English), Laura Wexler (Women’s, Gender, & Sexuality Studies)

Associate Professors
Alicia Schmidt Camacho, Mary Lui (History)

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

Senior Lecturers
James Berger, Ron Gregg (Film 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 390a or b, 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 493a, 494b) and work independently for two terms. The intensive major offers an opportunity for significant original research leading to a substantial senior project. AMST 493a, 494b 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 493a, 494b, 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 390a or b 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 493a, 494b) replaces AMST 491a or b

FOUNDATION COURSES

For description see under History.

[AMST 189a/HIST 105a, The Formation of Modern American Culture, 1750–1876]


An introduction to the cultural history of the United States from Reconstruction through the First World War, with special attention to the persistence of popular culture, the transformation of bourgeois culture, and the birth of mass culture during a period of rapid industrialization.

[AMST 191b/HIST 106b, The Formation of Modern American Culture, 1920 to the Present]

NATIONAL FORMATIONS

★AMST 001b/AFAM 095b/HIST 001b, African American Freedom Movements in the Twentieth Century. Glenda Gilmore.
For description see under History.

★AMST 003b/HIST 004b, Revolutionary America. Jon Butler.
For description see under History.

For description see under History.

For description see under History.

For description see under African American Studies.

★AMST 238a, Wilderness in the North American Imagination.
Mary Greenfield.

HTBA Hu (0)
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 262b/ER&M 232b, Comparative Ethnic Studies.
Birgit Rasmussen.
Th 9.25–11.15 So (0)
Introduction to the methods and practice of comparative ethnic studies. Examination of racial formation in the United States within a transnational framework. Legacies of colonialism, slavery, and racial exclusion; racial formation in schools, prisons, and citizenship law; cultural politics of music and performance; social movements; and postcolonial critique.


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 273A/ANTH 311A/ER&M 240A, New Immigrants in the United States. Patricia Pessar. T 3:30-5:20 So (0)
Identities, strategies, and modes of incorporation of contemporary immigrants in U.S. society and culture. Constructions and practices of ethnicity, race, gender, and national and transnational belonging. Focus on post-1965 immigration, with some attention to earlier twentieth-century immigrant groups.

American literature from the colonial period paired with contemporary texts to examine how contemporary writers use, critique, revise, or speak back to colonial narratives. Contemporary authors include Eduardo Galeano, Toni Morrison, and Arthur Miller, who revisit histories of conquest, enslavement, and settler colonialism.

AMST 410A/HIST 166Ja, Asian American Women and Gender, 1830 to the Present. Mary Lui. For description see under History.

ER&M 200B, Introduction to Ethnicity, Race, and Migration. Alicia Schmidt Camacho.

THE INTERNATIONAL UNITED STATES

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 304b/hist 154Jb, American Culture in the Revolutionary Era. Kariann Yokota.  
W 1.30-3.20 Hu (o)  
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. Analysis of primary historical sources from the Revolutionary era. Visits to archives and museum collections at Yale.

*amst 321a/afam 368a, Interraciality and Hybridity. Naomi Pabst.  
For description see under African American Studies.

*amst 343a, Muslim Diasporas in America. Zareena Grewal.  
T 1.30-3.20 So (o)  
Exploration of the meanings and attachments that connect Muslims in the U.S. to homelands in the Muslim world. How to define and apply the concept of diaspora to an ever-broadening set of Muslim populations dispersed in space, including immigrants, expatriates, refugees, guest-workers, exiles, and religious seekers. Analysis of newspaper articles, political comics, memoirs, fiction, ethnographies, political essays, sociological surveys, and documentary films.

*amst 374b/afam 374b/er&m 333b, Black Travel and Transnationality. Naomi Pabst.  
For description see under African American Studies.

*amst 380b/film 339b, Cultural Encounters in American Film. Zareena Grewal.  
T h 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.

*amst 426b/afam 411b/er&m 413b/wgss 411b, The Fiction of Imaginary or Imminent Futures. Hazel Carby.  
For description see under African American Studies.

*amst 430a/er&m 430a, Islam in the American Imagination. Zareena Grewal.  
For description see under Ethnicity, Race, & Migration.

MATERIAL CULTURES AND BUILT ENVIRONMENTS

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 transformed downtowns and shaped diffuse metropolitan regions.

**AMST 350b/ARCH 350b, Suburbs and the Culture of Sprawl.**
Dolores Hayden.
Th 9.25–11.15 Hu (o)
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 391b/ER&M 363b, Ethnicity, Race, and Material Culture.**
Kariann Yokota.
T 2.30–4.20 Hu (o)
Ways that members of ethnic, racial, and religious groups have used objects to articulate their identities. Cultural expressions ranging from food to fashion as they have created a shared sense of belonging across racial, class, and geographic divides, while also serving as markers to separate groups. Political meanings of quintessentially American objects as varied as the Lincoln Memorial, homespun, Cadillacs, and Coca-Cola.

**AMST 424a/HIST 156Ja, An Introduction to the Cultural History of Things.**
Kariann Yokota.
T 2.30–4.20 Hu (o)
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.

**ARCH 344a, Urban Life and Landscape.**
Elihu Rubin.

**PLSC 250a/ARCH 347a, Infrastructure: Politics and Design.**
Elihu Rubin.
For description see under Political Science.

**SOCI 115b, Contemporary American Society.**
Karl Ulrich Mayer, Ron Eyerman, Philip Gorski.

**Politics and American Communities**

**AMST 111a/RLST 111a/WGSS 111a, Sexuality and Religion.**
Kathryn Lofton.
For description see under Religious Studies.

**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 170B/HIST 177B/HSHM 277B, Genetics, Reproduction, and Society.
Daniel Kevles.
For description see under History of Science, History of Medicine.

Gretchen Berland, John Warner.
For description see under History of Science, History of Medicine.

*AMST 300B/ANTH 307B, Work in America.
Kathryn Dudley.
M 1.30-3.20 So (0)
The changing nature of work in America from the post–World War II period to the present. Classic and recent ethnographic studies of various kinds of work; historical shifts in technology and the U.S. occupational structure; the cultural implications of growing income inequality. Focus on ways in which race, class, gender, and citizenship shape the experience of work in a global economy.

Kathryn Lofton.
For description see under Religious Studies.

Geetanjali Singh Chanda.
For description see under Women’s, Gender, & Sexuality Studies.

*AMST 333B/HIST 160JB/WGSS 348B, Selected Topics in Lesbian and Gay History.
George Chauncey.
For description see under History.

*AMST 392A/RLST 311A, Religion and Popular Culture.
Kathryn Lofton.
For description see under Religious Studies.

Jean-Christophe Agnew.
T 1.30-3.20 Hu (0)
An interdisciplinary study of New York City as a global cultural capital in the twentieth century. Social, political, and economic forces shaping the principal institutions of the city’s patrician, popular, and mass cultures. The formation of identifiably “New York” styles in the arts, architecture, photography, literature, and film. The changing geography of cultural creation, reproduction, and distribution in the city.

Laura Wexler.
For description see under Women’s, Gender, & Sexuality Studies.

*HIST 126B, Murder and Mayhem in Old New York.
Mary Lui.

*HIST 130A, Indians and the Spanish Borderlands.
Ned Blackhawk.
American Studies

**hist 134a, American Indian Law and Policy.** Ned Blackhawk.

**phil 260b, American Philosophy.** Kenneth Winkler.

**VISUAL, AUDIO, LITERARY, AND PERFORMANCE CULTURES**

*amst 003b, American Literature and World Religions.
Wai Chee Dimock.

**TTH 2:30-1:45 WR, Hu (0) Fr sem**
A study of the complex trajectories of Christianity, Islam, Hinduism, Judaism, and Buddhism in American literature. Readings range from Anne Bradstreet to Bharati Mukherjee. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

*amst 210b/engl 280b, Nineteenth-Century American Literature, the Revolution to 1865.* Michael Warner.
For description see under English Language & Literature.

*amst 219a/*afam 233a/*thst 219a, Performing American Identities.
Paige McGinley.

**TTH 11:35-12:50 Hu (0)**
Expressions of national identity and national feeling in American performance history. The role of live performance in generating meanings of America, including race, ethnicity, and citizenship. Performance inherent in political demonstrations, sporting events, dance, and music.

*amst 225a/*film 325a, American Film Comedy.
Michael Roemer.

**M 2:30-5:20 Hu Meets RP (37)**
A study of the great American film comedians and an investigation into the psychology of laughter. Comedians from Chaplin and Keaton to the Marx brothers and Fields examined against a background of European comedy. Topics include comic form and technique, and their relevance to the American scene. Not a history of American film comedy. *Priority to juniors and seniors majoring in American Studies or in Film Studies.*

*amst 235a/*engl 354a, Language, Disability, Fiction.
James Berger.

**TTh 3:30-5:20 Hu (0)**
Portrayals of cognitive and linguistic impairment in modern fiction. Characters with limited capacities for language as figures of “otherness.” Contemporaneous discourses of science, sociology, ethics, politics, and aesthetics. The ethics of speaking about or for subjects at the margins of discourse.

*amst 246a/engl 289a, Hemingway, Fitzgerald, Faulkner.*
Wai Chee Dimock.
For description see under English Language & Literature.

*amst 257a/engl 325a, Modern Apocalyptic Narratives.*
James Berger.

**T 9:25-11:15 Hu (0)**
The persistent impulse in Western culture to imagine the end of the world and what might follow. Social and psychological factors that motivate apocalyptic representations. The differences and the constant features in apocalyptic representations from the Hebrew Bible to contemporary science fiction. Attitudes toward history, politics, sexuality, social class, and the process of representation in apocalyptic texts.
**AMST 273A/AFAM 279A/WGSS 342A, BLACK WOMEN’S LITERATURE.** Naomi Pabst.
For description see under African American Studies.

**AMST 274A/ER&M 260A, AMERICAN CAPTIVITY NARRATIVES.** Birgit Rasmussen.
Th 1:20-3:20 Hu (0)
Introduction to captivity narratives from colonial and nineteenth-century America. Settler narratives placed in dialogue with slave narratives and Native American pictographic sketchbooks produced in military forts. Contemporary captivity narratives from the U.S. war in Iraq and other conflicts compared with narrative forms and themes from the colonial period.

**AMST 277A/ER&M 284A, INTRODUCTION TO CHICANO AND LATINO LITERATURES.** Birgit Rasmussen.
MW 1-2:15 Hu (36)
Historical, political, and aesthetic roots of Chicano and Latino literature in short stories, novels, poetry, plays, essays, literary criticism, and the performance genres of spoken word, theater, and film.

For description see under African American Studies.

**AMST 301B/ENGL 299B/FILM 311B, EAST ASIA IN U.S. LITERATURE AND FILM.** John Williams.
For description see under English Language & Literature.

**AMST 308B/FILM 467B, THE FILMS OF WOODY ALLEN.** Michael Kerbel.
F 1-3:20; screenings W 6:30-10:30 P.M. Hu Meets RP (0)
Examination of the works of Woody Allen. Close analysis of his films, essays on the films, and stories by and interviews with Allen. His work in the contexts of film history and U.S. culture and society from the 1970s to the present. Includes screenings of two films per week.

**AMST 309B/AFAM 304B/WGSS 309B, TONI MORRISON.** Naomi Pabst.
For description see under African American Studies.

For description see under Theater Studies.

**AMST 346B/ENGL 341B, AMERICAN LITERATURE AND THE WORLD.** Wai Chee Dimock.
For description see under English Language & Literature.

**AMST 371A/THST 398A, AMERICAN EXPERIMENTAL THEATER.** Marc Robinson.
For description see under Theater Studies.

**AMST 372B/ENGL 439B/THST 369B, CONTEMPORARY AMERICAN DRAMA.** Marc Robinson.
For description see under Theater Studies.

**AMST 381A/ARCH 351A, POETS’ LANDSCAPES.** Dolores Hayden.
Th 1:30-3:20 Hu (0)
Depictions of American landscapes as a way to achieve resonance in poetry. Focus on domestic, public, urban, and rural landscapes in New England, Chicago and the Midwest, New York and New Jersey, and Los Angeles. Attention to poems from a national automotive landscape as well as narrative poems about cities.

*AMST 405b/AFAM 406b/ENGL 405b, AUTOBIOGRAPHY IN AMERICA. Robert Stepto.
M 1:30-3:30 WR, Hu (o)
A study of nineteenth- and twentieth-century autobiographical writings including those by Jefferson, Whitman, Douglass, Henry Adams, Chesnutt, William Carlos Williams, Hong Kingston, and Hellman. Topics include autobiographical forms (diaries, letters, narratives) and the bond between region and autobiographical practice.

*AMST 420a/AFAM 437a/ENGL 445a, RALPH ELLISON IN CONTEXT. Robert Stepto.
For description see under English Language & Literature.

*AMST 430a/FILM 426a, CONTEMPORARY DOCUMENTARY FILM AND VIDEO. Charles Musser.
M 6:30-10:30 P.M., 1 HTBA Hu Meets RP (o)
Examination of documentary and related nonfiction forms in the last three decades. Issues include film truth, performance, ethics, race and gender, and the filmmaker as participant-observer. Filmmakers include Frederick Wiseman, William Greaves, Chris Choy, Errol Morris, Lourdes Portillo, Trin T. Minh-Ha, Sue Friedrich, and Marlon Riggs.

*AMST 437a/ER&M 411a, RECORDING VERNACULAR MUSICS. Michael Denning.
TH 1-2:15 Hu (o)
Introduction to the cultural study of vernacular musics in the era of sound recording. The rise of the music industry from sheet music to mp3s. Ethnographic field recording and twentieth-century revivals of folk musics; popular urban music cultures of ports and industrial cities; and global circulation of commercial vernacular musics from jazz, tango, and hula to salsa and hip-hop.

*AMST 438a/AFAM 352a/ER&M 291a/LITR 295a/WGSS 343a, CARIBBEAN DIASTORIC LITERATURE. Hazel Carby.
For description see under African American Studies.

*AMST 439b/ENGL 413b, FOUR AMERICAN WRITERS SINCE 1950. Amy Hungerford.
For description see under English Language & Literature.

AMST 449b/WGSS 451b, PHOTOGRAPHY AND MEMORY: PUBLIC AND PRIVATE LIVES. Laura Wexler.
3 HTBA Hu (o)
Photographs as a source for the creation of public and private memory in the United States, 1839 to the present.

*AMST 460a/AFAM 408a/ENGL 306a, AFRICAN AMERICAN POETS OF THE MODERN ERA. Robert Stepto.
For description see under African American Studies.

*AMST 465a, CENSORSHIP AND U.S. CULTURE. Joel Silverman.
TH 1:30-3:20 Hu (o)
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.

Robert Thompson.
For description see under History of Art.

hsar 379a/G/afam 112a/G, New York Mambo: Microcosm of Black Creativity.
Robert Thompson.
For description see under History of Art.

*musi 246a/*thst 236a, American Musical Theater History.
Daniel Egan.
For description see under Music.

musi 275a, Forms of Pop/Rock Music.
Daniel Harrison, Jason Summach.

THE JUNIOR SEMINAR

*amst 390a or b, The Junior Seminar. Amina El-Annan [F], Myra Jones-Taylor [Sp].
T1.30-3.20 Hu, So (o)
An interdisciplinary course in American history, literature, the arts, and society, organized around a common core of texts. Topic for fall 2009: contemporary American fiction and globalization. Topic for spring 2010: ethnography and "poverty's culture wars."

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 (o)
Special projects intended to enable the student to cover material not otherwise offered by the program. 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 (o)
Independent research and proseminar on a one-term senior project. For requirements see under “Senior requirement” in the text above.

*amst 493a and 494b, Senior Project for the Intensive Major.
Staff.
htba (o)
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: Eric Sargis, Rm. 208, 10 Sachem St., 432-6140, eric.sargis@yale.edu [F]; David Watts, Rm. 210, 10 Sachem St., 432-9597, david.watts@yale.edu [Sp]

FACULTY OF THE DEPARTMENT OF ANTHROPOLOGY

Professors
Richard Bribiescas, Richard Burger, †Michael Dove, Kathryn Dudley, J. Joseph Errington, Andrew Hill, Marcia Inhorn, William Kelly (Chair), Adam Kuper (Emeritus) (Visiting), Enrique Mayer, Roderick McIntosh, †Patricia Pessar (Adjunct), Eric Sargis, †James Scott, Helen Siu, Kalyanakrishnan Sivaramakrishnan, David Watts, †Harvey Weiss

Associate Professors
Bernard Bate, Kamari Clarke, †Nora Groce

Assistant Professors

Lecturers
†Carol Carpenter, †Ashish Chadha, John Hale, Alessandro Monsutti, †Graeme Reid, Emily Wentzell

†A joint appointment with primary affiliation in another department or school.

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:** 030b, 150a, 172a, 232b, 272b, 277a, 278La, 279Lb, 293a, 320a, 363b, 374a, 473a, 483a

**BIOLOGICAL ANTHROPOLOGY:** 116a, 204a, 212b, 280b, 299a, 394a, 395b, 396b, 397Lb, 456a

**SOCIOCULTURAL ANTHROPOLOGY:** 010b, 011a, 110b, 114a, 201b, 208b, 210b, 211a, 234b, 239b, 244a, 254a, 266a, 282a, 288a, 290b, 303a, 307b, 330a, 337b, 342a, 344a, 350a, 351a, 357a, 358b, 360b, 369b, 382a, 422b, 427b, 451a, 474b

**LINGUISTIC ANTHROPOLOGY:** 120a, 285b, 298a, 333b, 413b, 419a, 423b, 432a

**INTRODUCTORY COURSES**

**ANTH 010b, Urban Culture, Space, and Power.** Erik Harms.

MW 11.35-12.50 So (O) 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 011A, Reproductive Technologies. Marcia Inhorn.

TTh 2:30-3:45 So (0) Fr sem
Introduction to scholarship on the anthropology of reproduction. Focus on reproductive technologies such as contraceptives, prenatal diagnostics, childbirth technologies, abortion, assisted reproduction, surrogacy, and embryonic stem cells. The globalization of reproductive technologies, including social, cultural, legal, and ethical responses. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.


MW 1-2:15 So (0) Fr sem
History of the Inca empire of the Central Andes, including the empire’s impact on the nations and cultures it conquered. Overview of Inca religion, economy, political organization, technology, and society. Ways in which different schools of research have approached and interpreted the Incas over the last century, including the influence of nationalism and other sources of bias on contemporary scholarship. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

ANTH 110B, An Introduction to Cultural Anthropology.
Michael McGovern.

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.


MWF 10:30-11:20 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

For description see under Humanities.

ANTH 172A/ARC 172A, Great Hoaxes and Fantasies in Archaeology. William Honeychurch.

MW 11:35-12:50 So (34)
Examination of selected archaeological hoaxes, cult theories, and fantasies; demonstration of how archaeology can be manipulated to authenticate nationalistic ideologies, religious causes, and modern stereotypes. Examples of hoaxes and fantasies include the lost continent of Atlantis, Piltdown man, ancient giants roaming the earth, and alien encounters. Evaluation of how, as a social science, archaeology is capable of rejecting such interpretations about the past.

INTERMEDIATE COURSES

ANTH 201b, Postwar Vietnam. Erik Harms.
MW 2.30-3.45 So (0)
Vietnamese society since the end of the Vietnam War in 1975. Focus on the effect of economic and political changes on cultural and social life. The challenges of postwar socialism; economic renovation; the intersection of market-oriented socialism with class dynamics, urbanization, gender, health care, and ritual life.

ANTH 204a, Molecular Anthropology. Brenda Bradley.
TH 11.35-12.50 So (0)
An introduction to the patterns and process of human genetic variation. Topics include human origins and migration; molecular adaptations to environment, lifestyle, and disease; ancient and forensic DNA analyses; and genealogical reconstructions.

ANTH 208b, Peoples and Cultures of the Andes. Richard Burger.
TH 11.35-12.50 So (0)
A review of the culture of the Andean region (Ecuador, Peru, Bolivia) from Inca society through colonial transformations to the present. Emphasis on contemporary ethnographic concerns.

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.

ANTH 211a/AFAM 231a/WGSS 436a, Sex and Gender in the Black Diaspora. Jafari Allen.
For description see under African American Studies.

ANTH 212b, Primate Molecular Ecology and Evolution.
Brenda Bradley.
TH 11.35-12.50 Sc (26)
An overview of how molecular tools are used to answer questions about primate behavior, ecology, and evolution. Topics include primate phylogeography, molecular identification, kinship and paternity, conservation genetics, and the molecular basis of primate adaptations.

ANTH 232b/ARCG 232b, Ancient Civilizations of the Andes.
Richard Burger.
TH 11.35-12.50 So (26)
Survey of the archaeological cultures of Peru and Bolivia from the earliest settlement through the late Inca state.
*ANTH 234b, Disability and Culture. Karen Nakamura.

TH 11:35-12:50 So Meets RP (o)
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 239b/AFST 323b/WGSS 323b, HIV and AIDS in Africa.
Graeme Reid.
For description see under Women’s, Gender, & Sexuality Studies.

ANTH 244a, Modern Southeast Asia. Erik Harms.

TH 11:35-12:50 So (0)
Introduction to the peoples and cultures of Southeast Asia, with special emphasis on the challenges of modernization, development, and globalization. Southeast Asian history, literature, arts, belief systems, agriculture, industrialization and urbanization, politics, ecological challenges, and economic change.

ANTH 244a, Japan: Culture, Society, Modernity. Karen Nakamura.

TH 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 266a/SAST 203a, State and Society in Afghanistan.
Alessandro Monsutti.
For description see under South Asian Studies.

ANTH 272b/AFST 272b/ARCG 272b, African Prehistory.
Roderick McIntosh.
MW 1-2:15 So (36)
Survey of the archaeological evidence for the original contributions of the African continent to the human condition. The unresolved issues of African prehistory, from the time of the first hominids, through the development of food production and metallurgy, to the rise of states and cities.

*ANTH 277a(3)/*ARCG 277a(3), Archaeological Field Techniques.
Staff.
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 278L2.

*ANTH 278La(5)/*ARCG 278La(5), Archaeology Laboratory I.
Staff.
Sa 8:30-5 So (0)
Instruction in the field at an archaeological site in Connecticut. Stratigraphy, mapping, artifact recovery, and excavation strategy. Must be taken concurrently with ANTH 277a.

*ANTH 279Lb(5)/*ARCG 279Lb(5), Archaeology Laboratory II.
Roderick McIntosh.
W 2:30-5:30 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 280b, **Evolution of Primate Intelligence.**  David Watts.  
**MW 4:30-5:45 So (0)**
Discussion of the extent and evolutionary origins of cognitive abilities in primates (prosimians, monkeys, apes, and humans). Topics include the role of ecological and social factors as evolutionary forces; “ape language” studies; and whether any nonhuman primates possess a “theory of mind.”

anth 282a, **Sport, Society, and Culture.**  William Kelly.  
**MW 10:30-11:20, I HTBA So (33)**
An introduction to critical sports studies. The nature of modern sports, the emergence of individual sports worlds, and the implications of sports for health, technology, ethics, gender, sexuality, class, race, and nationalism.

anth 285b/sast 201b, **South Asian Nationalisms.**  Bernard Bate.  
**MW 2:30-3:45 So (0)**
An examination of the culture and history of nationalist movements in South Asia. Exploration of elements of various national movements across the subcontinent, focusing on Tamil South India and the war of ethnic fratricide in Sri Lanka. Consideration of ideas and practices surrounding tropes of language, gender, and history in the development of national and regional identities.

anth 288a/afst 288a, **The State in Africa.**  Michael McGovern.  
**MW 2:30-3:45 So (0)**
A discussion of African states that avoids the pitfall of characterizing them as failed, weak, fragile, or war-torn. Identification of what the states are, how they operate, and how they negotiate varying degrees of legitimacy and authority with the populations they govern.

anth 290b/afst 290b/wgss 290b, **Gender and Sexuality in Africa.**  Emily Wentzell.  
**Th 4:30-5:15 So (27)**
Exploration of the diverse and changing ways in which gender and sexuality are informed by culture, politics, religion, and social organization in colonial and postcolonial Africa.

anth 293a/arcg 293a, **Underwater Archaeology.**  John Hale.  
**MW 9:10-10:15 So (32)**
Overview of major underwater archaeological discoveries, from shipwrecks to sunken cities. Technology and methods used to find, survey, excavate, and interpret submerged sites.

★anth 298a/er&m 298a/wgss 298a, **The Anthropology of Oratory and Rhetoric.**  Bernard Bate.  
**MW 2:30-3:45 So (0)**
Study of the relationship between language and political practice in ethnographic literature and in rhetorical analyses of classic and contemporary American oratory. Exploration of how language use, as both mode of social practice and object of ideology and political organization, can be understood as constitutive of political relations and social organization generally. *Enrollment limited to 35.*

anth 299a, **Human Functional Anatomy.**  Eric Sargis.  
**MW 2:30-3:45 So (37)**
Regional and systemic anatomy of the human body is explored from an evolutionary perspective. Examples from embryology provide a basis for understanding the similarity of human structure to the anatomy of other vertebrates.

**ADVANCED COURSES, INCLUDING SEMINARS, READING COURSES, AND RESEARCH COURSES**

*anth 303a, Field Methods in Cultural Anthropology.*
Narges Erami.
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 307b/*amst 300b, Work in America.  Kathryn Dudley.
For description see under American Studies.

*anth 308b/*arcg 308a, Mesopotamian Origins.  Harvey Weiss.
T 2.30-4.20 So (0)
Analysis of the archaeological and paleoenvironmental data for rain-fed and irrigation agriculture settlement, subsistence, and politicoeconomic innovation in Mesopotamia, from sedentary agriculture villages to cities and states to early empire. Focus on combinations of dynamic social and environmental forces that drove these developments.  *Prerequisite:* anth 108a or equivalent, or with permission of instructor.

*anth 309a/*sast 310a, Science, State, and Technology in India.
Ashish Chadha.
W 3.30-5.20 So (0)
Historical and anthropological investigation of science, state, and technology in the making of colonial India, the transformation of India into a postcolonial nation, and India’s rise to global prominence in the area of information technology. Topics include colonial medicine, the Gandhian critique of science, big dams, the Bhopal gas disaster, nuclear energy, and the Indian space program.

T 1.30-3.20 So (0)
The linguistic phenomenon of bilingualism presented through broad issues in social description inseparably linked to it: growth and change in bilingual communities; bilingual usage, social identity, and allegiance; and interactional significances of bilingual speech repertoire use.

*anth 312b/*sast 312b, Global Afghans.  Alessandro Monsutti.
For description see under South Asian Studies.

*anth 314a, Markets and Cultures in Asia.*  Helen Siu.
T 1.30-3.20 So (0)
Historical and contemporary movements of people, goods, and cultural meanings that have defined Asia as a region. Reexamination of state-centered conceptualizations of Asia and of established boundaries in regional studies. The intersections of transregional institutions and local societies and their effects on trading empires, religious traditions, colonial encounters, and cultural fusion. Finance flows that connect East Asia and the Indian Ocean to the Middle East and Africa. The cultures of capital and market in the neoliberal and postsocialist world.

*anth 344a, South Africa: An Ethnographic Perspective.*
Adam Kuper.
T 3.30-5.20 So (0)
Review of attempts by anthropologists to define and understand key features of the new South Africa. Topics include bridewealth and polygamy, Christian churches, ethnic identities, the HIV/AIDS pandemic, migrant labor, social movements, witchcraft, and urban life. Attention to the relationship between politics and anthropology.

*ANTH 350A*/AFAM 271A*/AFST 350A, TRANSNATIONAL AND RELIGIOUS MOVEMENTS. Kamari Clarke.
W 2:30-4:20 So (0)
Study of transnational institutions and practices, with a focus on globalized religious movements in the late twentieth century. The rise and expansion of transnational institutions and faith-based practices involved in the development of new transnational religious alliances. Ways that new religious movements are facilitated by the expansion of global formations; how these forces of change are leading to new sociopolitical, economic, and cultural landscapes. Recommended preparation: ANTH 110b or equivalent.

*ANTH 351A*/AMST 275A*/ER&M 240A, NEW IMMIGRANTS IN THE UNITED STATES. Patricia Pessar.
For description see under American Studies.

*ANTH 357A*, ANTHROPOLGY OF THE BODY. Sean Brotherton.
T 1:30-3:20 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 360B*/MMES 111B, REPRESENTING IRAN. Narges Erami.
M 1:30-3:20 So (0)
Major themes in Iranian history and culture used as a critical framework for understanding challenges that face Iran today. Examination of Western production of knowledge about Iran. Topics include local and oral history, revolutions, Islam and secularism, democracy and theocracy, and the role of cinema.

*ANTH 363B*/ARC 363B*/NELC 189B, ARCHAEOLOGIES OF EMPIRE. Harvey Weiss.
For description see under Near Eastern Languages & Civilizations.

*ANTH 369B*, ECONOMIC ANTHROPOLOGY. Enrique Mayer.
Th 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 374A*/ARC 374A, ORIGINS OF ANDEAN CIVILIZATION. Richard Burger.
T 1:30-3:20 So Meets RP (0)
The diversity of early Andean complex societies and their transformations during the first two millennia B.C. Special attention to the Chavin civilization of the
northern Peruvian highlands, including its art, technology, socioeconomic organization, territorial expansion, and cultural antecedents. Emphasis on recent research and on explanatory models that have been used to explain the emergence of complexity in pre-Hispanic Peru.

*anth 382a/*evst 345a/*f&es 384a, Environmental Anthropology. Michael Dove. For description see under Environmental Studies.

*anth 394a, Methods and Research in Molecular Anthropology I. Brenda Bradley. M 9.25-11.15; lab 4 HTBA Sc (o) The first part of a two-term practical introduction to molecular analysis of anthropological questions. Discussion of genetics and molecular evolution, particularly as they address issues in anthropology, combined with laboratory sessions on basic tools for genetic analysis and bioinformatics. Development of research projects to be carried out in anth 395b.

*anth 395b, Methods and Research in Molecular Anthropology II. Brenda Bradley. M 9.25-11.15; lab HTBA Meets RP (o) The second part of a two-term practical introduction to molecular analysis of anthropological questions. Design and execution of laboratory projects developed in ANTH 394a. Research involves at least ten hours per week in the laboratory. Results are presented in a formal seminar at the end of the term. Prerequisite: ANTH 394a.

ANTH 396b, Primate Comparative Anatomy. Eric Sargis. MW 2.30-3.45 Sc, So (37) Study of the major organ and musculoskeletal systems of nonhuman primates. Focus on functional similarities and differences among several primate groups. Must be taken concurrently with anth 397Lb. Prerequisite: ANTH 116a, E&EB 122b, or equivalent, or with permission of instructor.

ANTH 397Lb, Laboratory for Primate Comparative Anatomy. Eric Sargis. T 2.30-3.30 1/3 C Credit (27) The companion laboratory to ANTH 396b. Examination of the major organ and musculoskeletal systems of nonhuman primates. Must be taken concurrently with ANTH 396b.

*anth 413b, Language, Culture, and Ideology. J. Joseph Errington. W 9.25-11.15 So Meets RP (o) 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 419a/*sast 300a, Language and the Public Sphere. Bernard Bate. T 1.30-3.20 WR, So (o) Exploration of the relationship between language and the public sphere. Consideration of the theoretical perspectives of Jürgen Habermas and Benedict Anderson. Ethnographic and historical examination of eighteenth- and nineteenth-century America and Europe, nineteenth- and twentieth-century Arabia, and India from the third to the twentieth centuries.
★ANTH 422B/G ★AFST 464B/G ★PLSC 434B/G. AFRICA AND THE DISCIPLINES.
Kamari Clarke.
For description see under African Studies.

★ANTH 423B/G. POETICS AND PERFORMANCE. Bernard Bate.
T 1:30-3:20 So (0)
The historical and social structuring effects of poetic and performative elements of communication. Readings drawn from philosophy, linguistics, anthropology, history, and critical theory demonstrate how poetics and performance provide critical insights into political practice, gender identity, and large-scale social organization.

★ANTH 427B. TOPICS IN MEDICAL ANTHROPOLOGY.
Sean Brotherton.
T 1:30-3:20 So (0)
Anthropological approaches to medicine, science, technology, and the body examined through close reading of ethnographies and canonical texts. Theoretical, political, subdisciplinary, and area studies debates in medical anthropology and the larger fields of global health, international development, and science and technology studies. Recommended preparation: ANTH 114A or equivalent.

★ANTH 432A/G. POLITICS OF LANGUAGE. J. Joseph Errington.
T H 1:30-3:20 So Meets RP (0)
Aspects of language difference and inequality considered as often neglected but crucial shapers of political dynamics and social change in plural societies. Broad comparative and theoretical approaches to the politics of sociolinguistic difference, followed by case studies focusing on specific issues. Topics include “problems” of substandard languages, bilingual identities, globalization and language shift, and language death.

★ANTH 451A/G. INTERSECTIONALITY AND WOMEN’S HEALTH.
Marcia Inhorn.
W 2:30-4:30 So (0)
The intersections of race, class, gender, and other axes of “difference” and their effects on women’s health, primarily in the contemporary United States. Recent feminist approaches to intersectionality and multiplicity of oppressions theory. Ways in which anthropologists studying women’s health issues have contributed to social and feminist theory at the intersections of race/class/gender.

★ANTH 456A/G ★ARCQ 456A/G. RECONSTRUCTING HUMAN EVOLUTION: AN ECOLOGICAL APPROACH. Andrew Hill.
W 1:30-3:20 So (0)
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 (0)
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.

*ANTH 473a*G/*ARCG 473a*G/*EVST 473a*G/*NELC 188a*G, CIVILIZATIONS AND COLLAPSE. Harvey Weiss.

Th 9.25-11.15 Hu, So (0)

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.

*ANTH 474b*G, ANTHROPOLOGIES OF INSURGENCY.

Michael McGovern.

T 9.25-11.15 So (0)

The interlinked categories of rebel, bandit, and freedom fighter explored to understand insurgency from an anthropological viewpoint. Specific instances of illegal use of force in their sociocultural and historic settings subjected to sociological and micropolitical analysis; consideration of insurgency from the actors’ points of view.

*ANTH 483a*G/*ARCG 483a*G, ARCHAEOLOGY OF SACRED SITES.

John Hale.

M 3.30-5.20 So (37)

A global and interdisciplinary survey of ancient religious sites, from tombs and temples to entire sacred landscapes. Focus on reconstructing the ancient beliefs encoded within the archaeological record.

*ANTH 491a or b, THE SENIOR ESSAY.* Consult the director of undergraduate studies.

HTBA (0)

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.

COURSES OF INTEREST IN OTHER DEPARTMENTS

*MGSRK 212a/*GMST 212a/*HUMS 277a/*LITR 328a, FOLKTALES AND FAIRY TALES. Maria Kaliambou.

For description see under Hellenic Studies.

*NELC 372b*G, MAGIC IN ANCIENT EGYPT. Hans-Werner Fischer-Elfert.

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 Coifman (Mathematics, Computer Science), Gustave Davis (School of Medicine), Eric Denardo (Operations Research), Julie Dorsey (Computer Science), Stanley Eisenstat (Computer Science), Michael Fischer (Computer Science), Igor Frenkel (Mathematics), John Hartigan (Emeritus) (Statistics), Theodore Holford (Public Health, Statistics), Roger Howe (Mathematics), Peter Jones (Mathematics), Gil Kalai (Computer Science, Mathematics), Willard Miranker (Computer Science), A. Stephen Morse (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 Schultz (Computer Science), Mitchell Smooke (Mechanical Engineering, Applied Physics), Daniel Spielman (Computer Science), Katepalli Sreenivasan (Adjunct) (Mechanical Engineering), Hongyu Zhao (School of Medicine), Steven Zucker (Computer Science, Biomedical Engineering)

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

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

J. W. Gibbs Assistant Professors
Dan Kushnir, Adam Marcus, Yoel Shkolnisky

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 225a or b, or equivalents. Computer programming skills are also required and may be acquired by taking ENAS 130b or CPSC 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 project, 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 238a)
3. A course in data analysis (STAT 361a or 230b)
4. A course in discrete mathematics (AMTH 244a or CPSC 202a)
5. Courses in at least three of the following areas: (a) optimization (AMTH 237a) or linear programming (AMTH 234a); (b) stochastic processes (STAT 251b); (c) statistics (STAT 242b); (d) algorithms (CPSC 365b) or numerical computation (ENAS 440a, 441b, or CPSC 440b); (e) graphs and networks (AMTH 462a); (f) game theory (ECON 315b); (g) signals, dynamics, applications of differential or difference equations, or time series (AMTH 342a, ENAS 391a, EENG 310b, 397b, 436b or ECON 136b) or in applied functional analysis (AMTH 260b); (h) image or vision analysis (BENG 445a or CPSC 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 a 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. Senior seminar (AMTH 490a) or special project completed during senior year (AMTH 491a or b)

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 235a or b, or equivalents; ENAS 130b or CPSC 112a or b

**Number of courses:** B.A. — 11 term courses beyond prereqs (incl senior req); B.S. — 14 term courses beyond prereqs (incl senior req)

**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 CPSC 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 490a) or special project (AMTH 491a or b)

**INTRODUCTORY COURSES**

*AMTH 110a, INTRODUCTION TO QUANTITATIVE THINKING: THE PLEASURES OF COUNTING.* Adam Marcus.

MWF 1.30-2.20 QR (36)

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.*

For description see under Mathematics.

**INTERMEDIATE AND ADVANCED COURSES**

*AMTH 235a/OPRS 235a, OPTIMIZATION.* Eric Denardo.

For description see under Operations Research.

[**AMTH 237a**, OPTIMIZATION AND CONVEXITY]

*AMTH 244a/MATH 244a, DISCRETE MATHEMATICS.* Staff.

For description see under Mathematics.

*AMTH 260b/MATH 260b, BASIC ANALYSIS IN FUNCTION SPACES.*

Ronald Coifman.

For description see under Mathematics.

**AMTH 342a/EENG 442a, LINEAR SYSTEMS.** A. Stephen Morse.

For description see under Electrical Engineering.

**AMTH 361a/STAT 361a, DATA ANALYSIS.** Staff.

For description see under Statistics.

**AMTH 364b/EENG 454b/STAT 364b, INFORMATION THEORY.** Staff.

For description see under Statistics.

**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 MATH 237a.

[amth 462aG/cpsc 462aG, Graphs and Networks]
[amth 464aG, Topics in Computational Biology]
[amth 465b/mcdb 361bG, Systems Modeling in 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 490a, 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, Hui Cao, Richard Chang (Emeritus), Michel Devoret, Paul Fleury, †Steven Girvin, †Leonid Glazman, Robert Grober, Victor Henrich, Arvid Herzenberg (Emeritus), †Marshall Long, †Tso-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
†Jack Harris, Sohrab Ismail-Beigi, †Karyn Le Hur

†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 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 \( \text{math} \ 115a \) or \( b \), \( \text{enas} \ 151a \), \( \text{math} \ 222a \) or \( b \), and \( \text{enas} \ 194a \) or \( b \). Either \( \text{math} \ 120a \) or \( b \) or \( \text{math} \ 230 \) is an acceptable alternative to \( \text{enas} \ 151a \), and \( \text{math} \ 225a \) or \( b \) is an acceptable alternative to \( \text{math} \ 222a \) or \( b \). Similarly, \( \text{phys} \ 301a \) may be substituted for \( \text{enas} \ 194a \) or \( b \) and \( \text{math} \ 222a \) or \( b \).

The recommended starting courses in physics are \( \text{phys} \ 200a \) 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 particularly strong background in physics and mathematics may take \( \text{phys} \ 260a \) and \( 261b \) instead. Students who are less well prepared in physics and mathematics may choose to take \( \text{phys} \ 180a \) and \( 181b \) during their freshman year, or \( \text{phys} \ 200a \) and \( 201b \) during their sophomore year after they have taken more mathematics courses. Two laboratory courses, such as \( \text{phys} \ 205La \) 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. \( \text{enas} \ 130b \), *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 \( \text{aphy} \ 471a \), \( 472b \). All majors are also required to take \( \text{aphy} \ 322b \), \( 439a \), and \( \text{phys} \ 420a \), 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 \( \text{aphy} \ 321b \), \( 448a \), \( 446b \), \( \text{eeng} \ 320a \), and \( 325b \). A student interested in the physics of materials and/or nanoscience might choose from \( \text{aphy} \ 448a \), \( 449b \), \( \text{chem} \ 225b \), \( 450b \), and \( \text{meng} \ 285a \). Many 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, engineering, or the departments of Physics, Computer Science, or Geology and Geophysics. 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:

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<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
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<td>PHYS 200a</td>
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<td>PHYS 201b</td>
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<td>MATH 222b</td>
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A student starting physics in the sophomore year might elect:

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A typical program in physics of materials and/or nanoscience for a well-prepared student might be:

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<th>Sophomore</th>
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<td>PHYS 205La</td>
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<td>CHEM 227a</td>
<td>APHY 471a</td>
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<td>MATH 120a</td>
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<td>PHYS 420a</td>
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<td>PHYS 201b</td>
<td>APHY 322b</td>
<td>APHY 472b</td>
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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.
REQUIREMENTS OF THE MAJOR

Prerequisites: PHYS 180a, 181b, or 200a, 201b, with appropriate math coreqs and 2 lab courses as specified; ENAS 151a or 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 in 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

  TTh 2.30-3.45 Sc Meets RP (0) 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.

*APHY 060b/*ENAS 060b/*PHYS 060b, Energy Technology and Society. Paul Fleury.
  For description see under Engineering & Applied Science.

  For description see under Engineering & Applied Science.

APHY 321b/EENG 401b, Semiconductor Silicon Devices and Technology. Tso-Ping Ma.
  For description see under Electrical Engineering.

APHY 322b, 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.

APHY 439a/G/PHYS 439a, Basic Quantum Mechanics.
  Robert Schoelkopf.
  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.

APHY 448a/G/PHYS 448a, Solid-State Physics I. Paul Fleury.
  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.

APHY 449b/PHYS 449b, SOLID-STATE PHYSICS II. Charles Ahn.
   TTH 1-2.15 QR, Sc (26)
The second term of the sequence described under APHY 448a.

APHY 458aG/PHYS 458aG, 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.

★APHY 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). 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 (Chair), John Hale, Andrew Hill, William Honeychurch, Roderick McIntosh, Eric Sargis

Classics, History of Art
   Milette Gelfman, Diana Kleiner

Geology & Geophysics
   Leo Hickey, Ronald Smith, Karl Turekian

History of Art
   Edward Cooke, Jr., Mary Miller, Lillian Tseng

Near Eastern Languages & Civilizations
   John Darnell, Hans-Werner Fischer-Elfert, 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, Richard Burger, Department of Anthropology, 10 Sachem 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; 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, Mongolia, and Guatemala. 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 equivalent; 277a, 278La, 279Lb
Distribution of courses: 1 advanced lab; 1 theory course; at least 1 course in each of 3 areas; 3 addl 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 030b/ANTH 030b, Inca Culture and Society.* Richard Burger.
For description see under Anthropology.

*ARCg 172a/ANTH 172a, Great Hoaxes and Fantasies in Archaeology.* William Honeychurch.
For description see under Anthropology.

*ARCg 232b/ANTH 232b, Ancient Civilizations of the Andes.*
Richard Burger.
For description see under Anthropology.

*ARCg 272b/AFST 272b/ANTH 272b, African Prehistory.*
Roderick McIntosh.
For description see under Anthropology.

*ARCg 277a/ANTH 277a, Archaeological Field Techniques.*
Staff.
For description see under Anthropology.

*ARCg 277a/ANTH 277a, Archaeological Field Techniques.*
Staff.
For description see under Anthropology.

*ARCg 278La/ANTH 278La, Archaeology Laboratory I.*
Staff.
For description see under Anthropology.

*ARCg 279Lb/ANTH 279Lb, Archaeology Laboratory II.*
Roderick McIntosh.
For description see under Anthropology.

*ARCg 293a/ANTH 293a, Underwater Archaeology.*
John Hale.
For description see under Anthropology.

*ARCg 320a/ANTH 320a, Mesopotamian Origins.*
Harvey Weiss.
For description see under Anthropology.

*ARCg 374a/ANTH 374a, Origins of Andean Civilization.*
Richard Burger.
For description see under Anthropology.

*ARCg 436a/ANTH 436a, Reconstructing Human Evolution: An Ecological Approach.*
Andrew Hill.
For description see under Anthropology.

*ARCg 473a/ANTH 473a/EVST 473a/NELC 188a, Civilizations and Collapse.*
Harvey Weiss.
For description see under Anthropology.

*ARCg 483a/ANTH 483a, Archaeology of Sacred Sites.*
John Hale.
For description see under Anthropology.

**CLASSICAL CIVILIZATION**

*ARCg 252a/CLCV 175a/HSAR 252a, Roman Architecture.*
Diana Kleiner.
For description see under History of Art.

**GEOLOGY AND GEOPHYSICS**

*ARCg 230a/G&G 230a, Stratigraphy.* Leo Hickey.
For description see under Geology & Geophysics.
★ARCG 362b/★EVST 362b/★G&G 362bG, Observing Earth from Space.
Ronald Smith and staff.
For description see under Geology & Geophysics.

HISTORY OF ART

Karen Foster.
For description see under History of Art.

ARCG 238a/HSAR 238a/NELC 107a, Buried Cities: Thera, Pompeii, and Herculaneum.
Karen Foster.
For description see under History of Art.

NEAR EASTERN LANGUAGES AND CIVILIZATIONS

★ARCG 363bG/★ANTH 363bG/★NELC 189bG, Archaeologies of Empire.
Harvey Weiss.
For description see under Near Eastern Languages & Civilizations.

ADVANCED RESEARCH COURSES

★ARCG 471a and 472b, Directed Reading and Research in Archaeology.
Consult the director of undergraduate studies.

HTBA (0)
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.

★ARCG 491a or b, Senior Research Project in Archaeology.
Members of the Council on Archaeological Studies.

HTBA (0)
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.

OTHER COURSES RELEVANT TO ARCHAEOLOGICAL STUDIES

ASTR 135b, Archaeoastronomy. Michael Faison.


ARCHITECTURE

Director of undergraduate studies: Bimal Mendis, 328 Rudolph, 432-8325,
bimal.mendis@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, Alan Plattus, Alexander Purves (Emeritus), Vincent Scully (Emeritus)

Associate Professors
Michelle Addington, Keller Easterling, Eeva-Liisa Pelkonen
Assistant Professors
Kyoung Sun Moon, Emmanuel Petit, Elihu Rubin (Visiting), Hilary Sample

Lecturers
Victor Agran, Karla Britton, Susan Farricielli, Anne Gilbert

Critics
Andrei Harwell, Adam Hopfner, Joyce Hsiang, Bimal Mendis, Dean Sakamoto, Thomas Zook

Application to the Architecture major for the Class of 2012 and subsequent classes.
Yale College students must apply to enter the major during the spring term of their sophomore year, after taking arch 150a, 154b, and 249b. 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 29, 2010, 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, 154b, and 249b must also be submitted for review as part of the application process by May 3, 2010. 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 11, 2010. The major is limited to a maximum of twenty-five students in the junior year and twenty-five students in the senior year. Under exceptional circumstances students may petition the director of undergraduate studies in writing if they wish to change concentrations.

Introduction to architecture for the Class of 2012 and subsequent classes. Introductory courses are arch 150a, 154b, and 249b. 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 arch 003b, 152a, or STCY 176b.

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 for the Class of 2011 and previous classes. 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, 152a, 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 either HSAR 112a or 115b. The core courses for the urban studies track are ARCH 249a, 250a, 251b, and either ARCH 345b or <385a>. 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 chosen from ARCH 162b or 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 150a, 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), Environ-
mental 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)

Requirements of the major for the Class of 2012 and subsequent classes. Students majoring in Architecture are required to take fifteen course credits. Majors are expected to take three prerequisites in their sophomore year, complete a core of five course credits by their junior year, and 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 courses for all concentrations include three prerequisites: ARCH 150a, 154b, and 249b. The core of five course credits required for all three concentrations include the studio courses ARCH 250a and 251b (to be taken during the junior year after the student is accepted into the major) and the history of architecture surveys ARCH 260a and 261b (to be completed by the end of the junior year). The electives are categorized under four broad subject areas: history and theory of architecture, urbanism and landscape, materials and technology, and structures and computation.

For the architecture and design concentration, the following additional courses are required:

1. ARCH 450a
2. ARCH 494b (the senior requirement)
3. One elective in history and theory of architecture chosen from the following: ARCH 341a, <361b>, 430b, 431b, or other relevant course in History of Art approved by the director of undergraduate studies
4. One elective in urbanism and landscape chosen from the following: ARCH 340a, 344a, 345b, 347a, 350b, 351a, <385a>; STCY 176b; or other relevant course approved by the director of undergraduate studies in American Studies, Ethics, Politics, and Economics, Environmental Studies, or Political Science
5. One elective in materials and technology chosen from the following: ARCH 162b, 163b, or other relevant course in Environmental Studies approved by the director of undergraduate studies
6. One elective in structures and computation chosen from the following: ARCH 161b, PHYS 150a, 180a, 200a, a calculus course, or other relevant course approved by the director of undergraduate studies

For the history, theory, and criticism concentration, the following additional courses are required:

1. ARCH 490a and 491b (the senior requirement)
2. Four electives in history and theory of architecture, chosen from the following: ARCH 341a, <361b>, 431b or other relevant courses in History of Art approved by the director of undergraduate studies
3. One elective in urbanism and landscape chosen from the following: ARCH 340a, 344a, 345b, 347a, 350b, 351a, <385a>; STCY 176b; or other relevant course approved by the director of undergraduate studies in American Studies, Ethics, Politics, and Economics, Environmental Studies, or Political Science

For the architecture and urban studies concentration, the following additional courses are required:

1. ARCH 495a and 491b (the senior requirement)
2. Four electives in urbanism and landscape chosen from the following: ARCH 340a, 344a, 345b, 347a, 350b, 351a, <385a>; STCY 176b; or other relevant courses approved by the director of undergraduate studies in American
Studies, Ethics, Politics, and Economics, Environmental Studies, or Political Science

3. One elective in history and theory of architecture chosen from the following: ARCH 341a, 361b, 431b, or other relevant courses in History of Art approved by the director of undergraduate studies

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/classesindex09.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 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 4, 2010. 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:  Class of 2011 and previous classes: ARCH 150a, 152a, 154b; Class of 2012 and subsequent classes: ARCH 150a, 154b, 249b

Number of courses: Class of 2011 and previous classes: 16 course credits (incl prereqs and senior req); Class of 2012 and subsequent classes: 15 course credits (incl prereqs and senior req)
**Specific courses required:**  
*Class of 2011 and previous classes:* All tracks—ARCH 249a, 250a (in fall of junior year); ARCH 251b; Architecture and design—ARCH 450a; HSAR 112a or 115b; 1 from PHYS 150a, 180a, 200a, ARCH 161b, or a calculus course; History, theory, and criticism—HSAR 112a or 115b; 1 from ARCH 340a, 341b, 350b, STCY 176b; 1 from PHYS 150a, 180a, 200a, ARCH 161b, or a calculus course; Architecture and urban studies—ARCH 343b or 385a; 1 from ARCH 340a, 341a, 350b, STCY 176b; *Class of 2012 and subsequent classes:* Architecture and design—ARCH 250a, 251b, 260a, 261b, 450a; Architecture and urban studies—ARCH 250a, 251b, 260a, 261b.

**Distribution of courses:**  
*Class of 2011 and previous classes:* 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; *Class of 2012 and subsequent classes:* Architecture and design—1 elective in history and theory of architecture, 1 elective in urbanism and landscape, 1 elective in materials and technology, and 1 elective in structures and computation, all approved by DUS; History, theory, and criticism—4 electives in history and theory of architecture, 1 elective in urbanism and landscape, all approved by DUS; Architecture and urban studies—4 electives in urbanism and landscape and 1 elective in history and theory of architecture, all 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  
Study of architecture from 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 152a,* 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.

*arch 154b,* Drawing Architecture.  
Victor Agran.  

**W 2.30-4.20** (O)  
Introduction to the visual and analytical skills necessary to communicate architectural ideas. Observation and documentation of architectural space on the Yale campus. Drawing exercises introduce the conventions of architectural representation: plan, section, elevation, and isometric drawings, as well as freehand perceptual drawings of architectural space. Not open to freshmen.

*arch 161b,* Introduction to Structures.  
Kyoung Sun Moon.  

**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.

**arch 162b, Materials in Architecture.** Susan Farricielli.
F 10.10-11.20; lab F 12-3 (o)
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 (o)
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 or b, The Analytic Model.** Emmanuel Petit.
TTH 9-10.15 (o)
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. **arch 249a is required for all Architecture majors in the Class of 2011. arch 249b is required for all Architecture majors in the Class of 2012 and subsequent classes.**

**arch 250a, Methods and Form in Architecture I.** Hilary Sample, Bimal Mendis.
MW 1-2.50, 1 HTBA 1½ C Credits (o)
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.**
Dean Sakamoto, Joyce Hsiang.
MW 12.30-2.20 1½ C Credits (o)
Continuation of **arch 250a.**

**[arch 260a, History of Architecture I: From Antiquity to the Renaissance]**

**[arch 261b, History of Architecture II: From the Eighteenth Century to the Millennium]**

**arch 340a/amst 207a, American Cultural Landscapes: An Introduction to the History of the Built Environment.** Dolores Hayden.
For description see under American Studies.
**ARCH 344a, Urban Life and Landscape.** Elihu Rubin.

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.

**ARCH 346b, Civic Art: Introduction to Urban Design.**

Elihu Rubin, Andrei Harwell.

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 347a, Infrastructure: Politics and Design.**

Elihu Rubin.

For description see under Political Science.

**ARCH 350b, Suburbs and the Culture of Sprawl.**

Dolores Hayden.

For description see under American Studies.

**ARCH 351a, Poets’ Landscapes.** Dolores Hayden.

For description see under American Studies.

**ARCH 431b, Architecture and Religion.** Karla Britton, John Cook.

The historical evolution of sacred building in the twentieth and twenty-first centuries. Relations between a building, its cultural environment, and its cult. The influence of religion in contemporary civic life as manifest in the design and construction of prominent religious buildings. Examination of mosques, synagogues, temples, and churches. Perspectives from philosophy, comparative religion, liturgical studies, and architectural theory and practice.

**ARCH 450a, Senior Studio.**

Turner Brooks, Adam Hopfner.

Advanced problems with emphasis on architectural implications of contemporary cultural issues. 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.

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 (o)

Examination of the skills, topics, and preparation required for the research that students in the history, theory, and criticism track undertake for their senior project. Under the guidance of the instructor and members of the Architecture faculty and visitors, students present and define their proposals, complete basic readings, and seek criticism of individual research agendas.

**ARCH 491B, Senior Project.** Elihu Rubin, Karla Britton.

MW 1-2:15 (o)

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 1 C Credits (o)

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 preparation to support design research.

**ARCH 495A, Senior Research Colloquium for Urban Studies.** Karla Britton.

Th 11:35-12:50, 2 HTBA (o)

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 individual interests. Requirements include proposal drafts, case study research, analyses, and graphic illustrations.

**Courses Relevant to the Major in Other Departments**

**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.**
Celia Schultz.
For description see under Classics.

**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, Samuel Messer (Adjunct), Robert Reed, Jr., Michael Roemer (Adjunct), Jessica Stockholder, Robert Storr

ASSISTANT PROFESSORS
Clint Jukkala, Marie Lorenz

SENIOR CRITICS
Gregory Crewdson, John Gambell, Jessica Helfand, Pamela Hovland

CRITICS
Sandra Luckow, Sarah Oppenheimer, Henk van Assen

LECTURERS
Jonathan Andrews, Anna Betbeze, Julian Bittiner, Scott Braun, Alice Chung, Jon Conner, Daphne Fitzpatrick, Lisa Kereszi, Elke Lehmann, John Lehr, Dan Michaelsen, Phillip Pisciotta, 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 1, 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 2. For courses beginning in the spring term, counseling will be held on Monday, January 11, 2010, adjacent to the School of Art Gallery, from 12 to 1.30 p.m.; Art classes begin on Tuesday, January 12, 2010. 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.

Some Art courses may be repeated for credit, with permission of both the instructor and the director of undergraduate studies. 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 12, 2010.

**INTRODUCTORY COURSES**

**ART 001a, STUDIES IN VISUAL BIOGRAPHY.** Jessica Helfand.  
**MW 1-2.15, 1Htba** Meets RP (0) Fr sem  
Diaries, journals, and scrapbooks studied as authoritative examples of visual autobiography. Social history and visual methods, focusing on American and British cultural life between the world wars. Exercises in collecting, collage, and composition; methods of visually navigating space, time, and memory; discussion of the asynchronous nature of biography. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**ART 002b, PAPER.** Siobhan Liddell.  
**Th 1-2.15, 1Htba** Meets RP (0) Fr sem  
Paper as a material from which to make art. How paper is made; myriad ways that it is used in the collections of Yale’s galleries and libraries. Creation of paper objects to explore the formal properties of sculpture including volume, mass, line, and structure. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**ART 111a or b, VISUAL THINKING.** Anna Betbeze, Elke Lehmann, and staff.  
**Hu** Meets RP (0)  
111a: **Th 3.30-5.20**  
111b: **MW 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.** Anna Betbeze, Marie Lorenz, Samuel Messer, Robert Reed, Jr., Robert Storr, and staff.

Hu Meets RP (0)
- 114a–1: MW 8.25-10.15
- 114a–2: MW 1.30-3.20
- 114a–3: TTh 1.30-3.20
- 114b–1: MW 8.25-10.15
- 114b–2: MW 10.30-12.20
- 114b–3: TTh 1.30-3.20

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.** Clint Jukkala.

TTh 10.30-12.20 Hu Meets RP (0)

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.** Scott Braun and staff.

TTh 10.30-12.20 Hu Meets RP (0)

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 (0)

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.**

- 130a: MW 10.30-12.20 Hu Meets RP (0) George Rush
- 130b: TTh 3.30-5.20 Hu Meets RP (0) Anna Betbeze

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, Henrik van Assen.

Hu Meets RP (0)
- 132a–1: MW 10.30-12.20
- 132a–2: TTh 10.30-12.20
- 132b: TTh 3.30-5.20

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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: TTh 10.30-12.20
136A–2: WF 1.30-3.20

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 “flâneur” 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 or b, Digital Photography.** John Lehr, Rebecca Soderholm.

Hu Meets RP (o)
138A–1: TTh 1.30-3.20
138A–2: WF 1.30-3.20

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 and 142B, The Language of Film Workshop.**
141A: T 9-12.30 Meets RP (o) Michael Roemer
142B: M 1.30-5 Meets RP (o) Sandra Luckow

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 per term. **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.
W 10.30-12.20 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 and 211b, SCULPTURE AS OBJECT.** Scott Braun.

**MW 1:30-3:20**  
Hu  Meets RP  
Introduction to concepts of design and form in sculpture. The use of wood, including both modern and traditional methods of carving, lamination, assembly, 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 per term.  
*Enrollment limited to 12.*

**INTERMEDIATE COURSES**

**ART 223a and 224b, FIGURE DRAWING.**

**223a: MW 10.30-12.20**  
Meets RP  
Samuel Messer

**224b: TH 10.30-12.20**  
Meets RP  
George Rush

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.  
*Enrollment limited to 15. Prerequisite or corequisite: ART 114a or b.*

**ART 230a and 231b, INTRODUCTORY PAINTING.** Robert Reed, Jr.

**MWF 10.30-12.20**  
Meets RP  
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 and 238b, INTERMEDIATE PHOTOGRAPHY.** Lisa Kereszi.

**Hu  Meets RP  
237a: WF 3.30-5.20**  
238b: MW 10.30-12.20

A 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 per term.  
*Prerequisite: ART 136a or b or equivalent.*  
(Formerly ART 137a or b)

**ART 245b, DIGITAL DRAWING.** Sarah Oppenheimer.

**TH 1:30-5.20**  
Meets RP  
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.  
*Prerequisite: ART 111a or b or ART 114a or b or permission of instructor.*

**ART 264a, TYPEGRAPHY IN GRAPHIC DESIGN I.** Alice Chung.

**MW 3:30-5.20**  
Meets RP  
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.  
F 8.25-12.20 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.** George Rush [F], Clint Jukkala [Sp].  
M 3.30-7.20, W 3.30-5.20 Meets RP (o)  
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 discussion of issues in historical and contemporary painting. Materials fee: $150 per term. *Prerequisite: ART 230a or 231b.*

**ART 341a or b, Intermediate Fiction Film Workshop.**  
341a: M 9.25-12.15 Meets RP (o) Michael Roemer  
341b: Th 9.25-12.15 Meets RP (o) Jonathan Andrews  
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 142b, and FILM 150a.*

**ART 342b, Intermediate Documentary Film Workshop.**  
Sandra Luckow.  
T 12.30-3.20 Hu Meets RP (o)  
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 142b, and FILM 150a.*

**ART 345a and 346b, Intermediate Sculpture.** Scott Braun and staff.  
Meets RP (o)  
345a: Th 1.30-3.20 Meets RP (o)  
346b: MW 1.30-3.20 Meets RP (o)  
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 per term. *Enrollment limited to 12. Prerequisite: ART 120a or b or equivalent, or permission of instructor.*

**ART 355b, Silkscreen Printing.** Marie Lorenz.  
TTwF 1.30-3.20 Hu Meets RP (o)  
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.

**ART 356a, Printmaking I.** Marie Lorenz.

***Meets RP (O)***

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**

**ART 367a and 368b, Intermediate Graphic Design.** Alice Chung, Pamela Hovland.

***Meets RP (O)***

Various ways that design functions; how visual communication takes form and is recognized by an audience. Core issues inherent in design: word and image, structure, and sequence. Analysis and refinement of an individual design methodology. Attention to systematic procedures, techniques, and modes of inquiry that lead to a particular result. Materials fee: $150 per term. **Prerequisite:** ART 132a or b.

**ART 377a or b, Color Photography.** Phillip Pisciotta.

***Meets RP (O)***

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 by Helen Levitt, William Eggleston, Stephen Shore, Philip-Lorca diCorcia, Gregory Crewdson, and others. Materials fee: $150. **Prerequisites:** ART 237a or 238b or permission of instructor; and, for those intending to photograph with a view camera, ART 379b.

**ART 379b, View Camera Photography.** John Lehr.

***Meets RP (O)***

A concentrated study of operations required in the use of stand cameras, or view cameras. Student work is discussed in regular critiques. Review of a significant photographic tradition. 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 238b or permission of instructor; and, for those intending to photograph in color, ART 377a or b.

**ART 395a or b, Junior Seminar.** Jeffrey Stuker and staff.

***Meets RP (O)***

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, Advanced Photography.** Gregory Crewdson.

***Meets RP (O)***

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 b or 379b, and, for those working digitally, ART 138a or b. Required for Art majors concentrating in photography.

*ART 430a and 431b, Painting Studio II. Samuel Messer [F], Rochelle Feinstein [Sp].

M 3.30-7.20, W 3.30-5.20 Meets RP (0)

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 442a and 443b  FILM 483a and 484b, Advanced Fiction Film Workshop. Jonathan Andrews.

Th 12.30-3.20 (0)

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 in Film Studies. Prerequisite: ART 342a or b.

*ART 445b, Advanced Sculpture. Staff.

M W 1.30-3.20 Meets RP (0)

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. Prerequisite: ART 345a or 346b or equivalent, or permission of instructor.

*ART 447b, Art and Collaboration

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.” Student work considered in the context of conventional categories of sculpture, painting, graphic design, and photography. Art’s responsiveness to its context and questions of authorship, process, and vulnerability.

*ART 457b, Printmaking II. Marie Lorenz.

TTh 3.30-5.20 Meets RP (0)

Individual projects in a range of media: relief methods, etching, lithography, and silkscreen. Group projects to create a suite of prints or a book. Emphasis on contemporary printmaking practices that are both traditional and transmedia. Materials fee: $150. Recommended to be taken concurrently with ART 331b or 431b. Prerequisite: at least one term of printmaking.

*ART 468a and 469b, Advanced Graphic Design. Julian Bittiner, Henk van Assen, and staff.

W 1.30-5.20 Meets RP (0)

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 com-
ponent 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 techni-
cal experience required. Prerequisite:** ART 367a or 368b or permission of instructor.

**ART 471a and 472b, Independent Projects.** Consult the director of
undergraduate studies.

**Htba Meets RP (0)**

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. Expecta-
tions of the course include regular meetings, end-of-term critiques, and a
graded evaluation.

**ART 495a or b, Senior Project.** Clint Jukkala.

**Meets RP (0)**

**495a: 2 Htba**

**495b: T 6.30-8.30 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 stu-
dent'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 mem-
bers of the School of Art faculty. An exhibition of selected work done in the proj-
ect 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 Professors**

†Richard Easther, Priya Natarajan

**Assistant Professors**

Hector Arce, Marla Geha

**Lecturers**

Michael Faison, Eilat Glikman

†A joint appointment with primary affiliation in another department.

The Department of Astronomy offers courses both for the nonscientist inter-
rested in learning about modern astronomy and for the student wishing to pre-
pare 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 110b, 120a, 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, 160a, 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 160a 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 355a; 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 355a; 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 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:** 3 term courses in astronomy, 4 of them numbered 200 or above; 3 addtl courses in science or math, at least 2 with college-level prereqs (may include addtl astronomy courses)

**Specific courses required:** ASTR 255a or 355a; ASTR 310a, or both 210a and 220b; MATH 120a or b

**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 355a; ASTR 310a; ASTR 320b or 343b

**Substitution permitted:** ASTR 155a for 1 term of prereq physics lab; a more advanced astrophysics course for ASTR 320b or 343b, with DUS permission

**Senior requirement:** Senior independent research project (ASTR 490a and 491b)
astr 030a, Search for Extraterrestrial Life. Hector Arce.
TTh 4-5.15 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 110b, Planets and Stars. Robert Zinn.
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 120a, Galaxies and the Universe. Jeffrey Kenney.
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
astr 135b, Archaeoastronomy. Michael Faison.
TTh 11.35-12.50 (0)
For non-science majors. An introduction to how celestial patterns and events were observed and interpreted up to the Copernican revolution. Ancient observatories, calendar systems, records of astronomical events, and the role of astronomical knowledge in culture. Exercises in naked-eye observation of the sky.

T 2.30-3.45; lab HTBA Sc 0.5 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 160a, Frontiers and Controversies in Astrophysics. Marla Geha.
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.
TTh 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 171A/HUMS 361A/RLST 401A, RELIGION AND THE BIG BANG.**
Charles Bailyn, Ludger Viefhues-Bailey.
For description see under Humanities.

**ASTR 210A, STARS AND THEIR EVOLUTION.** Sarbani Basu.
**MW 1-2.15 QR, Sc (36)**
An intensive introduction to planetary physics and stellar evolution. Star formation, 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.** Eilat Glikman.
**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.**
Michael Faison.
**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]**

**ASTR 343B/PHYS 343B, GRAVITY, ASTROPHYSICS, AND COSMOLOGY.**
Daisuke Nagai.
For description see under Physics.

**ASTR 355G, OBSERVATIONAL ASTRONOMY.** Robert Zinn.
**3 HTBA QR, Sc Meets RP (0)**
Optics for astronomers. Design and use of optical telescopes, photometers, spectrographs, and detectors for astronomical observations. Introduction to error analysis, concepts of signal-to-noise, and the reduction and analysis of photometric and spectroscopic observations. **Previous experience with computer programming recommended. Prerequisite: one astronomy course numbered above 200, or permission of instructor.**

**ASTR 360B/G, INTERSTELLAR MATTER AND STAR FORMATION.**
Hector Arce.
**MW 10.30-11.20, 1 HTBA QR, Sc Meets RP (33)**
Observations of interstellar matter at optical, infrared, radio, and X-ray wavelengths; dynamics and evolution of the interstellar medium including interactions 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.

[ASTR 380B/G, Stellar Populations]

[ASTR 385A/G, Introduction to Radio Astronomy]


3 HTBA QR, Sc Meets RP (50)
The dynamics and evolution of star clusters; structure and dynamics of our galaxy; theories of spiral structure; dynamical evolution of galaxies. Prerequisites: PHYS 201B and MATH 246A or B or equivalents; ASTR 310A. Taught in alternate years.


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/G, Galaxies]

*ASTR 440A/G, Radiative Processes. Staff.

3 HTBA QR, Sc Meets RP (0)
Applications to astrophysics and geophysics of the theory of radiation fields. Specific examples from stellar physics; stellar and planetary atmospheres; other astrophysical and geophysical processes. Prerequisites: MATH 120A or B and PHYS 201B. Taught in alternate years.

[ASTR 450B/G, Stellar Astrophysics]


For description see under Physics.


3 HTBA QR, Sc Meets RP (50)
Overview of cosmic history from the formation of the first star to the present day, focusing on direct observations of the high-redshift universe. Prerequisites: MATH 120A or B, PHYS 201B, and one astronomy course numbered above 200. Taught in alternate years.

*ASTR 470B/G, Cosmology. Staff.

3 HTBA QR, Sc Meets RP (0)
The large-scale contents and structure of the universe and the origin of galaxies. Prerequisites: PHYS 201B and MATH 246A or B or equivalents; ASTR 310A. Taught in alternate years.

*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: Leo Buss (Ecology and Evolutionary Biology), 122D OML, 432-3837, karen.broderick@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**
- Walter Jetz, David Post, Paul Turner

**Assistant Professors**
- Suzanne Alonzo, Antonia Monteiro, Thomas Near, Melinda Smith, Jeffrey Townsend, David Vasseur

**Lecturers**
- Gisella Caccone, John Cooley, Mary Beth Decker, Marta Martínez Wells

**FACULTY OF THE DEPARTMENT OF MOLECULAR, CELLULAR, AND DEVELOPMENTAL BIOLOGY**

**Professors**

**Associate Professors**
- Scott Holley, Christine Jacobs-Wagner, Frank Slack, Elke Stein, David Wells, Weimin Zhong

**Assistant Professors**
- Thierry Emonet, Martín García-Castro, Valerie Horsley

**Lecturers**
- Carol Bascom-Slack, Emile Boulpaep, Iain Dawson, Savithramma Dinesh-Kumar, Akiko Iwasaki, Mary Klein, Harvey Kliman, Marta 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 Center for International Experience (www.yale.edu/yalecollege/international).

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 students are not 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, MCD 470a or b, E&EB 475a or b, MCD 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 MCD 475a and b or 485a and 486b). The intensive B.S. degree requires, in addition to the prerequisites, seven lecture courses or seminars, two laboratories, and the senior requirement (E&EB 495a, 496b or MCD 495a, 496b).

Core requirements for Area I, ecology and evolutionary biology. Area I majors are required to take MCD 202a, E&EB 210a or the equivalent, E&EB 220a, and 225b.

Electives for Area I, ecology and evolutionary biology. In addition to the four core courses, students must take three electives, one of which must be a course in organismal diversity chosen from E&EB 246b, 250a, 255b, 264b, 272b, or MCD 290b. Students who wish to take electives from other departments should obtain the approval of the director of undergraduate studies in EEB.

Laboratory requirement. 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 MCD 202a, 300a or its equivalent, and either 210b or 210b. (MCD 210b is not a core course for the biotechnology track.) Equivalents for MCD 300a are defined as either (a) both MB&B 300a and 301b or (b) MB&B 300a only, if the student took MCD 120a or 200b prior to MB&B 300a or has the permission of the director of undergraduate studies in MCD. For this purpose, placing out of MCD 120a is not equivalent of having taken MCD 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 MCD (numbered 150 or above), EEB (numbered 140 or above), or MB&B (numbered 200 or above), and one upper-level MCD 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 MCD 320a, one MCD course numbered 350 or above, and two courses chosen from BENG 410a, CPSC 475b, MCD 245b, 310a, 315b, 410a, 415b, 425a, 430a, 440b, 460b, PSYC 270a, 376a, and either MCD 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, 338A KBT (432-3481)  
R. Wyman, 610A KBT (432-3475)  
W. Zhong [Sp], 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, 457b, 464b, CENG 210a, 411a, 412b, CPS 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 351a, 356Lb 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, 710A KBT (432-5013)  
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 (122D 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, Karen Broderick (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 (EB&EB 470a or b or MCDB 470a or b); or by successful completion of one term of individual research (EB&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 485a, 486b**. 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 495a, 496b** or **MCDB 495a, 496b**, 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 **495a, 496b** and **MCDB 475a or b, 485a, 486b, and 495a, 496b** 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 485a, 486b** 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 495a, 496b and E&EB 495a, 496b 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, Karen Broderick (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 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], 56O OML (432-8452)
Class of 2012:  M. Smith, 426A OML (432-9422)
                D. Vasseur, 55O OML (432-2719)
Class of 2013:  L. Buss, 326B OML (432-3869)
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. Moosiker, R. Wyman
- DC, P. Forscher, V. Irish
- L. N. Ornston [F], W. Zhong [Sp]
- TD, S. Holley
- JE, T. Nelson [F], R. Breaker
- MC, X. W. Deng, H. Keshishian
- K. Nelson, T. Pollard, F. Slack
- PC, J. Carlson, C. Crews
- SY, C. Jacobs-Wagner, S. Roeder
- SM, S. Dellaporta [Sp], D. Kankel, J. Rosenbaum
- TC, S. Altman

REQUIREMENTS OF THE MAJOR

Prerequisites: MCD 120a, EEB 122b; either MCD 121La or EEB 123Lb; Chem 112a, 113b, or 118a, 115b, or 119a, 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 — EEB 210a or equivalent, EEB 220a, 235b, MCD 202a; Area II: Molecular, cellular, and developmental biology — Standard track — MCD 202a, 300a, and either 205b or 210b; Neurobiology track — MCD 202a, 300a, 320a, and either 205b or 210b; Biotechnology track — MCD 202a, 205b, 300a, and 350b.

Distribution of courses:
- Area I: Ecology and evolutionary biology — 3 electives, 1 in organismal diversity; Area II: Molecular, cellular, and developmental biology — Standard track — 3 electives from EEB numbered 140 or above, MCD numbered 150 or above, or MB&B numbered 200 or above, and 1 addtl MCD 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. — MCD 470a or b, or EEB 470a or b, or MCD 475a or b, or EEB 475a or b, taken in senior year, or senior essay; B.S. — 2 terms of MCD 475a or b or EEB 475a or b, or at least 1 in senior year, or MCD 485a, 486b; Intensive B.S. — MCD 495a, 496b or EEB 495a, 496b.

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

* MCD 060a and 061b, Topics in Reproductive Biology.

Harvey Kliman.

- M 2,30-4, SC ½ C Credit per term (0) 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. Credit only on completion of both terms. 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,  
Andrew Miranker, 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.

*MCDB 107a, HUMAN BIOLOGY.  Mitchell Kundel, William Segraves.  
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. Examination of microorganisms  
such as influenza, HIV, human papilloma virus, Chlamydia trachomatis, and commensal bacteria. The biology of the organism, interaction with the host immune  
system, and strategies by which pathogens elude the host defense. Some attention to zoonosis, vaccine development, biofilms, and evolution. Enrollment limited to freshmen and sophomores.

EE&EB 115a/F&ES 315a, CONSERVATION BIOLOGY. Walter Jetz,  
Jeffrey Powell.  
MWF 10.30-11.20 Sc (33)  
An introduction to ecological and evolutionary principles underpinning efforts to conserve Earth's biodiversity. Efforts to halt the rapid increase in disappearance of both plants and animals. Discussion of sociological and economic issues.

EE&EB 118a/EREM 180a, HUMAN GENETIC VARIATION AND EVOLUTION

MCDB 120a, PRINCIPLES OF MOLECULAR, CELLULAR, AND  
DEVELOPMENTAL BIOLOGY.  John Carlson, Carol Bascom-Slack,  
Frank Slack.  
MWF 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.  Maria Moreno.  
TTH of F 1.30– Sc ¼ 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.

EE&EB 122b, PRINCIPLES OF EVOLUTION, ECOLOGY, AND BEHAVIOR.  
Stephen Stearns.  
MWF 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 123b, Laboratory for Principles of Evolution, Ecology, and Behavior. Marta Martínez Wells.

Two or Th 1:30–3:45 Sc 3 C Credit (0)

Experimental approaches to organismal and population biology, including study of the diversity of life. Concurrent with or after E&EB 122b.

E&EB 123b/G&G 123b, History of Life. Derek Briggs, Jacques Gauthier.

For description see under Geology & Geophysics.

MCDB 135b/PSYC 302b, How the Brain Works. David Wells, Mitchell Kundel.

MWF 2:30-3:45 Sc (0)

For non-science majors. The biology of the brain: gross anatomy of the brain and the cellular components that make up nervous tissue. Neurodegenerative diseases such as Alzheimer's, Parkinson's, and ALS; sensory processing such as vision and pain; psychoactive drugs and their use in treating brain disorders and in recreation. Enrollment limited to freshmen and sophomores.


Th 2:30-3:45, disc. HTBA Sc (27)


E&EB 160b, Diversity of Life. Staff.

MWF 10:30-11:20 Sc (33)

A survey of the diversity of organisms on Earth with a focus on their evolutionary history, biology, and adaptations to their environment.

E&EB 171a, The Collections of the Peabody Museum. Leo Buss.

Th 2:30-3:45 WR, Sc Meets RP (0)

Exploration of selected scientific problems through the use of the biological and geological collections of the Peabody Museum. Enrollment limited to freshmen and sophomores.

Intermediate EEB Courses


For description see under Statistics.

E&EB 220a, General Ecology. David Post, David Vasseur.

MWF 10:30-11:20 Sc (33)

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.
e&eb 225b, Evolutionary Biology. Paul Turner, Jeffrey Townsend.

TTH 11.35-12.50 Sc (24)

An overview of evolutionary biology as the discipline uniting all of the life sciences. Reading and discussion of scientific papers to explore the dynamic aspects of evolutionary biology. Principles of population genetics, paleontology, and systematics; application of evolutionary thinking in disciplines such as developmental biology, ecology, microbiology, molecular biology, and human medicine. Recommended preparation: e&eb 122b.

e&eb 226Lb, 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 230a/evst 221a/f&es 221a, Field Ecology]


TTH 11.35-12.50 Sc (24)

Survey of evolutionary insights that make important differences in medical research and clinical practice, including evolutionary mechanisms and the medical issues they affect. Individual genetic variation in susceptibility; evolutionary conflicts and tradeoffs in reproductive medicine; the evolution of antibiotic resistance and virulence in pathogens; emerging diseases; the evolution of aging; cancer as an evolutionary process. After mcdb 120a or e&eb 122b, or with permission of instructor.

e&eb 240a, Animal Behavior. Suzanne Alonzo.

MW 9-10.15, 1 h tba 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. Staff.

MW 1-2.15 Sc (0)

Introduction to the evolutionary relationships of plant lineages. The complexity, diversity, and characteristics of the major plant groups, including the green algae, mosses, ferns, conifers, and flowering plants, within a phylogenetic context. To be taken concurrently with e&eb 247Lb. Prerequisite: a general understanding of introductory biology and evolution.

e&eb 247Lb, Laboratory for Plant Diversity and Evolution.

Staff.

T 1– Sc ½ C Credit (26)

Local flora field research; hands-on experience with the plant groups examined in the accompanying lectures. To be taken concurrently with e&eb 246b.

e&eb 250a, Biology of Terrestrial Arthropods.

Marta Martínez Wells.

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 251La**,
**Laboratory for Biology of Terrestrial Arthropods.** Marta Martínez Wells.

W 1.30– Sc ¼ C Credit (o)
Comparative anatomy, dissections, identification, and classification of terrestrial arthropods; specimen collection; field trips. *Concurrently with or after* E&EB 250a.

[**E&EB 251b**,
**Invertebrates I**]

[**E&EB 256Lb**,
**Laboratory for Invertebrates I**]

**E&EB 264b**,
**Ichthyology.** Staff.

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. *Concurrently with* E&EB 264b.

**E&EB 265Lb**,
**Laboratory for Ichthyology.** Staff.

T 1.30–4 Sc ¼ 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 264b.

**E&EB 272b**,
**Ornithology.** Richard Prum.

MWF 9.25–10.15 Sc (32)
An overview of avian biology and evolution, including the structure, function, behavior, and diversity of birds. The evolutionary origin of birds, avian phylogeny, anatomy, physiology, neurobiology, breeding systems, and biogeography.

**E&EB 273Lb**,
**Laboratory for Ornithology.** Richard Prum.

T 2.30– Sc ¼ C Credit (o)
Laboratory and field studies of avian morphology, diversity, phylogeny, classification, identification, and behavior. *Concurrently with* E&EB 272b.

**E&EB 275a**/EVST 400a,
**Biological Oceanography.**

Mary Beth Decker.
For description see under Environmental Studies.

**ADVANCED EEB COURSES**

**E&EB 330G/EVST 330a/F&ES 330a, Ecosystem Analysis.** Melinda Smith, Peter Raymond.

TRb 1–5 Sc (o)
An outdoor overview of the study of ecosystems. How the structure of ecosystems develops (e.g., biodiversity) and how ecosystems function (e.g., process nutrients or pollutants). The impact of global changes, such as climate change and eutrophication, on ecosystem structure and function. Field-based group and independent projects focused on New England ecosystems. *Prerequisite: E&EB 220a or permission of instructor.*

[**E&EB 426a**, Phylogenetics and Macroevolution]
Principles of evolutionary biology applied to issues in medical research and practice, such as lactose and alcohol tolerance; the “hygiene hypothesis”; genetic variation in drug response and pathogen resistance; spontaneous abortions, immune genes, and mate choice; the evolution of aging; the ecology and evolution of disease; and the emergence of new diseases. Students develop proposals for research to be conducted during the summer. *Admission by competitive application; forms are available on the EEB Web site.*

**EEB Research and Tutorials**

*EEB 470a or b, Tutorial.* Marta Martínez Wells.

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 9, for the fall term and Wednesday, January 20, for the spring term. The final paper is due in the hands 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.*

*EEB 475a or b, Research.* Marta Martínez Wells.

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, preferably during the term preceding the research. Proposals are due Wednesday, September 9, for the fall term and Wednesday, January 20, for the spring term. The final research paper is due in the hands of the director of undergraduate studies by Friday, December 11, for the fall term and Monday, April 26, for the spring term. *Fulfills the senior requirement for the B.A. degree if taken in the senior year.*
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 by September 9. Interim oral reports and a final written research paper are required. The final paper is due Monday, April 26. Credit only on completion of both terms. 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.

**MCDB 200b, Molecular Biology.** Stephen Dellaporta, Sidney Altman, Thomas Pollard, Matthew Rodeheffer.

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.** Shirleen Roeder, Martín García-Castro, Jeffrey Powell.

TH 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 1.45-5 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, Valerie Horsley.
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, Scott Holley, Douglas Kankel.
MW 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.

MCDB 215a/E&EB 210a/G/STAT 101a, INTRODUCTION TO STATISTICS: LIFE SCIENCES. Jonathan Reuning-Scherer and staff.
For description see under Statistics.

*MCDB 230b/MBB 230b, RAIN FOREST EXPEDITION AND LABORATORY. Scott Strobel, Carol Bascom-Slack, Lori-Ann Boulanger.
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 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. Christine Jacobs-Wagner, Savithranma Dinesh-Kumar.
TTh 1-2.15 Sc (26)

Cell structure of microorganisms, bacterial genetics, microbial evolution and diversity, 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)

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 300a<sup>G</sup> / MB&amp;B 300a, Biochemistry.** L. Nicholas Ornston, Ronald Breakeer, 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&amp;B 251La, Laboratory for Biochemistry.**

William Konigsberg, Aruna Pawashe.

For description see under Molecular Biophysics & Biochemistry.

**MCDB 310a<sup>G</sup> / BENG 350a<sup>G</sup>, 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.

**TTh 11:35-12:50 Sc Meets RP (0)**

Human biology and disease as a manifestation of reaction to injury. 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&amp;B. Prerequisite: MCDB 205b, 300a, or 310a.*

**MCDB 320a<sup>G</sup>, 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.*

**MCDB 321La<sup>G</sup>, Laboratory for Neurobiology.** Haig Keshishian, Robert Wyman.

**T or W 1:30–Sc 1/2 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.*

**MCDB 341La or Lb, Laboratory in Electron Microscopy.**

Barry Piekos.

**Sc 1/2 C Credit Meets RP (0)**

**341La: T 1:30–**

Techniques in light and electron microscopy. *Enrollment limited; preference given to senior Biology and MB&amp;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. After or concurrently with MCDB 320b.*

**MCDB 342La<sup>G</sup>, Laboratory in Nucleic Acids I.** Kenneth Nelson.

**TTh 1:30–Sc 1/2 C Credit (0)**

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.
**MCDB 343La, Laboratory in Nucleic Acids II.** Kenneth Nelson.

**TH 1:30– Sc ½ C Credit (o)**

Continuation of MCDB 342La 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. **Prerequisite: MCDB 342La or permission of instructor. Enrollment limited.**

Special registration procedures apply. Students must consult the instructor prior to the first week of classes.

**MCDB 344Lb, Experimental Techniques in Cellular Biology.**

Joseph Wolenski.

**MW 1:30-6:30 Sc ½ C Credit (o)**

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, gel fractionation, light microscopy, drug studies, bacterial cultures, and methods of transfection and transformation. **Prepares for MCDB 475a or b or 485a, 486b or 495a, 496b. Enrollment limited. Prerequisite: MCDB 205b.**

Special registration procedures apply. Students must contact the instructor by October of the fall term for spring registration.

**MCDB 345Lb, Experimental Strategies in Cellular Biology.**

Joseph Wolenski.

**MW 1:30-6:30 Sc ½ C Credit (o)**

Continuation of MCDB 344Lb, 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 485a, 486b or 495a, 496b. Enrollment limited. Prerequisite: MCDB 344Lb.**

Special registration procedures apply. Students must contact the instructor by October of the fall term for spring registration.

**MCDB 365a, Experimental Strategies in Molecular Cell Biology**

**MCDB 361b/G/AMTH 465b, Systems Modeling in Biology**


**MW 11:35-12:30 Sc (34)**

The principles and applications of cellular, molecular, and chemical techniques that advance biotechnology. 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 or 300a.**

**MCDB 375bG, Advances in Plant Molecular Biology.** Vivian Irish.

**M 7-8:30 P.M. Sc (o)**

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.**
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.

Electronic permission key required. Students must contact the instructor prior to the first week of classes.


Th 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 415b, Cellular and Molecular Physiology.

Emile Boulpaep, Frederick Sigworth.

MWF 9.25-10.15 Sc (32)
Study of the processes that transfer molecules across membranes. 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.

MCDB 425a/MBB 425a, Basic Concepts of Genetic Analysis.

Tian Xu, Michael Koelle, Shirleen Roeder, and staff.

For description see under Molecular Biophysics & Biochemistry.


MWF 9.25-10.15 Sc (32)


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 440b, 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.
For description see under Molecular Biophysics & Biochemistry.

MCDB 460bG, Cell Biology of the Neuron. Elke Stein and staff.
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.
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 734 KBT by Friday, September 11, for the fall term and Tuesday, 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.
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 485a, 486b. 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 Friday, September 11, for the fall term and Tuesday, 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 485a and 486b, Research in Biology. Mark Mooseker.
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 Friday, September 11, 2009. Credit only on completion of both terms. Fulfills the senior requirement if taken in the senior year.

**MCDB 495a and 496b, Intensive Research in Biology.**
Mark Mooseker.

**HTBA 2 C Credits per term (0)**
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 Friday, September 11, 2009. Credit only on completion of both terms. 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. 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: Lawrence Staib, N309 B TAC, 785-5958, lawrence.staib@yale.edu [F]; James Duncan, N309 D TAC, 785-2427, 313 MEC, 432-9917, james.duncan@yale.edu [Sp]

**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**
Robin de Graaf, Francesco d’Errico, Fahmeed Hyder, Laura Niklason, Xenophon Papademetris, Lawrence Staib (Electrical Engineering), Hemant Tagare

**Assistant Professors**
Tarek Fahmy, Anjelica Gonzalez, Themis Kyriakides, Michael Levene, Erik Shapiro

**Lecturer**
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 355La and 356Lb, 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 at least nine course credits, including at least three required courses in the chosen track, both terms of the Biomedical Engineering Laboratory (BENG 355La, 356Lb), and the two-term senior requirement.

All students in the major are required to take the following three-term courses and one yearlong laboratory sequence: BENG 350a, 351a, 352b, and 355La, 356Lb. Students in the bioimaging track must also take three courses chosen from EENG 310b, BENG 410a, 421b, 436b, 449a, 449b, or CPS 475b. Students in the biomechanics track must also take three courses chosen from MENG 185b, 280a, 361a, BENG 410a, 434a, or 437b. 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.

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; MATH 112a or b, 115a or b; MATH 120a or b or ENAS 194a or b; PHYS 180a, 181b, and 205La or Lb, 206La or Lb (or 165La, 166Lb with DUS permission)

Number of courses: 10 term courses, totaling at least 9 course credits, beyond pre-reqs (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, 355La, 356Lb; Bioimaging track—3 from EENG 310b, BENG 410a, 421b, 436b, 445a, 449b, or CPS 475b; Biomechanics track—3 from MENG 185b, 280a, 361a, BENG 410a, 434a, or 457b; Molecular engineering track—3 from BENG 410a, 434a, 435b, 449b, 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)

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BENG 100b, Frontiers of Biomedical Engineering.
Mark Saltzman.

TH 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. Tarek Fahmy.

TH 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, Fahmed Hyder.

TH 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 355La and 356Lb, 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.


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. Staff.

TH 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.


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.


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.

[beng 445a/eeng 445aG, Biomedical Image Processing and Analysis]
**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.

**TTH 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.** Staff.

**MW 9.25-10.15, W 2.30-4.20 Sc 1/2 C Credits (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.

**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.**

**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.


**TTH 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 or architecture, literature, and drama. Further information and application forms are available at http://ycba.yale.edu/education/edu_yil.html. Inquiries may also be directed to yaleinlondon@yale.edu. The application deadline for spring term 2010 is Friday, October 9, 2009. 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 address. Applications for summer 2010 are due Friday, January 8, 2010.

*BRST 175b, AMERICANS ABROAD. Susan Chambers. 

*BRST 176b, THE LONDON STAGE. Susan Chambers. 
A study of drama in performance, tailored to incorporate current offerings in London theaters. Development of a vocabulary for responding to and analyzing plays and performances.

BRST 177b, BRITISH ART AND LANDSCAPE. Martin Postle. 
The role of visual art in articulating cultural, literary, political, and environmental approaches to the landscape of the British Isles in the period from 1660 to 1860. Artists include Jan Siberechts, George Lambert, Thomas Gainsborough, Richard Wilson, J. M. W. Turner, and John Constable.

*BRST 322b, POLITICS AND SOCIETY IN GREAT BRITAIN, 1688–1832. Leslie Mitchell. 
Political and cultural aspects of the “long eighteenth century.” Oligarchical structures; the rule of property; the American and French Revolutions; problems presented by Ireland and India; marriage, divorce, and notions of gender; crime; religious movements; the advance of consumerism; and the “culture of politeness.”

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 Benoit, †Stephen Edberg, 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
Chemical engineering has made significant contributions to a diverse range of scientific and technological developments such as drug delivery devices; synthesis and purification of valuable chemicals; environmental remediation, including automotive catalytic converters; fuel cells; and synthesis and semiconductor processing. The far-reaching impact of chemical engineering can be attributed to its focus on basic principles from chemistry, physics, and biology and its systematic quantitative approach to analysis and problem solving.

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 both laboratory and theory/computation-based research opportunities. Most majors participate in research with faculty members, often leading to an archival 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 Engineering Accreditation Commission of ABET, Inc., 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, and 116La, 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
2. **Chemistry:** CHEM 220a or b or 225b; 221b or 227a; 332a, 333b, and 330La
3. **Engineering science:** MENG 361a and three term courses chosen from engineering 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 b 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.

**REQUIREMENTS OF THE MAJOR**

**CHEMICAL ENGINEERING, B.S.**

**Prerequisites:** MATH 112a or b, 115a or b, ENAS 151a or equivalent; CHEM 114a, 115b, and 116La; 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 b or 225b; 221b or 227a; 332a, 333b, and 330La; MENG 361a; CENG 210a, 300a, 301b, 315b, 411a, 412b, 480a

**Distribution of courses:** 3 addtl electives in engineering

**Senior requirement:** CENG 416b

**ENGINEERING SCIENCES (CHEMICAL), B.S.**

**Prerequisites:** MATH 112a or b, 115a or b, ENAS 151a or equivalent; CHEM 114a, 115b, and 116La; 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 b 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.

**MATH 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.

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**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.

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**CENG 315B/ENVE 315B, Transport Phenomena.**

Michael Loewenberg.

**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/or 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.

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**CENG 351A/BENG 351A, Biomedical Engineering I: Quantitative Physiology.**

Tarek Fahmy.

For description see under Biomedical Engineering.

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**CENG 373A/ENVE 373A, Air Pollution Control.**

Yehia Khalil.

For description see under Environmental Engineering.

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**CENG 377A/ENVE 377A, Water Quality Control.**

William Mitch.

For description see under Environmental Engineering.

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**CENG 410A, Biomolecular Engineering.**

Corey Wilson.

**TTTh 1-2:15, 1 HTBA Meets RP (26)**

A survey of the principles and scope of biomolecular engineering. Discussion of concepts at the interface of applied mathematics, biology, biophysical chemistry, and chemical engineering that are used to develop novel molecular tools, materials, and approaches based on biological building blocks and machinery. Modeling the physicochemical properties that confer function in biological systems; low- and high-resolution protein engineering; the design of synthetic interactomes.

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**CENG 411A, Separation and Purification Processes.**

Paul Van Tassel.

**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.

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 311B 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.

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 (0)
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.

The wide range of courses offered by the Department of Chemistry reflects the position of chemistry as the foundation of all the molecular sciences. In addition to graduate work in chemistry, biochemistry, or health-related disciplines, the department's graduates find their broad scientific training useful in fields such as technology policy, business management, and law. Chemistry is an especially appropriate major for students interested in energy research or policy and the environment.

Courses for nonmajors without prerequisites. Three one-term courses with no prerequisites are offered for non-science majors: chem 101a, Chemistry in the Modern World, chem 102a, Introduction to Green Chemistry, and chem 103b, Chemistry, Energy, and the Environment. They do not satisfy medical school requirements or the general chemistry requirement for any science major.

Introductory courses and placement. 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 prerequisite for general chemistry in the Chemistry major. A typical student in chem 112a may have taken a year of high school chemistry, but has not been exposed to the problem-solving approach used in many university-level science courses. Students in chem 114a may have taken one or possibly 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 in chem 114a last took chemistry as sophomores in high school. Students in chem 118a have done well in an advanced placement chemistry course or shown other evidence of high achievement in science and mathematics. For instance, students with a Chemistry Advanced Placement test score of 5 are placed into chem 118a.

Students with a sufficiently strong background in chemistry may initiate their studies with courses in organic or physical chemistry after demonstrating proficiency on the department's placement examination. chem 124a
and 125b, Freshman Organic Chemistry, is designed expressly for freshmen. Other courses in organic chemistry, CHEM 220a and 221b, or 225b and 227a, are also available to qualified freshmen. Students with a strong background in physics and calculus may be eligible for the physical chemistry courses CHEM 332a and 333b.

Placement procedures. The Chemistry department reviews the admission records of all freshmen prior to the beginning of the fall term. Using test scores and information supplied by students in preregistration, the department determines the appropriate general chemistry course for every entering freshman, either CHEM 112a, 114a, or 118a. Students will be able to view their initial placement in late August by following links provided at http://chem.yale.edu/undergrad. Placement updates will be posted on the same site during registration week in the fall term.

Freshmen wishing to take CHEM 124a, 220a, or 332a, or those wishing to take a higher-level course than their initial assigned placement, are required to take a placement examination on the first day of registration week in the fall term. Students who feel they have been incorrectly placed at too high a level may discuss changing their placement with a chemistry placement adviser and do not need to take the examination. Students uncertain about their placement are encouraged to sit for the examination, as it provides the best measure of a student’s readiness to enter the wide variety of courses offered to freshmen.

Students with placement questions, or those wishing to change their course preference indicated during preregistration, should attend the department’s orientation meeting prior to the placement examination. Additional sessions with placement advisers are scheduled throughout the first week of the fall term in SCL at times listed in the Calendar for the Opening Days of College. Students wishing to change their placement should consult an adviser as soon as possible.

Students are advised to review general chemistry before taking the placement examination. Use of an electronic calculator is permitted. Times and places for the examination are published in the Calendar for the Opening Days of College. After the examination, final placements are posted at http://chem.yale.edu/undergrad. For further information about placement and the examination, consult the Calendar for the Opening Days of College, the Freshman Handbook, and http://chem.yale.edu/undergrad.

Permission keys. Enrollment in all introductory chemistry courses requires an electronic permission key. Keys are automatically issued by the department for entering freshmen, and are displayed as green key-shaped icons next to the appropriate courses on the online registration page. Students are blocked from enrolling in any chemistry course for which they do not possess a permission key. Students experiencing problems with permission keys should inquire in person at the department office, SCL.

Section registration in laboratory and lecture courses. Information about online registration for laboratory and discussion sections can be found in the description for each laboratory or lecture course at www.yale.edu/courseinfo. Due to the nature of laboratory exercises, it is impractical to preview laboratory courses during the course selection period.

Placement information for upperclassmen. Upperclassmen wishing to take CHEM 114a, 115b or 118a must first confirm their placement and obtain permission keys by inquiring at the department office, SCL. Because CHEM 112a and 113b are restricted to freshmen, upperclassmen are placed into either CHEM
114a or 118a. Upperclassmen wishing to enroll in CHEM 220a or b or 225b may do so, as long as they have satisfied the general chemistry prerequisite.

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 CHEM 112a and 113b, or 114a and 115b, or CHEM 328a or 332a followed by 333b. Students taking CHEM 118a often complete this requirement by taking either CHEM 252b and 251Lb or a course in biochemistry with laboratory. Students should consult with Undergraduate Career Services for the most up-to-date premedical course advice.

Major degree programs. Four degree programs are offered: a B.S., an intensive B.S., a B.A., and a combined B.S./M.S. The B.S. degree is pursued by the greatest number of majors. It is intended to prepare students for graduate study while permitting extensive exploration of other disciplines. The intensive B.S. provides more focused preparation for a career in chemical research, and requires greater breadth in laboratory courses and electives. Students electing the intensive B.S. can also satisfy the requirements for a certified degree in chemistry as set forth by the American Chemical Society. The B.A. is intended for students who want solid training in the chemical sciences, and who also intend to study other subjects in which chemical training would be an asset, such as technology policy, economics, the environment, or medicine. The combined B.S./M.S. is designed for students whose advanced preparation qualifies them for graduate-level work in their third and fourth years of college.

Degree requirements common to all Chemistry degree programs. One year of general chemistry and laboratory, or the equivalent in advanced placement, is a prerequisite to all four degree programs. In addition, all degrees require a year of organic chemistry (CHEM 124a or 220a or b or 225b, and 125b or 221b or 227a) and laboratory (CHEM 126La or 222La or Lb, and 127Lb or 223La or Lb), a year of physical chemistry (CHEM 332a or 328a and 333b, except for the B.A., which does not require 333b) and one term of laboratory (CHEM 330La), and a term course in inorganic chemistry (CHEM 252b or higher). No chemistry courses taken Credit/D/Fail may be counted toward the major (including substitutions for advanced courses).

Prerequisites outside the Chemistry department. Each degree program requires a course in physical chemistry. Single-variable calculus and college-level physics are required for the physical chemistry courses. Students are also encouraged to complete a course in multivariable calculus and a physics course that uses calculus.

B.S. degree. In addition to the prerequisites and common degree requirements, the B.S. requires completion of an additional half-credit chemistry laboratory elective and four additional course credits of advanced chemistry lecture or laboratory courses. At least one of the advanced courses must be a lecture course in chemistry. One term of CHEM 490a or b involving original research may be applied toward the advanced-course requirement.

Intensive B.S. degree. The requirements for the intensive degree are the same as those for the B.S., except that the laboratory elective requirement is increased to one full course credit, and five, rather than four, advanced chemistry courses are required. The five advanced courses must include two terms of the independent research course CHEM 490a or b.

B.A. degree. The B.A. degree requires completion of the prerequisites, the common degree requirements, and three course credits of advanced chemistry
lecture or laboratory courses, one of which may be chem 490a or b. At least one of the advanced courses must be a lecture course in chemistry. chem 333b can be counted toward this requirement, although not as the sole advanced chemistry lecture course offered.

**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. Two terms of chem 490a or b 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. The B.S./M.S. degree program requires completion of the intensive B.S. requirements, a physics course at the level of 200 or higher, and eight graduate courses in chemistry (four of which count toward the B.S.). Four terms of research are required, including two terms of research taken in chem 990.

**Advanced courses.** For the purposes of degree requirements, all chemistry courses numbered 400 or higher count as advanced lecture or laboratory courses, as do chem 224La or Lb, 226La or Lb, 251Lb, 331Lb, MB&B 300a, 301b, and 360Lb.

**Substitutions for required courses.** Up to two terms of advanced science courses outside chemistry may be counted as electives, with the written approval of the director of undergraduate studies. Students without advanced placement who complete chem 116La and 117Lb may count one-half course credit of physics laboratory toward the laboratory requirement, with approval of the director of undergraduate studies. chem 490a or b may not in any circumstances be substituted for any of the laboratory requirements. The graduate courses chem 362, 364, and 365 may not be counted toward any requirement of the major.

**Senior requirement.** Senior B.S. and intensive B.S. majors prepare a written report and give an oral presentation on their independent project in chem 490b. Research papers are expected to be fifteen to twenty-five pages in length (double-spaced, twelve-point font, exclusive of figures and bibliography). Students pursuing the B.A. typically do not pursue independent research, but instead write a senior essay under the guidance of a faculty member as arranged by the instructor of chem 490b. The senior essay option may also be elected by B.S. students. The requirements of the senior essay are the same as those for research papers. Students electing the senior essay must secure a faculty sponsor by the middle of the fall term.

**Sequence of courses.** Majors are encouraged to begin their programs in the freshman year to provide the greatest flexibility in scheduling. It is possible, however, to complete the B.S. in as little as six terms if a student has advanced placement. One sample B.S. program follows, but many others are possible:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>chem 118a, 119La, 252b, 251Lb, math prereq</td>
<td>chem 220a, 221b, 222La, 223Lb, physics prereq</td>
<td>chem 332a, 333b, 330La, 1 elective</td>
<td>chem 490b, 2 electives</td>
</tr>
</tbody>
</table>
Approval of major programs of study. All Chemistry majors in the sophomore, junior, and senior years must have their programs approved by the director of undergraduate studies. A program tailored to each major’s goals is created and recorded on a Chemistry Course of Study form kept in the student’s file in the department office. Majors who have a current course of study form on file may have their schedules signed by the director of undergraduate studies or any of the advisers to the major: J. Michael McBride, Patrick Vaccaro, or Kurt Zilm.

Special restrictions on lecture courses. Completion of the first term of any yearlong chemistry lecture sequence (CHEM 112a and 113b, 114a and 115b, 124a and 125b, 220a or b and 221b, 225b and 227a, and 322a and 333b) with a passing grade is a prerequisite for registration in the subsequent term. Students receive credit for only one chemistry sequence of any given type. For example, a student who has completed CHEM 112a and 113b may not subsequently enroll in CHEM 118a; a student who has completed CHEM 124a and 125b may not subsequently enroll in CHEM 220a or b. Similarly, students may not enroll in a course that is a prerequisite to a course they have already taken. Thus, for example, a student who has completed an organic chemistry laboratory cannot subsequently enroll in a general chemistry laboratory.

Special restrictions on laboratory courses. Chemistry courses may be taken without the accompanying laboratory (except CHEM 124a and 125b, for which CHEM 126La and 127Lb are corequisites), although the department does not recommend it. 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.

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 Chemistry Year Abroad coordinator, Robert Crabtree. For general information about the Year or Term Abroad, see chapter II of this bulletin.

REQUIREMENTS OF THE MAJOR

Prerequisites: CHEM 112a and 113b, or 114a and 115b, or 118a; CHEM 116La and 117Lb, or 119Lb; MATH 112a or b, 115a or b (MATH 120a or b or ENAS 151a suggested); PHYS 180a and 181b, or 200a and 201b (150a, 151b acceptable), or equivalents in advanced placement

Number of courses: B.A. — 10 term courses, totaling 9 course credits; B.S. — 13 term courses, totaling 11 1/2 course credits; Intensive B.S. — 14 or 15 term courses, totaling 13 course credits

Specific courses required: All degrees — organic chem (CHEM 124a, 125b, or 220a or b, 221b, or 225b, 227a); organic chem lab (CHEM 126La, 127Lb or 222La or Lb, 223La or Lb); physical chem I (CHEM 328a or 332a); inorganic chem (CHEM 352b, 452b, 452a, or 457a); physical chem lab I (CHEM 330La); B.S. — CHEM 333b; Intensive B.S. — CHEM 333b, two terms of CHEM 490a or b

Distribution of courses: B.A. — 3 course credits in advanced lectures or labs; B.S. — addtl lab for 1/2 course credit; 4 course credits for advanced lectures or labs; Intensive B.S. — addtl labs for 1 course credit; 5 course credits in advanced lectures or labs

Substitution permitted: Up to 2 relevant advanced science courses in other depts for advanced chem courses with DUS permission

Senior requirement: CHEM 490b or senior essay
COURSES FOR NONMAJORS WITHOUT PREREQUISITES

**chem 101a, Chemistry in the Modern World.**  N. Ganapathi.  
**Lect.** TTh 9-10.15 Sc (22)
Basic concepts necessary to understand how chemistry affects life in the modern world. Laws, events, and other ways that chemistry shapes human lives. \textit{_intended for non-science majors; no prerequisites. Does not satisfy premedical chemistry requirements or requirements for the Chemistry major. Not open to students who have completed another chemistry course at Yale.}

**chem 102a, Introduction to Green Chemistry.**  Paul Anastas.  
**Lect.** TTh 1-2.15; disc. M 4-4.30 or Th 7-7.50 P.M. (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. \textit{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.}

**Lect.** TTh 1-2.15; disc. M or W 7-7.50 P.M. Sc (26)
Introduction to principles that govern chemical processes in everyday life, with emphasis on the production and use of energy. Exploration of constraints imposed by the laws of thermodynamics and the underlying nature of chemical reactions, as well as associated direct and environmental costs. \textit{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. Not open to students who have completed another chemistry course at Yale.}

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, 220a, or 332a must also 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. Time and place for the orientation meeting and placement examination are listed in the Calendar for the Opening Days of College. For further information on placement see the text above and the Freshman Handbook.

**chem 112a, Chemistry with Problem Solving I.**  Jonathan Parr.  
**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.
A systematic introduction to chemistry. Topics include atomic/molecular structure, stoichiometry, thermodynamics, 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. \textit{Attendance at one discussion section and one problem-solving section required. Enrollment limited to freshmen, by placement only.}
*chem 113b, Chemistry with Problem Solving II.  Jonathan Parr.
  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.
Continuation of chem 112a. Phase-dependent properties of matter, solutions and their behavior, chemical equilibrium, chemical kinetics, and the chemistry of the elements. Attendance at one discussion section and one problem-solving section required. Enrollment limited to freshmen, by placement only.

*chem 114a, Comprehensive General Chemistry I.  Victor Batista.
  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. 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. Attendance at a weekly discussion section required. Normally accompanied by chem 116La. Enrollment by placement only.

*chem 115b, Comprehensive General Chemistry II.
  Charles Schmuttenmaer.
  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
Continuation of chem 114a. Kinetics, chemical equilibrium, acid-base chemistry, free energy and entropy, electrochemistry, nuclear chemistry, and descriptive chemistry of the elements. Attendance at a weekly discussion section required. After chem 114a. Normally accompanied by chem 117Lb. Enrollment by placement only.

chem 116La, General Chemistry Laboratory I.  N. Ganapathi.
  mtwtth or F 12-4 or 1-5  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. To accompany or follow chem 112a or 114a. May not be taken after a higher-numbered laboratory course.

chem 117Lb, General Chemistry Laboratory II.  N. Ganapathi.
  mtwtth or F 12-4 or 1-5  Sc  ½ C Credit  Meets RP (0)
Continuation of chem 116La. Introduction to rate and equilibrium measurements, acid-base chemistry, synthesis of inorganic compounds, and qualitative/quantitative analysis. After chem 116La. To accompany or follow chem 113b or 115b. May not be taken after a higher-numbered laboratory course.

*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 course emphasizing conceptual aspects and physical principles in general chemistry. Fulfills the general chemistry prerequisite for organic chemistry. Enrollment by placement only.

chem 119La, Laboratory for Comprehensive General Chemistry.
  Jonathan Parr.
  mtwtth 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.

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. Must be taken concurrently with chem 126La.


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.

Continuation of chem 124a. Survey of simple and complex reaction mechanisms, spectroscopy, organic synthesis, and the molecules of nature. After chem 124a. Must be taken concurrently with chem 127Lb.

chem 126La, Laboratory for Freshman Organic Chemistry I.

Christine DiMeglio.

mt or w 1-5, or th 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 w 1-5, or th 12-4 Sc ½ 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 or b, Organic Chemistry. Frederick Ziegler [F], Seth Herzon [Sp].

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 or Lb. Discussion section at 12.30 is offered in fall term only. After college-level general chemistry. Students who have earned a grade lower than C in general chemistry 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 223La or Lb. After chem 220a or b. Students who have earned a grade lower than C in general chemistry are cautioned that they may not be sufficiently prepared for this course.

chem 222La or Lb, Laboratory for Organic Chemistry I.

Christine DiMeglio.

mtw or f 1-5 or th 12-4 Sc ½ C Credit (0)

First term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. After or concurrently with chem 220a or b or 225b. Prerequisite: chem 117Lb or equivalent.
CHEM 223La or Lb, Laboratory for Organic Chemistry II.
Christine DiMeglio.
MTW or F 1-4 or TH 12-4 Sc ½ C Credit (0)
Second term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. 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 1-5 or TH 12-4 Sc ½ 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]

CHEM 226La or Lb, Intensive Advanced Chemistry Laboratory.
Christine DiMeglio, Jonathan Parr.
T 1-5 and TH 12-4 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 225La or Lb. For enrollment procedures, contact the instructors.

CHEM 227a, Comprehensive Organic Chemistry II.
Martin Saunders.
Lect. MWF 9.25-10.15 Sc Meets RP (32)
Disc. M or W 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 220a or b or 225b.

CHEM 251Lb, Inorganic Chemistry Laboratory.
Jonathan Parr.
MTW or TH 1-5 Sc ½ C Credit (0)
Introductory laboratory course covering synthetic and physical characterization techniques in inorganic chemistry. After chem 119La or 126La or 222La or Lb; concurrently with or after chem 252b.

CHEM 252b, Introductory Inorganic Chemistry.
Robert Crabtree.
Lect. MWF 10.30-11.20 Sc Meets RP (33)
Disc. M or T 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. After chem 113b, 115b, or 118a. May not be taken after chem 450b, 452a, or 457a.

CHEM 328a, Physical Chemistry with Applications in the Biological Sciences.
Elsa Yan.
Lect. TH 9-10.15 QR, Sc Meets RP (22)
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. Thermodynamics, chemical and biochemical kinetics, solution physical
chemistry, electrochemistry, and membrane equilibria. **Chem 332a is preferred for Chemistry majors. Prerequisites: introductory physics, college-level general chemistry, and single-variable calculus required; Math 120a or b or ENAS 151a suggested; 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)

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. Meets on Wednesday, Thursday, and Friday from 1.30 to 2.20 for the first week of the term.*

**Chem 331Lb, Laboratory for Physical Chemistry II.**
R. James Cross, Jr., N. Ganapathi.

* Lect. F 1:30-2.20; lab MTW or TH 1-5 Sc Meets RP (36)

Continuation of Chem 330La. Application of physical methods to chemical analysis by spectroscopic and spectrometric techniques. *After or concurrently with Chem 333b. After Chem 330La. 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.** R. James Cross, Jr.

* Lect. MWF 9.25-10.15 QR, Sc Meets RP (32)
* Disc. M or T 1.30-2.20 or MT or W 7-7.50 p.m.

A comprehensive survey of modern physical and theoretical chemistry, including topics drawn from thermodynamics, chemical equilibrium, electrochemistry, and kinetics. *Prerequisites: introductory physics, college-level general chemistry, and single-variable calculus required; Math 120a or b or ENAS 151a suggested; or permission of instructor. May not be taken after Chem 328a.*

**Chem 332b, Physical Chemistry with Applications in the Physical Sciences II.** Patrick Vaccaro.

* Lect. MWF 9.25-10.15 QR, Sc Meets RP (32)
* Disc. M or T 1.30-2.20 or MT or W 7-7.50 p.m.

Continuation of Chem 332a, including topics drawn from quantum mechanics, atomic/molecular structure, spectroscopy, and statistical thermodynamics. *Prerequisites: Chem 328a or 332a required; familiarity with differential equations recommended; or permission of instructor.*

**Advanced Courses**


* MW 11.35-12.50 Sc Meets RP (34)

Concise overview of structure, properties, thermodynamics, kinetics, reactions, and intermolecular interactions for organic molecular systems. *Prerequisites: Chem 123b, 221b, or 227a, Chem 328a or 332a, and Chem 333b.*

**Chem 421G, Chemical Biology.** Alanna Schepartz.

* TH 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 133b, 221b, or 227a, and MCDB 120a or equivalent.*
David Spiegel.
MWF 10:30-11:20 Sc Meets RP (33)
A discussion of modern methods. Functional group manipulation, synthesis and functionalization of stereodefined double bonds, carbonyl addition chemistry, and synthetic designs. Normally taken only by students with a special interest in organic synthesis; for others, CHEM 418a is more appropriate. Prerequisite: CHEM 125b, 221b, or 227a, or permission of instructor.

MWF 11:35-12:25 Sc Meets RP (34)
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 and CHEM 333b.

CHEM 426bG, Computational Chemistry and Biochemistry.
William Jorgensen.
TRH 9-10:15 QR, Sc Meets RP (22)
An introduction to modern computational methods employed for the study of chemistry and biochemistry, including molecular mechanics, quantum mechanics, statistical mechanics, and molecular dynamics. Special emphasis on the hands-on use of computational packages for current applications ranging from organic reactions to protein-ligand binding and dynamics. After organic chemistry and physical chemistry.

CHEM 430bG, Statistical Mechanics and Thermodynamics.
Victor Batista.
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.
Let.: 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. Prerequisite: CHEM 333b or permission of instructor.

CHEM 442bG, Molecules and Radiation II. Mark Johnson.
MW 11:35-12:50 QR, Sc Meets RP (34)
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.

*CHEM 449bG, Biophysical Chemistry. Peter Moore.
TRH 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 450b, Advanced Inorganic Chemistry. John Faller.

TTH 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 physical methods used in the determination of molecular structure and the bonding of polyatomic molecules. May be taken independently of CHEM 432a. Prerequisites: CHEM 328a or 332a and CHEM 333b; CHEM 457a or equivalent and an introduction to quantum mechanics strongly recommended.

CHEM 452a, Organometallic Chemistry. Nilay Hazari.

TTH 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.

CHEM 457a, Modern Coordination Chemistry. John Faller.

TTH 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 470a, Introductory Quantum Chemistry. John Tully.

TTH 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 333b, and MATH 120a or b or ENAS 151a.

*CHEM 490a or b, Independent Research in Chemistry.

Jonathan Parr.

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. 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. Enrollment limited to junior and senior Chemistry majors except with permission of the course instructor.

To enroll, the student must complete a CHEM 490a or b 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 490a or b must also consult with the director of undergraduate studies for approval of their projects by midterm of the term preceding enrollment in CHEM 490a or b.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Information on graduate courses of interest to Chemistry majors is available from the assistant to the director of undergraduate studies in SCI and on line at www.yale.edu/courseinfo. Enrollment requires permission of the director of undergraduate studies, 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 (o)
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 (o)
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.

★CHLD 128b/★PSYC 128b/★TPRP 128b, LANGUAGE, LITERACY, AND PLAY.

Nancy Close, Carla Horwitz.

W 9:25-11:15 WR, So Meets RP (o)
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.

Ami Klin, Fred Volkmar.

T 3:30-5:20 So Meets RP (o)
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.*

**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: Celia Schultz, 202 Phelps, 432-0991, celia.schultz@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*)
- Joseph Manning
- John Matthews
- William Metcalf (*Adjunct*)

**Associate Professors**
- Emily Greenwood
- Celia Schultz

**Assistant Professors**
- Alexander Beecroft
- John Fisher
- Milette Gaifman
- Pauline LeVen
- Irene Peirano
- Barbara Sattler

**Lecturers**
- Veronika Grimm
- Susan Matheson
- Timothy Robinson
- 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.

1. **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. 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: 10 term courses
Specific courses required: GREK 390a or LATN 390b; CLCV 254a and 255b
Distribution of courses: Two literatures—6 courses in both languages at level 390 or above, with at least 5 at 400 level or above; 1 course in ancient hist; 1 addtl course in ancient hist, classical art and archaeology, or classical civ; One literature—6 courses in lit at level 390 or above, with at least 5 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
Substitution permitted: One literature—2 courses in the other lit numbered 131 or higher for 2 courses in major lit at 400 level
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 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:** 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. 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 GREK 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: 10 term courses
Specific courses required: GREK 390a, CLCV 254a, 255b
Distribution of courses: 4 term courses in ancient Greek numbered 390 or higher; 1 term course in ancient Greek hist; 2 term courses in modern Greek numbered 130 or higher; 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

**greek 110a, Beginning Greek: The Elements of Greek Grammar.**
Staff.
 MTWThF 9.25-10.15 L1 1 C Credits Meets RP (32)
Introduction to ancient Greek. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for greek 120b. *No prior knowledge of Greek assumed.*

**greek 120b, Beginning Greek: Review of Grammar and Selected Readings.**
Staff.
 MTWThF 9.25-10.15 L2 1 C Credits Meets RP (32)
Continuation of greek 110a. Emphasis on consolidating grammar and on readings from Greek authors. The sequence greek 110a, 120b prepares for 131a or 141b. *Prerequisite: greek 110a or equivalent.* (Formerly greek 111b)

**greek 131a, Greek Prose: An Introduction.**
Staff.
 MW 10.30-11.20 L3 (32)
Close reading of selections from classical Greek prose with review of grammar. *Counts as L4 if taken after greek 141b or equivalent.* (Formerly greek 300a)

**greek 141b, Homer: An Introduction.**
Pauline LeVen.
 MW 10.30-11.20 L3 (32)
A first approach to reading Homeric poetry in Greek. Selected books of the *Iliad* or the *Odyssey.* *Counts as L4 if taken after greek 131a or equivalent.* (Formerly greek 301b)

**greek 390a, 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 418a, Apology of Xenophon.*
Emily Greenwood.
 THH 11.35-12.50 L5, Hu (24)
Close reading of Xenophon’s *Apology of Socrates,* with selected extracts from Xenophon’s *Memorabilia.* A bridge course intended to develop confidence in reading Greek prose and to introduce the corpus of apologetic literature about the life and death of Socrates. The primary focus is linguistic (grammar and syntax), with attention to competing representations of Socrates, such as that in Plato’s *Apology.*

*GREK 434a, Thucydides.*
Emily Greenwood.
 THH 2.30-3.45 L5, Hu (27)
An intensive reading of selections from Thucydides’ *History,* interpreting the Greek text in relation to its historical and intellectual context.

*GREK 450a, Euripides.*
Pauline LeVen.
 MW 11.30-12.50 L5, Hu (34)
Close reading of two late plays of Euripides: *Helen* and *Ion.* Euripides’ literary and dramatic technique; issues of myth, geography, and cultural and personal identity.

*GREK 455b, Athenian Law Courts.*
Victor Bers.
 THH 9-10.15 L5 (22)
Rhetoric and law, procedural and substantive, in the Athenian courts of the fifth and fourth centuries B.C. as seen in forensic speeches and discursive treatments, and as satirized in Aristophanes' *Wasps*.

grek 461b, Ancient Greek Wisdom Poetry. Egbert Bakker.

Selections from the corpus of archaic Greek elegy (Solon, Theognis) and didactic poetry (Hesiod, *Works and Days*).

*greek 494a or b, Independent Tutorial in Greek Language and Literature.* Consult the director of undergraduate studies.

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.

**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 Latin 120b. No prior knowledge of Latin assumed. Preregistration, which is required, is on Tuesday, September 1, at the Academic Fair in WLH from 2 to 4 p.m.

**Latin 120b, Beginning Latin: Review of Grammar and Selected Readings.** Celia Schultz.

L2 1 1/2 C 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 Latin 110a. Emphasis on consolidating grammar and on readings from Latin authors. The sequence Latin 110a, 120b prepares for 131a or 141b. Prerequisite: Latin 110a or equivalent. (Formerly Latin 111b)

**Latin 131a, Latin Prose: An Introduction.** 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 Latin 141b or equivalent. (Formerly Latin 300a)

**Latin 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 Latin 131a or equivalent. (Formerly Latin 301b)

**Latin 390b, 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.

**LATIN 411A, EARLY ROME: AENEAS TO ROMULUS.** Joseph Solodow.  
MW 9-10.15  L5, Hu (32)  
Investigation of how the Romans imagined the founding of their nation and their city, events to which they attached the highest importance yet about which they had little information. Careful reading of both prose and verse by Vergil, Livy, Ovid, and others. A bridge course between L4 and other L5 courses.

**LATIN 427A/HIST 214JA, TACITUS AND PLINY.** John Matthews.  
Th 1.30-3.20  L5, Hu (0)  
The culture of the Flavio-Trajanic period as illustrated by the historical works of Tacitus and the letters of the younger Pliny. Emphasis on the personal connections between the two writers and on their social background and literary formation.

**LATIN 430A/G, OVID’S FASTI AND EXILE POEMS.** Kirk Freudenburg.  
TTh 2.30-3.45  L5, Hu (27)  
A close reading of Ovid’s Fasti. Discussion of genre, style, and cultural context.

**LATIN 436B/G, CICERO’S LETTERS.** William Metcalf.  
MW 4-5.15  Hu (37)  
An introduction to the correspondence of Cicero, with particular attention to its social and historical context. Cicero’s changing relationships with major political figures of the day, his proconsulship, and his reaction to the fall of the Roman republic.

**LATIN 465A/G, LUCAN.** Christina Kraus.  
MW 2.30-3.45  L5, Hu (37)  
Reading of selected Latin passages from Lucan’s epic poem The Civil War (the whole poem to be read in English translation). Lucan’s manipulation of the epic tradition; the lure and nature of violence in civil war narrative.

**LATIN 494A 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.

**CLASSICS**

**CLASS 444B/G/HIST 202Jb, NUMISMATICS.** William Metcalf.  
Th 1.20-3.20  Hu (0)  
An introduction to the history of ancient coinage and the modern methodology of numismatic study. Brief consideration of the Greek background, followed by detailed treatment of the Roman republic and empire. **Prerequisite: proficiency in Greek and Latin.**

**CLASS 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

*CLCV 091b, Performance and Society in Ancient Greece.*
Pauline LeVen.

MW 4-5.15 WR, Hu (37) Fr sem
A survey of the culture and society of ancient Greece through an examination of the notion of performance. Readings in translation include passages from the *Iliad* and the *Odyssey*, Sappho, and other Greek poets, playwrights, and orators. Topics include song-culture; spectacle in ancient Greece from the dramatic stage to courtroom drama; and the importance of display for the construction of the political and social self. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

CLCV 122a/HIST 214a, The Age of Constantine.
John Matthews.

MW 11.35-12.50 Hu (34)
An exploration of the origins and reign of Constantine, and of the political, social, and cultural consequences for the Roman Empire of the emperor’s conversion to Christianity. Sources include visual evidence, literary and documentary works of the period, and the emperor’s own writings. *Readings in translation.*

*CLCV 134a, A History of Ancient Greek Medicine.*
Veronika Grimm.

TH 1-2.15 Hu (26)
An introduction to Greek medicine from the fifth century B.C. to the second century A.D., with attention to central concepts, methods, and theories. Topics include relation of scientific theories to clinical practice, to magic, to temple medicine, and to Greek philosophy.

CLCV 175a/ARC G 252a/HSAR 252a, Roman Architecture.
Diana Kleiner.

For description see under History of Art.

CLCV 204b/HIST 200b, Alexander the Great and the Hellenistic World.
Joseph Manning.

TH 11.35-12.50, 1 HTBA Hu (24)
The history and culture of the ancient world between the rise of Macedonian imperialism in the fourth century B.C.E. and the annexation of Egypt by Augustus in 30 B.C.E. Particular attention to Alexander, one of the most important figures in world history, and to the definition of “Hellenism.”

CLCV 205a/HIST 205a, Introduction to Ancient Greek History.
Donald Kagan.

TH 1-2.15, 1 HTBA Hu (26)
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.
Celia Schultz.

MW 1-2.15 Hu (36)
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, THE ROMAN EMPIRE. John Matthews.
MW 2.30-3.45, 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.

For description see under Hellenic Studies.

CLCV 217b, ANCIENT GREEK LAW. Victor Bers.
THH 2.30-3.45 Hu (27)
The punishment of crime and the adjudication of disputes in the evolving society of ancient Greece. The development of organized political mechanisms, the mass jury, and legal rhetoric; the legal treatment of homicide, sexual behavior, citizenship, religion, commerce, and slavery; fictional trials in comedy, tragedy, and rhetoric; law in the political philosophy of Plato and Aristotle; and comparisons with contemporary civil and common law systems.

*CLCV 218b/HUMS 238b/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.

CLCV 232b/HIST 208b/HUMS 233b, FOOD AND DIET IN GRECO-ROMAN ANTIQUITY. Veronika Grimm.
THH 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 238b, CLASSICS IN BLACK. Emily Greenwood.
MW 1-2.15 Hu (36)
The reception and appropriation of Greco-Roman classics in Africa and the black diaspora during the twentieth century. The same classical canon that had been used to furnish arguments for colonialism, imperialism, and racism read by black writers and artists in ways that subverted those arguments. Works include drama from Nigeria and South Africa, Caribbean poetry and autobiography, novels by Ralph Ellison and Toni Morrison, and the Odyssey collages of Romare Bearden.

CLCV 254a/LITR 158a, INTRODUCTION TO GREEK LITERATURE. Victor Bers.
MW 1-2.15, HTBA Hu (36) Tr
Survey of the literature of ancient Greece from the Archaic period to the Second Sophistic. Readings and discussion in English.

**CLCV 255b/LITR 195b, Introduction to Latin Literature.**
Kirk Freudenburg.

**CLCV 268b/LSAR 423b, The Art of Dionysos: Drink, Drama, and Ecstasy.** Milette Gaifman.
For description see under History of Art.

**CLCV 258b, The Ancient Economy.** Joseph Manning.

A survey of the economies of the ancient Mediterranean world, with emphasis on economic institutions, the development of the economies over time, ancient economic thought, and the interrelationships between institutions and economic growth. Material evidence for studying the economies of the ancient world, including coinage, documentary material, and archaeology.

**CLCV 405a/HIST 201Ja, The Spartan Hegemony, 404–362 B.C.** Donald Kagan.

A history of Greece during the period 404–362 B.C. Focus on the relationship between domestic constitutions and politics and diplomacy and war. **Prerequisite: CLCV 205a or equivalent.**

**CLCV 407b/GHSAR 427b, Thucydides and the Peloponnesian War.** Donald Kagan.

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 411b/HIST 213b, Historians of the Roman Empire.** John Matthews.

An introduction to the history of the Roman Empire through readings in contemporary sources and their modern interpreters, from Tacitus to the twentieth century.

**CLCV 450a and 451b, Senior Project for the Major in Classical Civilization.** Consult the director of undergraduate studies.

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.
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

For description see under History.


MGKR 110A, Elementary Modern Greek I. Maria Kaliambou.
For description see under Hellenic Studies.

MGKR 120B, Elementary Modern Greek II. Maria Kaliambou.
For description see under Hellenic Studies.

MGKR 130A, Intermediate Modern Greek I. Maria Kaliambou.
For description see under Hellenic Studies.

MGKR 140B, Intermediate Modern Greek II. Maria Kaliambou.
For description see under Hellenic Studies.

For description see under Hellenic Studies.

*MGKR 228A/HIST 205Ja, Greece in the Twentieth Century. Konstantina Maragkou.
For description see under Hellenic Studies.

GRADUATE COURSES OF INTEREST TO UNDERGRADUATES

Various graduate seminars are open to juniors and seniors with the qualifications expected of graduate students, i.e., proficiency in the pertinent ancient and modern languages. Descriptions of the courses are available from the director of undergraduate studies. Permission is required of the instructor, the director of undergraduate studies, and the director of graduate studies.

COGNITIVE SCIENCE

Director of undergraduate studies: Brian Scholl, 304 SSS, 432-4629, brian.scholl@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM IN COGNITIVE SCIENCE

Professors
Woo-kyoung Ahn (Psychology), Stephen Anderson (Linguistics), Amy Arnsten (School of Medicine), John Bargh (Psychology), Paul Bloom (Psychology), Marvin Chun (Psychology), Michael Della Rocca (Philosophy), Ravi Dhar (School of Management), Julie Dorsey (Computer Science), Carol Fowler (Adjunct) (Linguistics, Psychology), Robert Frank (Linguistics), David Gelernter (Computer Science), Tamar Gendler (Chair) (Philosophy), Donald Green (Political Science), Laurence Horn (Linguistics), Marcia Johnson (Psychology), Dan Kahan (Law School), Frank Keil (Psychology, Linguistics),
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 connection 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 490a and 491b. In the fall term students begin researching and writing 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 writing to the director of undergraduate studies no later than Thursday, December 10, in 109 K. Applications must include both an official or unofficial transcript of work at Yale that lists fall-term 2009 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 online at [www.yale.edu/cogsci](http://www.yale.edu/cogsci). Applicants will be notified of decisions concerning admission to the major in January 2010.

**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 addl term courses from relevant area

**Senior requirement:** CGSC 490a, 491b

**INTRODUCTORY COURSES**

*CGSC 110a/PSYC 130a, Introduction to Cognitive Science.*

Brian Scholl.

MW 2.30-3.45 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 201a/PSYC 120a, Brain and Thought: An Introduction to the Human Brain.* Amy Arnsten.

TTh 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.


For description see under Philosophy.
ADVANCED COURSES

For description see under Linguistics.

CGSC 343a/MUSI 343a, Music Cognition. Ian Quinn.
For description see under Music.

*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 408b/PSYC 408bG, Cognitive Science of Ignorance.
Frank Keil.
For description see under Psychology.

*CGSC 413a/PSYC 413aG, Mind, Brain, and Society. Marvin Chun.
For description see under Psychology.

Joshua Knobe.
For description see under Philosophy.

*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 490a and 491b, Senior Colloquium and Project.
Joshua Knobe.
W 4-5:30 ¼ C Credit per term (0)
A research colloquium leading to the selection of a topic for, and the completion of, the senior essay. Students attend regular colloquium presentations by outside scholars. 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. Credit only on completion of both terms.
COURSES IN OTHER DEPARTMENTS RELEVANT TO COGNITIVE SCIENCE

ANTH 280b, Evolution of Primate Intelligence. David Watts.

*ART 111a or b, Visual Thinking. Anna Betbeze, Elke Lehmann, and staff.


*CHLD 350a or b/PSYC 350a or b, Autism and Related Disorders. Ami Klin, Fred Volkmar.
For description see under Child Study Center.

CPSC 201a or b, Introduction to Computer Science.


CPSC 475bG/EENG 475bG, Computational Vision and Biological Perception. Steven Zucker.
For description see under Computer Science.


For description see under Biology.

ECON 351b, Mathematical Economics: Game Theory. Johannes Horner.


LING 117aG/PSYC 137a, Language and Mind. Maria Piñango.
For description see under Linguistics.

LING 120bG/PSYC 318b, General Phonetics. Matthew Wolf.
For description see under Linguistics.


LING 149b/PSYC 149b, Animal Communication and Human Language. Stephen Anderson.
For description see under Linguistics.

LING 153aG, Syntax I. Raffaella Zanuttini.
LING 163a/PSYC 163a, Language Acquisition. Rhea Paul.
For description see under Linguistics.

*LING 180bG, Morphology. Maria Piñango.


LING 231bG/PSYC 331b, Neurolinguistics. Maria Piñango.
For description see under Linguistics.

LING 254bG, Syntax II. Robert Frank.

Robert Frank, Thomas Leu.


*LING 270aG, Topics in Semantics: Conventional Implicature.
Laurence Horn.

LING 275bG, Pragmatics. Laurence Horn.

*MCDB 135b/PSYC 302b, How the Brain Works. David Wells,
Mitchell Kundel.
For description see under Biology.

MCDB 320aG, Neurobiology. Haig Keshishian, Paul Forscher.
For description see under Biology.

MCDB 321LaG, Laboratory for Neurobiology. Haig Keshishian,
Robert Wyman.
For description see under Biology.

*MCDB 440bG, Brain Development and Plasticity. Weimin Zhong,
Elke Stein.
For description see under Biology.

*MUSI 021b, Music and Human Evolution. Ian Quinn.

PHIL 115a, First-Order Logic. Kenneth Winkler.

PHIL 267bG, Mathematical Logic. Sun-Joo Shin.

PHIL 269aG, Philosophy of Science. Jill North.

PHIL 272a, Philosophy of Mind. Katalin Balog.


*PHIL 450aG/HUMS 338a, Biology, Evolution, and Culture.
Jonathan Gilmore.
For description see under Philosophy.
PSYC 140A, Developmental Psychology. Frank Keil.
PSYC 230LA, Research Methods in Human Neuroscience.
Gregory McCarthy.
Allan Wagner.
★PSYC 270A, Research Methods in Behavioral Neuroscience.
Karyn Frick.
PSYC 301B, Thinking. Woo-kyoung Ahn.
PSYC 376A, Basics of Learning and Memory. Thomas Brown.

COLLEGE SEMINARS IN THE RESIDENTIAL COLLEGES

Residential college seminars for the fall and spring terms are described on line at [www.yale.edu/collegeseminar](http://www.yale.edu/collegeseminar): These listings contain course titles, descriptions, and prerequisites. Course syllabi are available on line at [classesv2.yale.edu](http://classesv2.yale.edu).

College seminars begin meeting on the first day of classes each term. Students apply on line to college seminars through the Preregistration and Preference Selection tool, [www.yale.edu/yalecollege/academics/special/preregistration](http://www.yale.edu/yalecollege/academics/special/preregistration). A student may apply to a maximum of three college seminars per term, and may enroll in no more than two in any 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, 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 Professors
Daniel Abadi, Bryan Ford, Maxwell Krohn

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 
\texttt{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.

\textit{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 
\texttt{cpsc 201a or b}, none assumes previous knowledge of computers.

1. \texttt{cpsc 079b} 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.

2. \texttt{cpsc 101b} introduces nonmajors to some of the central ideas in computer science, including algorithms, elementary programming, hardware, complexity, and representation of information.

3. \texttt{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 
\texttt{cpsc 201a or b} instead.

4. \texttt{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.

5. \texttt{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.

6. \texttt{cpsc 178a} presents computer graphics and visualization tools as a medium for communication and discovery in science, engineering, business, and the arts.

7. \texttt{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 \texttt{cpsc 201a or b} without taking \texttt{cpsc 112a or b}. (These courses meet at the same time so that students are easily able to change levels if necessary.)

8. \texttt{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: CPS 201A or B; CPS 202A or MATH 244A; CPS 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. CPS 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 CPS 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>CPS 201A</td>
<td>CPS 202A</td>
<td>Two electives</td>
<td>CPS 490A</td>
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<tr>
<td>CPS 223b</td>
<td>CPS 365b</td>
<td>One elective</td>
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and

<table>
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<tr>
<th>Sophomore</th>
<th>Junior</th>
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<tbody>
<tr>
<td>CPS 201A</td>
<td>CPS 323A</td>
<td>CPS 490A</td>
</tr>
<tr>
<td>CPS 202A</td>
<td>One elective</td>
<td>Two electives</td>
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<tr>
<td>CPS 223b</td>
<td>CPS 365b</td>
<td>One elective</td>
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<tr>
<td></td>
<td></td>
<td>Two electives</td>
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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 CPS 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 CPS 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 CPS 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 CPS 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.

**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 244a; 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 079b, Digital Photorealism.* Julie Dorsey. 
**TRH 1-2.15 QR (0) Fr sem**
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. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. (Formerly CPSC 179b)

[CPSC 101b, Great Ideas in Computer Science]

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. Enrollment limited to 25.

**MW 11.35-12.50 WR (0)**
The role of graphical user interfaces (GUIs) on standard platforms such as desktop PCs, laptops, and small-screen devices. Discussion of how and why GUIs developed as they did, why they have evolved so little since the desktop computers of the 1970s, and how changing hardware and user requirements might reshape them in the future. Enrollment limited to 25.

[CPSC 178A, Visualization: Data, Pixels, and Ideas]

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.


Joan Feigenbaum.

TH 1-2.15 QR (26)

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.

Stanley Eisenstat.

TH 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.

★CPSC 290A or B, Directed Research. Stanley Eisenstat.

HTBA (0)

Individual research. Requires a faculty supervisor and the permission of the director of undergraduate studies. May be taken more than once for credit.

Math 244A/AMTH 244A, Discrete Mathematics. Staff.

For description see under Mathematics.

Intermediate Courses


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.


TH 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.

EENG 348a, Digital Systems. Eugenio Culurciello.

ADVANCED COURSES

[cpsc 421aG, Compilers and Interpreters]


MWF 11:35-12:25 QR (34)

The design and implementation of operating systems. Topics include synchronization, deadlock, process management, storage management, file systems, security, protection, and networking. After cpsc 323a.


MW 1-2:15 QR (36)

Models of asynchronous distributed computing systems. Fundamental concepts of concurrency and synchronization, communication, reliability, topological and geometric constraints, time and space complexity, and distributed algorithms. After cpsc 323a and 365b.

[cpsc 428bG, Language-Based Security]


MW 1-2:15 QR (36)

Introduction to formal approaches to programming language design and implementation. Topics include the lambda-calculus, type theory, denotational semantics, type-directed compilation, higher-order modules, and application of formal methods to systems software and Internet programming. After cpsc 202a and 323a.

[cpsc 431G, Computer Music: Algorithmic and Heuristic Composition]


MW 2:30-3:45 QR (0)

Study of the theoretical and practical fundamentals of computer-generated music, with a focus on low-level sound representation, acoustics and sound synthesis, scales and tuning systems, 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.


TRH 1-2:15 QR (0)

An introduction to the design, implementation, analysis, and evaluation of computer networks and their protocols. Topics include layered network architectures, applications, transport, congestion, routing, data link protocols, local area networks, performance analysis, multimedia networking, network security, and network management. Emphasis on protocols used in the Internet. After cpsc 323a.

[cpsc 434bG, Mobile Computing and Wireless Networking]
**cpsc 436a/eeng 460a**, **Networked Embedded Systems and Sensor Networks.** Andreas Savvides.

For description see under Electrical Engineering.

**cpsc 437a**, **Introduction to Databases.** Avi Silberschatz.

**TTH 2.30-3.45 QR (0)**


**cpsc 438b**, **Database System Implementation and Architectures.** Daniel Abadi.

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

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.

**cpsc 439b**, **Numerical Computation.** Vladimir Rokhlin.

**TTH 1-2.15 QR (26)**

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.

**cpsc 440b**, **Introduction to Data Mining.** Vladimir Rokhlin.

**TTH 1-2.15 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.

[cpsc 455a/econ 425a, **Economics and Computation**]

[cpsc 463b, **Machine Learning**]

**cpsc 467b**, **Cryptography and Computer Security.**

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**, **Computational Complexity.** Joan Feigenbaum.

**TTH 2.30-3.45 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 469bG, RANDOMIZED ALGORITHMS]

**cpsc 470aG, ARTIFICIAL INTELLIGENCE.** Brian Scassellati.

**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.

**cpsc 473bG, INTELLIGENT ROBOTICS.** 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 201a or b and 202a.

**cpsc 475bG/eeeng 475bG, COMPUTATIONAL VISION AND BIOLOGICAL PERCEPTION.** Steven Zucker.

**MW 1-2.15** QR, Sc Meets RP (36)

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.

**cpsc 477aG, NEURAL NETWORKS FOR COMPUTING.** Willard Miranker.

**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.

**cpsc 478bG, COMPUTER GRAPHICS.** Julie Dorsey.

**Th 2.30-3.45** QR (27)

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 479aG, ADVANCED TOPICS IN COMPUTER GRAPHICS.** Holly Rushmeier.

**Th 1-2.15** QR (0)

An in-depth study of advanced algorithms and systems for rendering, modeling, and animation in computer graphics. Topics vary and may include reflectance modeling, global illumination, subdivision surfaces, nurbs, physically-based fluids systems, and character animation. After cpsc 202a and 223b.
**CPSC 480A or B, Directed Reading.** Stanley Eisenstat.

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.** Dana Angluin.

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.*

MB&B 452B/MCDB 452B, Bioinformatics: Practical Application of Simulation and Data Mining. Mark Gerstein. For description see under Molecular Biophysics & Biochemistry.

### 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; Roger Howe (Mathematics), 220B LOJ, 432-4686, roger.howe@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, <462A>, <465B>, 468A, or 469B; 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 (“advanced courses” are those that have as a prerequisite MATH 120A or B, 222A or B, or 225A 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. 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, <462A>, <465B>, 468A, or 469B; 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 \textit{MATH 470a or b}); 1 addtl advanced course in comp sci (may not be \textit{CPSC 480a or b or 490a or b})

Substitution permitted: \textit{MATH 230} for \textit{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

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**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 \textit{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: \textit{CPSC 201a or b, 202a, 223b, 323a, 365b}, and three advanced computer science courses in artificial intelligence or neural computing. \textit{MATH 244a} may substitute for \textit{CPSC 202a}. \textit{CPSC 480a or b} may not be counted as one of these courses.

The remaining six courses must be in psychology, including \textit{PSYC 200b}, at least one from \textit{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., \textit{PSYC 120a or 130a}). \textit{PSYC 490a} and \textit{491b} may not be counted as one of these courses.

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 \textit{PSYC 200b} may substitute for \textit{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 \textit{CPSC 490a or b or PSYC 492a or 493b}, 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. 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: \textit{PSYC 110a or b}

Number of courses: 14 term courses beyond prereq (not incl senior project)

Specific courses required: \textit{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 \textit{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 \textit{CPSC 202a, MATH 244a}; for 1 course in AI or neural computing, 1 addtl course in cognitive psych or cognitive science; for \textit{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 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, which should be taken during the freshman year. Additional prerequisites for the art track are ART 111a or b and 114a or b. There are no additional prerequisites for the history of art track. 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 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 244a 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.

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 132a or b, 138a or b, 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) 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); (3) one studio art course (students may need to take a prerequisite course in Art to prepare for the studio course); (4) HSAR 401a or b; (5) one 400-level seminar in History of Art; (6) CPSC 478b; (7) one course selected from CPSC 437a, 473b, 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) five term courses chosen from MUSI 312a, 313b, 343a, 395b, 412a, 413b, <450a>, <466b>, 471a, and 472b; (3) CPSC 431a; (4) CPSC 432a; (5) 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 431a or 432a; (5) CPSC 478b or 479a; (6) one additional intermediate or advanced computer science course (excluding CPSC 490a or b).

Senior requirement. The senior project requires two terms: one term of CPAR 491a or b, and one term of ART 495a or b, HSAR 499a or b, MUSI 491a or b, or THST 491a or b, depending on the track chosen. The project must be approved by the director of undergraduate studies and be acceptable to both departments. Students must submit a written report, including an electronic abstract and Web page(s).

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, 111b

**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—5 term courses from MUSI 312a, 313b, 343a, 395b, 412a, 413b, 450b, 466b, 471a, 472b, 485b; Theater studies track—3 courses in dramatic lit or theater history; 2 production sems, as specified

**Substitution permitted:** MATH 2444a 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 MUSI 491a or b; Theater studies track—Senior project completed in CPAR 491a or b and THST 491a or b

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**CPAR 491a or b, Senior Project in Computing and the Arts.**

Stanley Eisenstat.

HTBA (0)

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

Devn 192a/Plsc 258a, A Guided Tour of the Constitution.

Akhil Amar.

MW 4.30-5.45, 1 HTBA So (0)

Introduction to America’s written Constitution, as distinct from the case law interpreting the document. Consideration first of the original text adopted in 1788, then the ensuing amendments. No prerequisites. Open to students who have taken Plsc 233a.

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 why dominant world powers rise and fall.

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. W 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 some-
what from year to year and include Petrarch, Cervantes, Shakespeare, Milton, Wordsworth, Goethe, Flaubert, Tolstoy, and Eliot. (Formerly DRST 001)


Lect. F 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. (Formerly DRST 002)

*DRST 005a and 006b, Directed Studies: Historical and Political Thought. Robert Burt, Cynthia Farrar, Paul Freedman, Charles Hill, Emily Levine, Steven Pincus, Frank Prochaska, Stuart Semmel, Kathryn Slanski, Steven Smith, Justin Zaremby.

Lect. M 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. (Formerly DRST 003)

DRAMA

(See under Theater Studies.)

EAST ASIAN LANGUAGES AND LITERATURES

Director of undergraduate studies: Jing Tsu, 309 HGS, 432-2861, jing.tsu@yale.edu; language director: Seungja Choi, Rm. 101, 432-434 Temple St., 432-2866, seungja.choi@yale.edu

FACULTY OF THE DEPARTMENT OF EAST ASIAN LANGUAGES AND LITERATURES

Professors

Kang-i Sun Chang, Eiichi Ishigami (Visiting), Edward Kamens, Tina Lu, Haun Saussy, John Treat (Chair)

Associate Professors

Aaron Gerow, Christopher Hill

Assistant Professors

Reginald Jackson, Paize Keulemans, Jing Tsu

Senior Lecturer

Koichi Shimohara

Senior Lectors

Seungja Choi, Koichi Hiroe, Zhengguo Kang, Angela Lee-Smith, Ninghui Liang, Yoshiko Maruyama, Ling Mu, Michiaki Murata, Hiroyo Nishimura, Masahiko Seto, Mari Stever, Wei Su, Peisong Xu, William Zhou

Lectors

Hsiuh-hsien Chan, Min Chen, Rongzhen Li, Qingrui Liao (Visiting), Fan Liu, Yukie Mammoto, Jianhua Shen, Haiwen Wang, Yu-lin Wang-Saussy

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 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 Chinese-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 129a,
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:

Prerequisite: CHNS 140b or equivalent

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 129a, 130b, 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. 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 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 492a, 493b.

REQUIREMENTS OF THE MAJOR
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 492a, 493b.

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
Senior requirement: Senior essay (JAPN 491a or b, or 492a and 493b)

EAST ASIAN HUMANITIES

eall 200b/rlst 134bG, BUDDHISM IN CHINA AND JAPAN.
Koichi Shinohara.
For description see under Religious Studies.

*eall 240a/G*sthst 430a, THEORY AND PERFORMANCE IN EAST ASIAN TRADITIONS. Reginald Jackson.
T 11:30-3:20 Hu Meets RP (0)
The relationship between performance and theory in the East Asian diaspora. Analysis of performances and texts from a range of regions and historical periods, including Kabuki, Peking Opera, Pansori, Bunraku, Chinese and Japanese jazz, and the contemporary choreographic work of Shen Wei and the Cloud Gate Dance Company.

*eall 249b/east 441b/litr 267b, TRANSLATION AND MODERN LITERATURE IN EAST ASIA. Heckyoung Cho.
For description see under East Asian Studies.

*eall 250a/engl 297a/er&m 310a/litr 258a, LITERATURE ON MIGRATION IN ASIAN AMERICA AND EAST ASIA. Jing Tsu.
T 3:30-5:20 Hu (0) Tr
Comparative study of literature from East Asia and the Asian American diaspora. Focus on shared issues such as native speakers, translation, mother tongues, ethnicity and race, national languages, and colonialism. Readings and discussion in English.

CHINESE

*chns 110a, ELEMENTARY MODERN CHINESE I. William Zhou and staff.
mtwrh 9:25-10:15 or 10:30-11:20 or 11:35-12:25 L1 1½ C Credits
Meets RP (0)
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.

MTWTHF 9.25-10.15 L1 1 C Credits Meets RP (0)

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 and staff.

MTWTHF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L2 1 C Credits Meets RP (0)

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.

MTWTHF 9.25-10.15 L2 1 1/2 C Credits Meets RP (0)

Continuation of CHNS 112a. (Formerly the second term of CHNS 118)

**CHNS 125b, Intensive Elementary Modern Chinese.** Staff.

MTWTHF 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 and staff.

MTWTHF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L3 1 1/2 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 1 1/2 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 113)

**CHNS 140b, Intermediate Modern Chinese II.** Ling Mu and staff.

MTWTHF 9.25-10.15 or 10.30-11.20 or 11.35-12.25 L4 1 1/2 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 1 1/2 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 1 1/2 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 1 1/2 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 153b, Advanced Modern Chinese II 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 154b, Advanced Modern Chinese III.** Jianhua Shen.

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.

MWF 10.30-11.20 or 11.35-12.25 L5  (61)
Continuation of CHNS 154a. **Prerequisite: CHNS 154a or equivalent.** (Formerly the second term of CHNS 154)

*CHNS 162a, 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 182a, Readings in Contemporary Chinese Texts I.* Wei Su.
  MWF or TTTh 11.35-12.50 L5 Meets RP (06)
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.
  MW or TTTh 11.35-12.50 L5 Meets RP (06)
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 numbered 154a or higher.**

CHNS 170a**, Introduction to Literary Chinese I.*
  Yu-lin Wang-Saussky.
  TTTh 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 171b**, Introduction to Literary Chinese II.*
  Yu-lin Wang-Saussky.
  TTTh 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 180b**, Classical Tales from Tang to Qing.* Tina Lu.
  TTTh 11.35-12.50 L5, 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 themes such as romance, magical transformations, and proto-martial arts, including how these themes were transformed over time. After CHNS 171b or equivalent.

**CHNS 181a**, Chinese Informal Prose. Tina Lu.
MW 11:35-12:50  L5, Hu (14)
Translation and discussion of classical essays: first, models of guwen (ancient-style prose) from the Tang and Song dynasties, and second, the transformation of these models in the late Ming and early Qing into xiaopin ("lesser works"). Guwen as a choice both for philosophical and speculative writing and for describing the minutiae of everyday life. After CHNS 171b or equivalent.

**CHNS 190b**, Advanced Readings in Modern Chinese Literature. Jing Tsu.
W 3:30-5:20  L5, Hu (37)
A rigorous introduction to literary criticism and analysis using texts in the original language. Focus on the contemporary period, drawing from fiction written in Chinese in different parts of the world, from mainland China to Taiwan and from Malaysia to Hong Kong. Texts in both simplified and traditional characters. After CHNS 153b or 159b or equivalent. (Formerly CHNS 170a)

**CHNS 193b**, Chinese Philosophical Texts. Haun Saussy.
WF 1-2.15  Hu (0)
Readings in early Chinese thought, with attention to questions of style, rhetoric, and organization. Selections from the Shi ji (Records of the Historian), Mengzi (Mencius), Xunzi, Zhuangzi, Huainan zi, Dong Zhongshu, and Baihu tonglun (Discussions in the White Tiger Hall). Most readings in classical Chinese. After CHNS 171b or equivalent.

[CHNS 202a/LITR 172a, Man and Nature in Chinese Literature]

**CHNS 203a**, Readings in Classical Chinese Prose.
Kang-i Sun Chang.
W 1.30-3.20  Hu (0)

**CHNS 204a**, Readings in Classical Chinese Poetry.
Kang-i Sun Chang.
W 1.30-3.20  Hu (0)

[CHNS 302b, Readings in Classical Chinese Prose]
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]

*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 492a and 493b, 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, Koichi Hiroe, Yukie Mammoto, Michiaki Murata, Mari Stever.

MTWTHF 9.25-10.15 or 10.30-11.20 LI 1 ½ 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, Koichi Hiroe, Yukie Mammoto, Michiaki Murata, Mari Stever.

MTWTHF 9.25-10.15 or 10.30-11.20 L2 1 ½ C Credits Meets RP (61)

Continuation of JAPN 110a. Prerequisite: JAPN 110a. (Formerly the second term of JAPN 115)


MTWTHF 10.30-11.20 or 11.35-12.25 L3 1 ½ 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 130)


MTWTHF 10.30-11.20 or 11.35-12.25 L4 1 ½ C Credits Meets RP (61)

Continuation of JAPN 130a. Prerequisite: JAPN 130a or equivalent.
**JAPN 150a, Advanced Japanese I.** Mari Stever, Yoshiko Maruyama, Hiroyo Nishimura.
MWF 9-10.15 or 1-2.15 L5 1½ 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, Yoshiko Maruyama, Hiroyo Nishimura.
MWF 9-10.15 or 1-2.15 L5 1½ 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, Masahiko Seto.
MWF 9-10.15 or 1-2.15 L5 1½ 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, Masahiko Seto.
MWF 9-10.15 or 1-2.15 L5 1½ C Credits (0)
Continuation of JAPN 156a. *After JAPN 156a or equivalent.*

**JAPN 162a, Advanced Japanese V.** Koichi Hiroe.
TTTh 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.
TTTh 1-2.15 L5 (0)
Continuation of JAPN 162a. *After JAPN 162a or equivalent; recommended to be taken after JAPN 170a.* (Formerly the second term of JAPN 162)

**JAPN 170a, Introduction to Literary Japanese.** Reginald Jackson.
TTTh 9-10.15 L5 Meets RP (0)
Introduction to the grammar and style of the premodern literary language (*bungo-tai*) through a variety of texts. *After JAPN 151b or equivalent.* (Formerly JAPN 160a)

**JAPN 171b, Readings in Literary Japanese.** Reginald Jackson.
TTTh 9-10.15 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)

**JAPN 200a/LITR 175a, The Japanese Classics.** John Treat.
TTTh 2.30-3.45 WR, Hu (0) Tr
Prose narratives, poetry collections, and plays from the eighth century through the nineteenth. 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 215a/G/THST 338a, INTRODUCTION TO JAPANESE THEATER]**

**JAPN 250a/G/LITR 260a, MODERN JAPANESE FICTION.** Christopher Hill.
**TTH 1-2:15 Hu (o) 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.** John Treat.
**TTH 2:30-3:45 Hu (o) Tr**


**JAPN 252b/G/LITR 252b, IMAGINING SPACE IN JAPANESE FICTION AND FILM.** Christopher Hill.
**TTH 1-2:15 Hu (o) 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 254b/G/THTH 385b, MODERN JAPANESE PERFORMANCE.** Reginald Jackson.
**M 1:30-3:20 Hu Meets RP (o)**

Various forms of Japanese performance from the late nineteenth century to the present. Particular attention to technical analysis of the performances in historical context and to relevant theories of embodiment, nationalism, spectacle, and shifting constructions of cultural identity through performance.

**JAPN 470a and 471b, INDEPENDENT TUTORIAL.** Consult the director of undergraduate studies.
**HTBA (o)**

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 492a and 493b, 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.

MTWRF 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 110b, Elementary Korean II.** Angela Lee-Smith and staff.

MTWRF 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]

**KREN 132a, Intermediate Korean for Advanced Learners I.**

Angela Lee-Smith.

MTWRF 10.30-11.20 L3 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]

**KREN 142b, Intermediate Korean for Advanced Learners II.**

Angela Lee-Smith.

MTWRF 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.** Angela Lee-Smith and staff.

MWF 11.35-12.30 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 11.35-12.30 L5 1 1/2 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.
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 in Korean available for students who have completed KREN 151b or equivalent.

*KREN 470a and 471b, Independent Tutorial. Consult the director of undergraduate studies.

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.

EAST ASIAN STUDIES

Director of undergraduate studies: Jun Saito, 124 Prospect St., 432-1841, jun.saito@yale.edu; http://research.yale.edu/eastasianstudies

FACULTY ASSOCIATED WITH THE PROGRAM OF EAST ASIAN STUDIES

Professors
Kang-i Sun Chang (East Asian Languages & Literature), Deborah Davis (Sociology), Koichi Hamada (Economics), Valerie Hansen (History), Eiichi Ishigami (East Asian Languages & Literature) (Visiting), Edward Kamens (East Asian Languages & Literature), William Kelly (Anthropology), Tina Lu (East Asian Languages & Literature), Peter Perdue (History), Frances Rosenbluth (Political Science), Haun Saussy (Chair) (Comparative Literature, East Asian Languages & Literature), Helen Siu (Anthropology), William Summers (History of Science, History of Medicine), John Treat (East Asian Languages & Literature), Mimi Yengpruksawan (History of Art)

Associate Professors
Aaron Gerow (East Asian Languages & Literature, Film Studies), Christopher Hill (East Asian Languages & Literature), Pierre Landry (Political Science), Lillian Tseng (History of Art)

Assistant Professors
Seok-ju Cho (Political Science), Fabian Drixler (History), William Honeychurch (Anthropology), Reginald Jackson (East Asian Languages & Literature, Theater Studies), Paize Keulemans (East Asian Languages & Literature), Karen Nakamura (Anthropology), Jun Saito (Political Science), Jing Tsu (East Asian Languages & Literature), Jessica Weiss (Political Science)

Senior Lecturers
Annping Chin (History), Koichi Shinohara (Religious Studies, East Asian Languages & Literature)

Lecturers
Heekyoung Cho, Justin Jetsy, Toby Lincoln

Senior Lectors
Seungja Choi, Koichi Hiroe, Zhengguo Kang, Angela Lee-Smith, Ninghui Liang, Yoshiko Maruyama, Ling Mu, Michiaki Murata, Hiroyo Nishimura, Masahiko Seto, Mari Stever, Wei Su, Peisong Xu, William Zhou

Lectors
Hsu-hsien Chan, Min Chen, Rongzhen Li, Qingrui Liao (Visiting), Fan Liu, Yukie Mamimoto, Jianhua Shen, Haiwen Wang, Yu-lin Wang-Saussay

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 at least eleven term courses for thirteen course credits, which may include up to six courses 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 491a, 492b 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 multidisciplinary 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 relevance 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://comet.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 course credits beyond prereq (incl senior req); up to 6 courses 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 premodern 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 491a, 492b

EAST 291b/INTS 391b, CHINESE LAW AND SOCIETY. Ling Bin.
For description see under International Studies.

EAST 355a/PLSC 377a, CHINESE POLITICS IN THE REFORM ERA. Pierre Landry.
For description see under Political Science.

EAST 355b/INTS 355b/PLSC 433b, EAST ASIAN CAPITALISM. Jun Saito.
For description see under Political Science.

*EAST 357a/INTS 307a/PLSC 390a, STATE AND SOCIETY IN POST-MAO CHINA. Jessica Weiss.
For description see under Political Science.

*EAST 440b/JAPN 269b, POSTWAR JAPANESE DOCUMENTARY AND HISTORY. Justin Jetsy.
M 3.30-5.20 Hu (o)
Japanese documentary films after 1945, approached both as historical documents and as testimonies from Japan’s postwar period. Critical approaches to historical and filmic argument; the use of images in writing history.

*EAST 441b/EALL 249b/LITR 267b, TRANSLATION AND MODERN LITERATURE IN EAST ASIA. Heekyoung Cho.
W 1.30-3.20 Hu (o)
Translation and the formation of modern literature in East Asia. The construction of modern literary language, the appropriation and creation of literary texts, gender created in and by translation, and power dynamics inherent in the context of translation.

F 1.30-3.20 WR, Hu (o)
The development of Chinese cities in the modern era. The impact of war and revolution; the explosive growth of cities; China’s entry into the globalized landscape of the twenty-first century.

*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 (o)
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 studies 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 491a and 492b, Senior Research Project.** Consult the director of undergraduate studies.

HTBA 1/2 C Credit per term (0)

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. Credit only on completion of both terms.

**ELECTIVES WITHIN THE MAJOR**

*anth 234b, Disability and Culture.* Karen Nakamura.

**anth 254a, Japan: Culture, Society, Modernity.** Karen Nakamura.

**anth 282a, Sport, Society, and Culture.** William Kelly.

*anth 342aG, Markets and Cultures in Asia.* Helen Siu.


For description see under East Asian Languages & Literatures.


For description see under East Asian Languages & Literatures.

*chns 180bG, Classical Tales from Tang to Qing.* Tina Lu.

For description see under East Asian Languages & Literatures.

*chns 190bG, Advanced Readings in Modern Chinese Literature.* Jing Tsu.

For description see under East Asian Languages & Literatures.

*chns 195bG, Chinese Philosophical Texts.* Haun Saussy.

For description see under East Asian Languages & Literatures.

**chns 201aG/wgss 405a, Women and Literature in Traditional China.** Kang-i Sun Chang.

For description see under East Asian Languages & Literatures.

*chns 220bG, Romance in Late Imperial Literature.* Tina Lu.

For description see under East Asian Languages & Literatures.


For description see under East Asian Languages & Literatures.
East Asian Studies

For description see under East Asian Languages & Literatures.

*EALL 250a/EGL 297a/E&MR 350a/LITR 258a*, Literature on Migration in Asian America and East Asia. Jing Tsu.
For description see under East Asian Languages & Literatures.

econ 180b, Introduction to the Chinese Economy. Dong Chen.


hst 306b, East Asia, 500 to the Present. Fabian Drixler, Valerie Hansen.

For description see under History.

hst 315a/HUMS 421a, History of Traditional China to 1600. Valerie Hansen.
For description see under History.


HIST 335a or b, Confucianism and Commerce in China. Antonia Finnane.


HUMS 418a/List 130a, Traditional Literature of India, China, and Japan. Phyllis Granoff, Koichi Shinohara.
For description see under Humanities.

For description see under East Asian Languages & Literatures.

For description see under East Asian Languages & Literatures.

For description see under East Asian Languages & Literatures.

JAPN 250a/G/LITR 260a, Modern Japanese Fiction. Christopher Hill.
For description see under East Asian Languages & Literatures.

For description see under East Asian Languages & Literatures.
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: Leo Buss, 122D OML, 432-3837, karen.broderick@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: Donald Brown, Rm. B1, 28 Hillhouse Ave., 432-6934 or 432-3574, qazi.azam@yale.edu

FACULTY OF THE DEPARTMENT OF ECONOMICS

Professors

Associate Professors
Dino Gerardi, Justine Hastings, Julian Jamison (Visiting), Simon Lee (Visiting), † Sheila Olmstead

Assistant Professors
Costas Arkolakis, David Atkin, † Christopher Blattman, Irene Brambilla, Bjoern Bruegemann, Tri Vi Dang (Visiting), Eduardo Faingold, Amanda Kowalski, Fabian Lange, Guillermo Ordonez, Taisuke Otsu, Kareen Rozen, Melissa Tartari, Ebonya Washington

Lecturers
Irasema Alonso, Sigridur Benediktsdottir, Michael Boozer, Benjamin Chabot, Cheryl Doss, † Andrew Epstein, Keith Gamble, Tolga Koker, Douglas McKee, Nicholas Perna, Michael Schmertzler, Katerina Simons, Philip Slavin, 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 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 a number of professions.

Requirements of the major. Students majoring in Economics are required to take twelve term courses. Two of these may be introductory economics courses, one in microeconomics and one in macroeconomics. All majors must take the following courses: one term of intermediate microeconomics (chosen from ECON 121a or b or 123a); one term of intermediate macroeconomics (chosen from ECON 122a or b or 126b); one term of econometrics (chosen from ECON 131a or b or 132a or b or 136b); and one Yale mathematics course, usually selected from MATH 112a or b or 113a or b, 118a or b, or 120a or b. Students who place out of these mathematics courses must take a higher-level mathematics course at Yale and should consult the director of undergraduate studies in Economics. All of these required courses must be completed prior to the senior year. Majors must also take two courses numbered ECON 400–491. At least one of these must be taken in the senior year, and at least one must be either a seminar or the senior essay.

Students may petition the director of undergraduate studies to count toward the major one course related to economics but taught in another
field, such as another social science or advanced mathematics. In order to receive such permission, a student must be a declared Economics major. Related-course credit forms are available on the Economics undergraduate Web site, www.econ.yale.edu/undergrad/ugrad.htm, and are due by midterm (as it appears in the calendar in 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.

Students who take a term abroad or take summer courses not at Yale may petition the director of undergraduate studies to count at most two courses from outside Yale toward the requirements of the major. Students who take a year abroad may petition to count at most three courses. Many economics courses taken outside Yale do not meet the requirements of the Economics major; students should consult with the director of undergraduate studies before taking such courses.

Courses taken Credit/D/Fail 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; it has a microeconomics prerequisite.

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 pre-register. 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, 110a, and 115a or b 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. 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.

Introductory courses: placement and exemptions. Students with a score of 5 on the Advanced Placement tests for microeconomics and macroeconomics and a score of 5 on the Advanced Placement Calculus BC test may petition the director of undergraduate studies to place out of introductory microeconomics and enroll directly in intermediate microeconomics. It is recommended that students with a score of 5 on the Advanced Placement economics tests but without a 5 on the Calculus BC test take a Yale mathematics course such as MATH 115a or b or 120a or b, and then petition the director of undergraduate studies to place out of introductory microeconomics and instead take intermediate microeconomics in the following term. Students with high scores on examinations equivalent to Advanced Placement, such as the GCE A-level or Higher Level International Baccalaureate, may also petition to be exempted from the introductory courses. For other placement and exemption

Mathematics. Students are advised to meet the mathematics requirement for the major during their freshman year. The department also recommends that majors either complete MATH 118a or b or complete two term courses including MATH 120a or b and either 222a or b or 235a or b. The latter two-term sequence is preferable for students who wish to take further mathematics courses or who may go on to graduate school in economics.

Econometrics. Students are advised to take a two-term sequence of statistics and econometrics courses, especially if they are considering a senior essay. One option is to take ECON 131a or b followed by 132a or b. A popular alternative is to take a course in the STAT 101–106 series or STAT 238a followed by ECON 132a or b. Students with a stronger mathematics background are encouraged to take ECON 135a followed by 126b. Prospective majors are urged to start their econometrics sequence in the fall of sophomore year.

Intermediate microeconomics and macroeconomics. Along with econometrics, intermediate microeconomics and macroeconomics form the core of the major. Two options are available in both micro- and macroeconomics. The standard intermediate courses are ECON 121a or b and 122a or b. Students with a stronger mathematics background are encouraged to take ECON 125a and 126b instead. The intermediate courses need not be taken in sequence: in particular, ECON 125a is not required for 126b.

Field courses. The department offers a wide selection of upper-level courses that explore in greater detail material presented in introductory courses. Advanced fields of economics include theoretical, quantitative, and mathematical economics; market organization; human resources; finance; international and development economics; public policy and the public sector; and economic history. Some advanced field courses have only introductory microeconomics as a prerequisite. Others apply intermediate-level theory or econometrics to economic problems and institutions, and for this reason list one or more of the theory or econometrics courses as prerequisites.

Starred lecture courses. These advanced courses, numbered ECON 400–449, are limited-enrollment courses that cover relatively advanced material in more depth than regular field courses. Prerequisites for starred lecture courses usually include two of intermediate microeconomics, intermediate macroeconomics, and econometrics or a mathematics course such as MATH 120a or b. Advanced lecture courses may be applied toward the senior requirement.

Seminars. Although there is diversity in approaches in the various seminars (courses numbered ECON 450–489), 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. Students must take two of three core courses before enrolling in a seminar. Underclassmen and nonmajors may apply for places in Economics seminars, but priority is given to senior Economics majors (including those in Economics and Mathematics) who have not yet completed two seminars: all other students will be put on a wait list. Seminar enrollment lists (including the wait lists) will be posted outside Room 101,
28 Hillhouse Avenue, and on the Economics undergraduate Web page. The seminar requirement must be met by Yale Economics courses; seminars in other departments or taken elsewhere do not suffice. Residential college seminars do not count toward the major.

**Senior requirement.** Majors are required to take two departmental courses numbered ECON 400–491. At least one of these courses must be taken in the senior year, and at least one must be either a seminar or the senior essay. ECON 491a (the senior essay) counts as one seminar. ECON 492b does not count toward the senior requirement. Students who took ECON <429a> prior to their senior year may not count it toward the senior requirement.

**Senior essay.** Only those majors who submit a senior essay are eligible for Distinction in the Major. There are three types of senior essay: (1) students may write a one-term essay in an advanced departmental course (numbered 400–489) taken during the senior year; (2) students may write a one-term essay in the fall of the senior year as an independent project on a topic of their own design under the close and regular supervision of a faculty adviser (ECON 491a); or (3) students may write a two-term essay starting in the fall of the senior year as an independent project on a topic of their own design under the close and regular supervision of a faculty adviser (ECON 491a and 492b). The department does not permit one-term senior essays in the spring term except those written in advanced departmental courses (ECON 400–489). Meetings to discuss the senior essay will be held at the beginning of the fall term; see below under “Distinction in the Major.”

**Distinction in the Major.** To be considered for distinction, students must meet the appropriate grade standards (see chapter I) and submit a senior essay to the Economics department by the end of the next-to-last week of classes in the spring 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, related-credit courses, or courses taken outside Yale. Meetings for seniors to discuss the senior essay will be held on Wednesday, September 2, at 4:30 P.M. and Thursday, September 3, 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 5, 2009.

**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 all courses relating to the major. Applicants must have taken MATH 120a or b and 222a or b or equivalent. 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 a joint committee of Yale College and the Graduate School. 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 must be economics courses designed primarily for Ph.D. students (courses in the International and Development Economics program do not count toward this requirement). The eight graduate 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 ECON 122a or b or 132b or 136b or a 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 121a or b and 122a 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. Questions concerning the major or programs of study should be directed to a college representative. For 2009–2010 the college representatives are as follows:

- BK, D. Karlan, J. Horner
- BR, G. Ordonez, F. Lange
- CC, A. Tsyvinski, W. Nordhaus
- DC, D. Brown, C. Udry
- TD, D. Andrews, E. Washington
- JE, S. Berry, E. Vytlacil
- MC, A. Kowalski, J. Hastings
- PC, G. Moscarini, D. Bergemann
- SY, T. Bewley, B. Bruegmann
- SM, T. Otsu, A. Smith
- ES, T. Srinivasan, G. Maggi
- TC, J. Geanakoplos, D. Gerardi
REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 12 term courses
Distribution of courses: 2 term courses of intro econ: 1 of microecon, one of macroecon; 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 and either a sem or the senior essay
Specific courses required: ECON 121a or b or 125a; 122a or b or 126b; 131a or b or 132a or b or 136b
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. 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: MW 9-10.15 QR, So (64) Katerina Simons
  110a–5: MW 11.35-12.50 QR, So (64) Katerina Simons
  110a–6: MW 2.15 QR, So (64) Katerina Simons
  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. Final enrollment list will be posted on the bulletin board at 28 Hillhouse Ave. May not be taken after ECON 108a or b or 115a or b or <117a>.

*ECON 111b, An Introduction to Macroeconomic Analysis.
  111b–1: TTH 9-10.15 So (64) Sigridur Benediktsdottir
  111b–2: TTH 11.35-12.50 So (64) Sigridur Benediktsdottir
  111b–3: TTH 1-2.15 So (64) Sigridur Benediktsdottir
  111b–4: 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. Prerequisite: ECON 108a or b, 110a, 115a or b, or <117a>. May not be taken after ECON 116a or b.

ECON 115a or b, Introductory Microeconomics.
  115a: MW 2.15 QR, So (36) Steven Berry
  115b: TTH 2.15 QR, So (26) Timothy Guinnane
  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: TRH 1-2:15  So (26) Anthony Smith
116b: MW 1-2:15  So (36) 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: ECON 108a or b, 110a, 115a or b, or <117a>.

Intermediate Core Courses

ECON 121a or b, Intermediate Microeconomics.

121a: MW 9-10:15  QR, So Core (32) Larry Samuelson
121b: TRH 9-10:15  QR, So Core (22) Dirk Bergemann

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 introductory microeconomics 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 125a. (Formerly ECON 150a or b)

ECON 122a or b, Intermediate Macroeconomics.

122a: MW 11:35-12:50  QR, So Core (34) William Nordhaus
122b: MW 1-2:15  QR, So Core (36) Bjoern Bruegemann

Contemporary theories of employment, finance, money, business fluctuations, and economic growth. Their implications for monetary and fiscal policy. Emphasis on empirical studies, financial and monetary crises, and recent policies and problems. Enrollment limited in ECON 122a. After two terms of introductory economics and completion of the mathematics requirement for the major or its equivalent. May not be taken after ECON 125a. (Formerly ECON 150a or b)

ECON 123a, Microeconomic Theory. Dino Gerardi.

MW 1-2:15  QR, So (36) Core

Similar to ECON 121a 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 introductory economics, and MATH 118a or b or 120a or b or equivalent. May not be taken after ECON 121a or b. (Formerly ECON 154a or b)

ECON 126b, Macroeconomic Theory. Giuseppe Moscarini.

MW 1-2:15  QR, So (36) Core

Similar to ECON 122a 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 122a or b. (Formerly ECON 153b)

Econometrics Core Courses

ECON 131a or b, Econometrics and Data Analysis I.

131a: TRH 9-10:15  QR, So Core (22) Lanier Benkard
131b: TRH 11:35-12:50  QR, So Core (24) Taisuke Otsu

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. (Formerly ECON 161a or b)
econ 132a or b, Econometrics and Data Analysis II.
132a: TTh 9-10.15 QR, So Core (22) Fabian Lange
132b: TTh 11.35-12.50 QR, So Core (24) Joseph Altonji
Continuation of econ 131a 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 131a or b or econ 135a or a course in the stat 101–106 series. (Formerly econ 166b)

econ 135a, Introduction to Probability and Statistics.
Xiaohong Chen.
TTh 9-10.15 QR, So (22)
Foundations of mathematical statistics: probability theory, distribution theory, parameter estimation, hypothesis testing, regression, and computer programming. After introductory microeconomics and either math 118a or b or math 120a or b and 222a or b or 225a or b. (Formerly econ 162a)

econ 136b, Econometrics.
Edward Vytlacil.
MW 11.35-12.50 QR, So (34) Core
Continuation of econ 135a 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 135a or with permission of instructor. (Formerly econ 163b)

FIELD COURSES
[econ 159a, Game Theory]

econ 170a, Health Economics and Public Policy.
Howard Forman.
TTh 2.30-3.45 So (27)
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 180b, 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. (Formerly econ 120a or b)

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]

**econ 187a, European Economic History, 1815–1914.**
Timothy Guinnane.
**Th 9-10.15 So (22)**
European economic growth and development from the industrialization of Germany and other Continental countries in the early nineteenth century to World War I. The role of institutional development, the role of trade and imperialism, agricultural improvements, and industrialization. *After two terms of introductory economics.*

**econ 200b, Firms, Markets, and Competition.** Staff.
3 **htba QR, So (50)**
Analysis of imperfectly competitive markets, focusing on the interactions among firm behavior, market structure, and market outcomes. Topics include oligopoly, collusion, predation, firm entry, advertising, and price discrimination as well as public policy implications of market behavior. *After intermediate microeconomics or equivalent.*

**econ 251a, Financial Theory.** John Geanakoplos.
**Th 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.*

**Mw 9-10.15 So (32)**
An overview of the ideas, methods, and institutions that permit human society to manage risks and foster enterprise. Description of practices today and analysis of prospects for the future. Introduction to risk management and behavioral finance principles to understand the functioning of securities, insurance, and banking industries. *After two terms of introductory economics.*

[econ 253b, Computational Finance]

[econ 254b, Financial Econometrics]

**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 276a, Law and Economics of Contracts I.**
Alexander Stremitze, Richard Brooks.
**Th 1-2.15 So (26)**
The written contracts that organize relationships between parties engaging in economic exchange. The design of contracts and the body of law that governs and influences their economic efficiency. *Prerequisites: basic calculus and intermediate microeconomics, or permission of instructors.*
econ 277b, Law and Economics of Contracts II.
  Alexander Stremitze, Richard Brooks.
  TTh 1-2.15 So (26)
A course that bridges the gap between economic contract theory, contract law scholarship, and the practice of writing contracts. Legal and economic theory are applied to the design of real-world contracts. Prerequisites: introductory microeconomics and econ 276a, or permission of instructors.

[econ 300a/ints 388a, International Trade Theory and Policy]

econ 323b/ints 328b, 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, intrahousehold allocations, gender, and corruption. After introductory microeconomics.

econ 330a, 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. After two terms of introductory economics.

econ 350a, Mathematical Economics: General Equilibrium Theory.
  Truman Bewley.
  TTh 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. (Formerly econ 155a)

econ 351b, Mathematical Economics: Game Theory.
  Johannes Horner.
  TTh 9-10.15 QR, So (22)
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 intermediate microeconomics, or with permission of instructor. (Formerly econ 156b)
ADVANCED LECTURE COURSES

  TTh 1-2.15  So (26)
  Overview of the state of knowledge in the field of labor economics; introduction to research methods. 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. **Prerequisites:** intermediate microeconomics and econometrics. (Formerly econ 225a)

* **econ 402b, Economics of Education.** Justine Hastings.
  TTh 1-2.15  So (0)
  Review of academic research in the economics of education. Measurement of student achievement, funding of public education, and school choice and school vouchers. **Prerequisites:** intermediate microeconomics or equivalent, calculus, and econometrics or a course in the stat 101–106 sequence.

* **econ 403b, Trade and Development.** David Atkin.
  TTh 2.30-3.45  So (0)
  Comparison of some developing countries, where international trade has brought about rapid growth and large-scale reductions in poverty, with other countries, where global trade has increased inequality and brought little growth. Both theoretical models and empirical evidence are used. **Prerequisites:** intermediate microeconomics and an econometrics or statistics course.

SEMINARS

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 1-3.20  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 452a or b, Behavioral Finance.** Keith Gamble.
  M 1.30-3.20  So (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 either econ 251a or 252b.**

  M 2.30-4.30  So (0)
  The character, logic, and economic effects of U.S. antitrust laws, drawing on legal and economic analyses. Major areas of antitrust law: price fixing and other horizontal restraints of trade, vertical restraints of trade, monopolization, and mergers. **After intermediate microeconomics or equivalent. Preference to students who have completed econ 200b.**

* **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. **Prerequisite:** introductory microeconomics.

**econ 456a, Private Equity Investing.** Michael Schmertzler.

M 1:30-1:20 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:** intermediate microeconomics or equivalent, and econometrics.

**econ 457b, Financial History.** William Goetzmann.

T 9:25-11:15 So (0)

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:** intermediate macroeconomics or equivalent, and econometrics. No previous training in finance is assumed.

**econ 459b, Corporate Finance.** Tri Vi Dang.

M 1:30-3:20 So (0)

Selected themes in corporate finance: financial instruments and financing patterns, the valuation of assets, capital structure decisions, taxes, financial contracting, costs of debt and equity finance, internal and external finance, venture capital and private equity finance, and security design. **After introductory microeconomics.**


T 2:30-4:20 So (0)

Introduction to neuroeconomics. The definition and measurement of subjective well-being; what economic and scientific theories can do to help maximize well-being in everyday life. Readings from economics, neuroscience, philosophy, and psychology. **After intermediate microeconomics or equivalent.**

**econ 461b, Economics, Addiction, and Public Policy.**

Jody Sindelar.

Th 1-2:50 So (0)

Smoking, alcoholism, illicit drugs, and obesity studied from economic and policy perspectives. Focus on causes of and solutions to problems. **After introductory microeconomics.**

**econ 463a/ep&ee 320a, Economic Problems of Latin America.**

Eduardo Engel.

W 3:30-5:20 So (0)

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. **Prerequisites:** intermediate microeconomics and macroeconomics or equivalents.
*econ 464b, Information and Incentives in Health Care.  
Andrew Epstein.  
T 2.30-4.20 So (0)  
Topics relating to the provision of medical care in the United States, focusing on features brought about by asymmetric information, uncertainty, and incentive structures. After two terms of introductory economics.

*econ 465a/ep&e 377a, Debating Globalization.  
Ernesto Zedillo.  
M 2.30-4.20 So (0)  
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. After two terms of introductory economics. Preference to seniors majoring in Economics or EP&E.

*econ 466a, Economics of Aging.  
Douglas McKee.  
T 2.30-4.20 So (0)  
Overview of the economics of aging and retirement. Saving for retirement, the decision to retire, design of social security systems, how families decide who cares for the elderly, and how older people decide to whom to leave their assets. Prerequisites: intermediate microeconomics and econometrics.

*econ 467a/ep&e 319a, Issues in Health Economics.  
Howard Forman.  
W 1.30-3.20 So (0)  
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. After introductory microeconomics. May not be taken after or concurrently with econ 170a.

[econ 468b, Institutions and Incentives in Economic Development]

*Econ 470a or b/ep&e 413a or b, Topics in American Economic History: Financial Crises.  
Benjamin Chabot.  
W 1.30-3.20 So (0)  
An empirical study of nineteenth- and early twentieth-century financial crises. Institutions, banking, panics and crashes, the gold standard, capital market integration, deflation, and the Great Depression. Prerequisites: intermediate microeconomics or equivalent, and econometrics or a course in the stat 101–106 series.

*econ 471a, Topics in Medieval Economic History, 1000–1500.  
Philip Slavin.  
Th 3.30-5.20 So (0)  
The economic development of western and central Europe during the High and Late Middle Ages, a period of commercial and agricultural revolution and expansion. The beginnings of commercial-financial capitalism in Europe. After introductory microeconomics.

*econ 472a, Theories of Political Economy.  
Dino Gerardi.  
Th 2.30-4.20 So (0)  
Introduction to recent theories of political economy. Game-theoretic models are used to study the effects of different constitutional structures on the behavior of voters and politicians and the performance of government. Analysis of collective decisions in small committees and juries. Prerequisite: intermediate microeconomics.
*econ 473a*/*ep&e 352a*/*plsc 343a, Equality. John Roemer.
   For description see under Ethics, Politics, & Economics.

*econ 476a, Topics in International Economics.* Miguel Ramirez.
   W 1.30-3.20 So (o)
   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. Prerequisites: intermediate microeconomics and macroeconomics or equivalents.

*econ 478a*/*east 476a, Economic Development of India and South Asia.* T. N. Srinivasan.
   W 2.30-4.20 So (o)
   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. After introductory microeconomics and macroeconomics.

*econ 479a*/*east 479a, Economic Development of Japan.* Koichi Hamada.
   Th 1.30-3.20 So (o)
   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. After introductory microeconomics and macroeconomics. May not be taken after econ <429a>.

*econ 480b, Topics in Macroeconomics.* Irasema Alonso.
   W 3.30-5.20 So (o)
   Central issues in macroeconomics. Focus on policy analysis and the study of puzzles in asset markets at both the domestic and the international level. Prerequisite: intermediate microeconomics.

[econ 483a, The Economy, Elections, and Markets]

*econ 484a, The United States Banking System.* Nicholas Perna.
   T 1.30-3.20 So (o)
   The structure and functions of the U.S. banking system, with special attention to the role of the Federal Reserve, private sector banks, and related financial institutions in the overall economy. The 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. After intermediate macroeconomics or equivalent.

*econ 488a, Experimental Economics.* Shyam Sunder.
   T 1.30-3.20 QR, So (o)
   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. After intermediate microeconomics or equivalent.
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 5, 2009. One-term senior essays are due at the end of the last week of classes in the fall term. In order to be considered for Distinction in the Major, students must submit three copies of their essay to the Economics department office by the end of the next-to-last week of classes in the spring term. This is also the due date for two-term senior essays. 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 and that the essay will contain original research. 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 2, from 4.30 to 5.20, or on Thursday, September 3, from 1.30 to 2.20, in Room 106, 28 Hillhouse Ave. Seniors planning to write a senior essay, including those who plan to write a spring-term essay, should attend this meeting. Details regarding calculation of distinction will be discussed and senior essay guidelines will be distributed.

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. 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 available in the Economics department office. Permission of the instructor and of the director of graduate studies is required.

ECONOMICS AND MATHEMATICS

Adviser (Economics): Donald Brown, Rm. B1, 28 Hillhouse Ave., 432-6934 or 432-3574, qazi.azam@yale.edu; director of undergraduate studies
Adviser (Mathematics): Roger Howe, 220B LOM, 432-4686, roger.howe@yale.edu

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 125a or 121a or b, and one intermediate macroeconomics course chosen from either ECON 126b or 122a or b
2. A year of mathematical economics, ECON 310a and 310b
3. Two term courses of econometrics, ECON 135a and 136b (with permission of the Economics adviser, STAT 242b may be taken instead of ECON 135a)
4. A term course in linear algebra, MATH 222a or b or 223a 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; for details see under Economics. 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.) 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 121a or b or 125a; ECON 126b or 122a or b; ECON 310a and 310b; ECON 135a and 136b; MATH 222a or b or 223a or b (or 230 for 2 course credits); MATH 300b or 301a
Substitution permitted: STAT 242b for ECON 135a, 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: Mark Reed, 523 BCT, 432-4306, mark.reed@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 Vaišnyš, Jerry Woodall (Adjunct), Steven Zucker
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 Engineering Accreditation Commission of ABET, Inc., 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, ENAS 130b or CPSC 112a 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. Students whose programming skills exceed the level of ENAS 130b or CPSC 112a or b are asked to take a more advanced programming course instead, such as CPSC 201a or b; 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 and thirteen term courses in topics in engineering. These courses include:

1. Mathematics and basic science (four term courses): ENAS 194a or b; MATH 222a or b or 225a 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.

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:

<table>
<thead>
<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>EENG 320a</td>
<td>EENG 481a</td>
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<tr>
<td>ENAS 151a or MATH 120a</td>
<td>STAT 241a</td>
<td>EENG 348a</td>
<td>Two electives</td>
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<tr>
<td>PHYS 180a</td>
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<tr>
<td>EENG 201b</td>
<td>CPSC 112b or MATH 222b</td>
<td>APHY 322b</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 222b</td>
<td>ENAS 130b</td>
<td>EENG 310b</td>
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<tr>
<td>PHYS 181b</td>
<td>EENG 203b</td>
<td>EENG 325b</td>
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<td>ENAS 194b</td>
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</tbody>
</table>

For students who must start with MATH 112a or b, a typical ABET-accredited B.S. program might include:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tbody>
<tr>
<td>CPS 112a</td>
<td>EENG 200a</td>
<td>EENG 202a</td>
<td>EENG 481a</td>
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<tr>
<td>MATH 112a</td>
<td>ENAS 151a or MATH 120a</td>
<td>EENG 320a</td>
<td>Two electives</td>
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<td>MATH 112a</td>
<td>EENG 348a</td>
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<td>MATH 112b</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>APHY 322b</td>
</tr>
<tr>
<td>MATH 112b</td>
<td>MATH 222b</td>
<td>EENG 310b</td>
<td>Two electives</td>
</tr>
<tr>
<td>PHYS 181b</td>
<td></td>
<td>EENG 325b</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.

**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: MATH 222a or b or 225a or b; ENAS 194a or b; EENG 200a, 201b, 202a, 203b, 471a or, with permission of the director of undergraduate studies, 481a (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:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
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</thead>
<tbody>
<tr>
<td>EENG 200a</td>
<td>CPS 112a</td>
<td>Two electives</td>
<td>EENG 471a</td>
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<tr>
<td>ENAS 151a or MATH 120a</td>
<td>EENG 202a</td>
<td></td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 180a</td>
<td></td>
<td></td>
<td></td>
</tr>
<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>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 181b</td>
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</tbody>
</table>

For students who must start with MATH 112a or b, a typical program for this degree might include:
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: MATH 222a or b or 225a or b, or ENAS 194a or b; EENG 200a, 201b, 202a, and 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 EENG 471a 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 471a, 472b, or 481a 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 should refer to previous editions of this bulletin for the appropriate major requirements. Seniors who have completed only part of the previous sophomore sequence EENG <226a>, <227a>, <228b>, <229b> should consult with the director of undergraduate studies.

REQUIREMENTS OF THE MAJOR

ELECTRICAL ENGINEERING, B.S.

Prerequisites: MATH 112a or b, 115a or b; ENAS 131a or MATH 120a or b or higher; ENAS 130b or CPSV 112a or b or higher; PHYS 180a, 181b or higher

Number of courses: 17 term courses beyond prereqs, incl senior req

Specific courses required: EAS 194a or b; MATH 222a or b or 225a or b; APHY 322b; STAT 241a, EENG 200a, 201b, 202a, 203b, 310b, 320a, 325b, 348a

Senior requirement: One-term design project (EENG 481a)
ENGINEERING SCIENCES (ELECTRICAL), B.S. AND B.A.

Prerequisites: Both degrees — Math 112a or b, 115a or b or higher; Enas 151a or Math 120a or b or higher; B.S. — Math 180a, 181b or higher; B.A. — Math 190a, 191b 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: B.S. — one-term research or design project (Eeng 471a or, with permission of DUS, 481a); B.A. — one-term research or design project (Eeng 471a)

*Eeng 001a, Introduction to Nanoscience. Mark Reed.

Th 4-5.15 QR, Sc (27) Fr sem
An introductory survey of the emerging discipline of nanotechnology. Topics include realistic nanosystems, methods used to fabricate and create nanostructures, the physical properties and applications of nanostructures, microelectromechanical systems (MEMS) and biological applications, and system architecture. Prerequisites: strong background in high school mathematics and science. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.


Th 11.35-12.50; lab w 1.30-5.30 or th 2-6 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.

Yiorgos Makris.

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. Mw 1.30-2.30; 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.** Jan Willems.

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.** Hür Köser.

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.** Eugenio Culurciello.

TH 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 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 401b/gaphy 321b, 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 semiconductor 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, solar cells, MOS capacitors, MOSFETs, and integrated 
circuits. Prerequisite: eeng 320a or equivalent or permission of instructor.

**eeng 402La/Gmeng 402La**, Nano and Microsystems Technology.  
Hong Tang.
TTh 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.

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.

eeng 408a/G, Electronic Materials: Fundamentals and  
Applications.  Minjoo Lee.
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 410a/G, 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  
gaphy 322b, or permission of instructor.
[eeng 418b/aphy 418b, Heterojunction Devices]

*eeng 425a, 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 tech-
niques, timing, and area estimation. Exploration of recent and future chip tech-
nologies. A course project is the design, through layout, of a digital CMOS sub-
system chip; selected projects are fabricated for students. Prerequisite: familiarity
with computer programming and with circuits at the level of introductory physics.

[eeng 428b/enas 428b, Sensors and Biosensors.]
Eugenio Culurciello.

Mw 10.30-11.20; lab 1 HTBA  QR  (0)
Analysis of the design of integrated sensors, using modern fabrication technolo-
gies and recent circuit topologies. Creation of a framework for sensor design that
attains performance as close as possible to the fundamental limits of transduction
and processing. Particular attention to mapping algorithms and topologies into
circuits that can match the physical level of the quantities to be sensed. Students
develop sensory systems for biomedical application and for sensor networks.

[eeng 436b, Systems and Control]
*eeng 437a/amth 437a, Optimization Techniques.
A. Stephen Morse.
For description see under Applied Mathematics.

*eeng 442a/amth 342a, Linear Systems.
A. Stephen Morse.

Mw 1-2.15, 1 HTBA  QR  (36)
Introduction to finite-dimensional, continuous, and discrete-time linear dynam-
ical 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 engineer-
ing, and control theory. Prerequisite: math 222a or b or permission of instructor.

[eeng 444a, Digital Communication Systems.]
Edmund Yeh.

Th 1-2.15  QR  (26)
Introduction to the fundamental theory underlying modern digital communica-
tion. 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 net-
works. 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 449b, Computers for Cognition.
Richard Lethin.

Th 1:30-3.20  QR  (26)
Introduction to the development of computer architectures specialized for cog-
nitive processing, including both offline “thinking machines” and embedded
devices. The history of machines, from early conceptions in defense systems to
temporary initiatives. Instruction sets, memory systems, parallel processing,
analog architectures, probabilistic architectures. Application and algorithm characteristics. **Prerequisites:** eeng 201b, 325b, and cpsc 112a or b.

For description see under Statistics.

*eeng 460aG* / *cpsc 436a, Networked Embedded Systems and Sensor Networks.* Andreas Savvides.

**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.

[eeng 462bG, Digital Systems Testing and Design for Testability]


W 2:30-4:20 (37)

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, Advanced ABET Projects. Roman Kuc.

**TTh** 9:25-10:15, 1 HTBA (0)

Study of the process of designing an electrical device that meets performance specifications, including project initiation and management, part specification, teamwork, design evolution according to real-world constraints, testing, ethics, and communication skills. Design project consists of electronic sensor, computer hardware, and signal analysis components developed by multidisciplinary teams. **Prerequisites:** eeng 310b, 320a, 325b, and 348a.
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Directors of undergraduate studies: Mark Reed (Electrical Engineering), 523 BCTR, 432/4306, mark.reed@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; CPS 112a or b; and PHYS 180a and 181b, or 200a and 201b. 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: CPS 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. MATH 244a may be substituted for CPS 202a. 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. CPS 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.

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>
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<tbody>
<tr>
<td>EENG 200a</td>
<td>CPS 201a</td>
<td>CPS 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>CPS 223b</td>
<td>CPSC 365b</td>
<td>Two electives</td>
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<tr>
<td>EENG 201b</td>
<td>CPS 203b</td>
<td>One elective</td>
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<tr>
<td>PHYS 181b</td>
<td>MATH 222b</td>
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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:
For students with no calculus and no programming experience, a typical program would be:

**Freshman** | **Sophomore** | **Junior** | **Senior**
---|---|---|---
CPSC 112a | CPSC 201a | CPSC 202a | Two electives
MATH 115a | EENG 200a | CPSC 323a |
PHYS 180a | EENG 202a | STAT 241a |
EENG 201b | CPSC 223b | CPSC 361b | Senior project
MATH 120b | EENG 203b | One elective | One elective
PHYS 181b | | | |

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.

**Accreditation.** Students interested in pursuing an ABET-accredited degree should consider the B.S. program in Electrical Engineering. See under Electrical Engineering.
Mechanical Engineering, and under the interdepartmental major in Environmental Engineering; interdisciplinary courses bearing on these programs are listed under Engineering and Applied Science. These departments are administered by the dean of the School of Engineering & Applied Science, and all offer B.S. degrees in their subject areas.

Curricula in Yale’s undergraduate engineering programs range from technically intensive ones to those with lesser technical content that allow students considerable freedom to include courses of a nontechnical nature in their studies. Programs accredited by the Engineering Accreditation Commission of ABET, Inc., the accreditor for university programs in engineering, are the most intensive. ABET-accredited programs include B.S. degrees in Chemical Engineering, Electrical Engineering, and Mechanical Engineering.

Some students find that less intensive programs better meet their needs when considering a joint major and/or careers in fields requiring less comprehensive technical knowledge. Such non-ABET programs include the B.S. in Engineering Sciences (Chemical, Electrical, Environmental, or Mechanical), as well as the B.A. in Engineering Sciences (Chemical, Environmental, or Mechanical) designed for students planning careers in business, law, medicine, journalism, or politics who want their liberal arts education to include study of the impact science and technology have on society. A related major in Applied Mathematics is also available. For descriptions of all the programs mentioned above, see the entries in this bulletin in their respective alphabetical positions.

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 School of Engineering and Applied Science 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.

  For description see under Mechanical Engineering.

  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 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]

*enas 323a, Creativity and New Product Development. Henry Bolanos.
  323a-1: T 1:30-3:20 So (o)
  323a-2: T 3:30-5:20 So (o)
An overview of the stages of product development in a competitive marketplace, with simulation of the process in class. A hands-on approach to creativity and the development process.

enas 335a, 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.

  For description see under Environmental Engineering.

enas 443a/enve 443a(f)&es 380a(f), Greening Business Operations. Thomas Graedel.
  For description see under Environmental Engineering.

enas 444a/enve 444a, Management of Environmental Resources and Environmental Systems. Gideon Oron.
  For description see under Environmental Engineering.
*enas 445a/G/ENVE 445a, Environmental Risk Assessment.
Yehia Khalil.
For description see under Environmental Engineering.

APPLIED MATHEMATICS AND COMPUTATION COURSES

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 or equivalent.

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. Staff [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.

For description see under Electrical Engineering.

For description see under Electrical Engineering.

enas 440a/G/ENGY 440a, Applied Numerical Methods I. Beth Anne Bennett.
TTTH 11.35-12.50 QR Meets RP (24)
The derivation, analysis, and implementation of various numerical methods. Topics include root-finding methods, numerical solution of systems of linear and nonlinear equations, eigenvalue/eigenvector approximation, polynomial-based interpolation, and numerical integration. Additional topics such as computational cost, error analysis, and convergence addressed in a variety of contexts. 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/MENG 441b, Applied Numerical Methods II.
Beth Anne Bennett.

TH 11:15-12:50 QR Meets RP (24)
The derivation, analysis, and implementation of various numerical methods. The numerical solution of ordinary and partial differential equations, both linear and nonlinear, via one-step, multistep, and Runge-Kutta methods for initial value problems, and via finite difference methods for boundary value problems. Topics such as computational cost, error analysis, and stability analysis are also addressed in a variety of contexts. 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 or equivalent.

For description see under Geology & Geophysics.

ENAS 496b/G, Probability and Stochastic Processes.
Sekhar Tatikonda.

MW 1-2:15 QR Meets RP (36)

ENGLISH LANGUAGE AND LITERATURE

Director of undergraduate studies: Amy Hungerford; associate director of undergraduate studies: Caleb Smith; 107 LC, 432-2233, ruben.roman@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 Gluck (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, Annabel Patterson (Emeritus), 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 Alyys, Murray Biggs (Adjunct), Jessica Brantly, Stefanie Markovits

Assistant Professors
Susan Chambers, Ian Cornelius, Paul Grimstad, Justin Neuman, Catherine Nicholson, Jessica Pressman, Sam Sec, Caleb Smith, Brian Walsh, John Williams

Senior Lecturers
James Berger, Amy Bloom, John Crowley, Richard Maxwell, Fred Strebeigh

Lecturers
Jill Abramson, Edward Barnaby, Emily Barton (Visiting), Steven Brill, Richard Deming, Andrew Ehrgood, Charles Euchner, Joseph Gordon, Karin Gosselin, Alfred Guy, Kevin Hicks, Rosemary Jones, Penelope Laurens, John Loge, Raymond Malewitz,
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 125a, 126b. It is strongly recommended that prospective English majors take at least one term of ENGL 125a, 126b by the end of the sophomore year. If a student takes two terms of ENGL 125a, 126b, then any two terms of ENGL 115–117, 127–130, or DRST 001a, 002b in the Directed Studies program, or THST 110a, 111b, or ENGL 114a in combination with 115b, 116b, or 117b, may count toward the twelve remaining terms in the major. If ENGL 125a, 126b is not taken, two terms of ENGL 127–130 or DRST 001a, 002b 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 125a, 126b. Two of these courses should substitute for two of the three units in ENGL 125a (Chaucer, Spenser, and a Renaissance lyric poet), and two should substitute for two of the four units in ENGL 126b (Milton, Pope, Wordsworth, 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 upperclassmen 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. Students are strongly encouraged to consult the director of undergraduate studies, the departmental representative in their residential college, and their departmental adviser for advice about their course choices.

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. 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 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 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 departmental seminar; courses in creative writing may not. 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; 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. 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 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, 116a or b, 117b, 120a or b), the English department offers several introductory, intermediate, and advanced creative writing courses (ENGL 130–141 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 LC and on the English department Web site at www.yale.edu/english/undergraduate.html. 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, except by permission of the director of undergraduate studies. 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, 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.

Juniors applying to the writing concentration must do so by noon on April 13, 2010. Seniors applying must do so by November 20, 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:

BK, J. Rogers
BR, L. Peterson [F]; R. Frank [Sp]
CC, to be announced
DC, A. Hungerford
TD, to be announced
JE, D. Bromwich
MC, L. Brisman
PC, S. Markovits
SY, M. Robinson
SM, C. Miller
ES, P. Fry
TC, J. Carlisle

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 and lists of approved senior essays and individual writing projects are posted in 107 LC.

REQUIREMENTS OF THE MAJOR

Prerequisite: ENGL 125A, 126B or, with addtl courses in major English poets, two terms selected from DRST 001A, 002B, ENGL 127A or B, or ENGL 129A, 130B

Number of courses: 14 term courses (incl prereq and senior req)
Distribution of courses:  

**Class of 2010**—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 sems, 1 in junior, 1 in senior year; no more than 4 intro-level courses;  

**Class of 2011 and later classes**—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; 2 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 sem  

**Other:**  Library research session or Libr sem  

**Senior requirement:**  

**Class of 2010**—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 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)  

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**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 1. 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](http://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 1 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 1.  

**English for Freshmen**  

**ENGL 114a** or b, **Writing Seminars I**. Suzanne Young and staff.  

3 HTBA For sections see [www.yale.edu/courseinfo](http://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**. Aaron Ritzenberg and staff.  

3 HTBA For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) WR, Hu (0)  

Exploration of major themes in selected works of literature. Individual sections 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.  

**ENGL 116a** or b, **Writing Seminars II**. Andrew Ehrgood and staff.  

3 HTBA For sections see [www.yale.edu/courseinfo](http://www.yale.edu/courseinfo) WR (0)
Refinement of 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. \textit{Prerequisite: ENGL 114a or b or permission of instructor.}

\textbf{ENGL 117b, Literature Seminars II.} Aaron Ritzenberg and staff.

3 \textsc{htba} For sections see \url{www.yale.edu/courseinfo} \textsc{WR, Hu (0)}

Continues the work of ENGL 115a or b through 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. \textit{Prerequisite: ENGL 115a or b or permission of the course director.}

\textbf{English for Freshmen and Sophomores}

ENGL 120a or b, 125a, 126b, 127a or b, and 130b are open to freshmen whose SAT and English Advanced Placement test scores fall within the range specified for these courses (see the \textit{Freshman Handbook}), and to upperclassmen, normally after one or two terms of English for Freshmen.

\textbf{ENGL 120a or b, Reading and Writing the Modern Essay.} Fred Strebeigh and staff.

3 \textsc{htba} For sections see \url{www.yale.edu/courseinfo} \textsc{WR (0)}

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.

\textbf{ENGL 125a and 126b, Major English Poets.} Susan Chambers [F], Brian Walsh [Sp], and staff.

3 \textsc{htba} For sections see \url{www.yale.edu/courseinfo} \textsc{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.

\textbf{ENGL 127a or b, Readings in American Literature.} Paul Grimstad [F], Caleb Smith [Sp], and staff.

3 \textsc{htba} For sections see \url{www.yale.edu/courseinfo} \textsc{WR, Hu (63)}

Amer

Major works of the American literary tradition in a variety of poetic and narrative forms and in diverse historical contexts. Emphasis on analytical reading and critical writing. Authors may include Melville, Poe, Hawthorne, Bryant, Whitman, Dickinson, Thoreau, Emerson, Douglass, Stowe, Twain, Wharton, Cather, H. Crane, Stevens, Stein, L. Hughes, Paredes, Ellison, O’Connor, Ginsberg, Lowell, O’Hara, M. Robinson, C. McCarthy, Morrison, E. P. Jones, J. Díaz.

\textbf{ENGL 129a and 130b, The European Literary Tradition.} Joseph Roach [F], Justin Neuman [Sp], and staff.

3 \textsc{htba} For sections see \url{www.yale.edu/courseinfo} \textsc{WR, Hu (63)}
In the fall term, Homer (the *Iliad*) and 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.

**SOPHOMORE SEMINARS**

**ENGL 131A, Versification.** Penelope Laurans.

* MW 1:2.15 Hu (0)  
A historical study of the evolving technical aspects of English verse from Anglo-Saxon through modern times. Regular exercises in writing meters and stanza forms and regular readings in poetry. Intended principally for aspiring poets who wish to learn the history of their craft, but open also to students of poetry who wish to have a firmer command of historical and technical poetic matters. *Enrollment limited to sophomores.*

**ENGL 133B, Dickens, High and Low.** Janice Carlisle.

* TTTh 2:30-3:45 Hu (0)  
Charles Dickens’s novels viewed both as examples of Victorian narrative art and as popular culture. A number of Dickens’s works—principally *Oliver Twist*, *A Christmas Carol*, and *Great Expectations*—from so-called high and low perspectives in their status as literary art and in their role as sources of popular entertainment, including that offered by comic books and movies. *Enrollment limited to sophomores.*

**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 150B/LING 150B, Old English.** Roberta Frank.

* MW 2:30-3:45 Hu (37) Pre-1800  
An introduction to the literature and culture of earliest England. A selection of prose and verse, including riddles, heroic poetry, meditations on loss, a dream vision, and excerpts from *Beowulf*, read in the original old English.

**ENGL 153A/LING 183A, Readings in Old Norse Poetry and Prose: Chronicles of the Vikings.** Roberta Frank.

* MW 2:30-3:45 Hu (0) Pre-1800  
An introduction to the language and literature of earliest Norway and Iceland. Texts (to be read in the original) include runic inscriptions left behind by the Vikings, verse of their official skalds, the sometimes irreverent mythological poetry of the Edda, and the sagas telling of the Norse discovery of America.

**ENGL 156A, Medieval War: Chaucer and Shakespeare.** Alastair Minnis.

* HTBA Hu (0) Pre-1800  
The culture of medieval warfare as fictionalized in Chaucer’s *Knight’s Tale* and Shakespeare’s *Henry V*. Principles of warfare drawn from Sun Tzu’s sixth-century treatise *The Art of War*. Offered in Beijing, China. For application procedures see under Peking University–Yale University Joint Undergraduate Program.
ENGL 158b, READINGS IN MIDDLE ENGLISH: LANGUAGE AND SYMBOLIC POWER. Ian Cornelius.
TTH 1-2.15 WR, Hu (0)
Readings in fourteenth- and fifteenth-century literature, religious writing, and accounts of current events. Issues of language choice, translation, authority, and literary culture. Focus on the poetry of Langland, Chaucer, and Hoccleve, devotional writing of their contemporaries, and early translations of the Bible. The emergence of English as a dominant world language.

ENGL 170b, 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 199a, FICTIONS OF LOVE: CHAUCER AND SHAKESPEARE. Alastair Minnis.
HTBA Hu (0)
Complex fictions of love in Chaucer’s Franklin’s Tale and Shakespeare’s Romeo and Juliet. Comparisons with the Chinese Shih Ching collection. Offered in Beijing, China. For application procedures see under Peking University–Yale University Joint Undergraduate Program.

ENGL 200b, SHAKESPEARE: COMEDIES AND ROMANCES. Lawrence Manley.
TTH 11.35-12.25, 1 HTBA Hu (24) Pre-1800
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: HIS TORIES AND TRAGEDIES. David Scott Kastan.
TTH 1.30-2.20, 1 HTBA Hu (26) Pre-1800
Shakespeare on the stage and 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.
TTH 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 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 235b, EIGHTEENTH-CENTURY BRITISH NOVELS AND POETRY. Christopher R. Miller.
TTH 11.35-12.30 (0) Pre-1800
The rise of the novel studied within broader literary and cultural contexts. Focus on works by Defoe, Swift, Richardson, Fielding, Sterne, Burney, and Austen, with attention to poetry (Pope, Collins, Thomson, Gray, Cowper) and nonfiction prose (Locke, Hume, Berkeley, Addison, Johnson, Burke, Reynolds).

ENGL 241A/PLSC 318A, LINCOLN AT 200.  Steven Smith, David Bromwich.  For description see under Political Science.

  MW 1-2.15  WR, Hu  (o)  Pre-1900  Natural history and environmental writing in the English-speaking world from the late eighteenth century to the present. Readings include 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, India, Australia, and South Africa.

*ENGL 250A, ROMANTIC POETRY.  Leslie Brisman.
  MW 11.35-12.50  WR, Hu Meets RP  (o)  Pre-1900  Libr  An introduction to the work of Blake, Coleridge, Wordsworth, Shelley, and Keats, with some attention to Byron and the minor poets of this rich period of poetic innovation and revolutionary spirit.

*ENGL 252B/HUMS 280B, ROMANTIC LITERATURE AND PAINTING.  Paul Fry.
  W 1.30-3.20  WR, Hu  (o)  Pre-1900  The mutual interactions of literature and painting during the romantic period, with focus on British romantic poets’ visual models but including antecedents and aftersmarts, from Reynolds to Ruskin and from Poussin to Turner.

  For description see under Literature.

ENGL 265B, THE VICTORIAN NOVEL.  Ruth Yeazell.
  MW 11.35-12.25, 1 HTBA  Hu  (34)  Pre-1900  A selection of nineteenth-century novels, with attention to cultural contexts. Authors chosen from the Brontës, Gaskell, Dickens, Collins, Eliot, Trollope, and Hardy.

*ENGL 276A/HUMS 334A, WAYS OF KNOWING IN NINETEENTH-CENTURY AMERICAN LITERATURE.  Pamela Schirmeister.
  TTH 2.30-3.45  WR, Hu  (o)  Pre-1900  Amer  Philosophical and epistemological tensions that characterize emergent American literature and its development in the nineteenth century. Readings in Broken Arrow, the journals of Lewis and Clark, Emerson, Hawthorne, Melville, Thoreau, Henry James, William James, and relevant criticism and historical materials.

*ENGL 279B, HAWTHORNE.  Kevin Hicks.
  TTH 9.25-11.15  WR, Hu  (o)  Pre-1900  Amer  A comprehensive 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 280b/AMST 210b, Nineteenth-Century American Literature, the Revolution to 1865. Michael Warner.

TTh 9:25-10:15, 1 HTBA Hu (22) Pre-1900 Amer
A survey of antebellum American literature, with emphasis on the relationships of law, literature, and democracy in the works of Emerson, Thoreau, Poe, Hawthorne, Stowe, Douglass, Melville, Whitman, and Dickinson. Definitions of “the people,” the expansion of the literary public sphere, market relations and literary democracy, and concepts of public voice in law and literature as inflected by the contexts of race and gender.

ENGL 289a/AMST 246a, Hemingway, Fitzgerald, Faulkner. Wai Chee Dimock.

TTh 10:30-11:20, 1 HTBA Hu (21) Amer
Major works by Hemingway, Fitzgerald, and Faulkner, with special attention to the composition, idioms, and group dynamics of different life-worlds: regional, national, and international. Connections from race and Southern history, through the high-gloss, fast-paced jazz age, to the traumas of World War I and the Spanish Civil War.

For description see under African American Studies. Amer

*ENGL 305b/LITR 233b, Austen and Brontë and Twentieth-Century Women’s Novels. Katie Trumpener.

MW 1:25-2:15, WR, Hu (o)
Examination of ways that twentieth-century British, American, and anglophone writers rewrite, revise, and reconcile key novels by Jane Austen and Charlotte Brontë as prototypes of a women’s novel tradition. Particular attention to narrative voice, reader identification, and the novel’s function as a record of social norms and as an agent of historical change.

For description see under African American Studies. Amer (Formerly ENGL 443a)

Th 10.30-11.20, 1 HTBA Hu (23) Amer
Major twentieth-century poets, including Yeats, Frost, Pound, Eliot, Moore, Stevens, and Auden.

Richard Maxwell.
For description see under Literature.

For description see under Literature.

For description see under Theater Studies.

*ENGL 323A/AMST 257A, Modern Apocalyptic Narratives.
James Berger.
For description see under American Studies.

*ENGL 329B/LITR 402B, Picture Book to Graphic Novel.
Katie Trumpener.
For description see under Literature.

*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 libretti by 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 341B/AMST 346B, American Literature and the World.
Wai Chee Dimock.
Th 11.35-12.50 Hu (0)
American literature as a gateway to the rest of the world. Key texts from the eighteenth century to the twenty-first, including works by Olaudah Equiano, Henry James, Edith Wharton, Ernest Hemingway, Paul Bowles, Maxine Hong Kingston, Monique Truong, Dave Eggers, Cormac McCarthy, Edwidge Danticat, and Junot Díaz.

*ENGL 342B/HUMS 288B/WGSS 408B, Mythology and Community in Twentieth-Century Queer Literature. Sam Sec.
MW 1-2.15 WR, Hu (0)
The use of mythology and mythopoeia (myth-making) by twentieth-century British and American writers to develop queer literary and historical communities. Readings include classical, biblical, and contemporary mythic texts as background for readings in modernist and postmodernist literature. Authors include James Joyce, Hilda Doolittle, Jeanette Winterson, and Tony Kushner.

Ala Alryyes.
For description see under Literature.
*ENGL 354A/AMST 235A, LANGUAGE, DISABILITY, FICTION.
James Berger.
For description see under American Studies.

*ENGL 358B, LITERATURE FOR YOUNG PEOPLE. Michele Stepto.
M 1:30-2:20 Hu Meets RP (0)
An eclectic approach to stories and storytelling for and by children. Authors include Nathaniel Hawthorne, Louisa May Alcott, J. K. Rowling, Leo Lionni, Laurent de Brunhoff, Dr. Seuss, Maurice Sendak, and children themselves.

*ENGL 359B/WGSS 352B, FEMINIST PERSPECTIVES ON LITERATURE.
Jill Campbell.
For description see under Women's, Gender, & Sexuality Studies. Libr

*ENGL 360B/ER&M 367B/WGSS 369B, ADOPTION NARRATIVES.
Margaret Homans.
WF 11:30-12:50 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 374A, RENAISSANCE LYRIC. Lawrence Manley.
MW 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. (Formerly ENGL 406A)

*ENGL 383B/LITR 275B/THST 348B, THE COMMON WEALTH OF DRAMA.
Murray Biggs.
For description see under Theater Studies.

*ENGL 385A/WGSS 339A, FEMINIST FICTIONS. Margaret Homans.
T 1:30-2:20 WR, Hu (0)
Historical survey of works of fiction that have shaped feminist and queer thought from the late eighteenth century to the present. Authors include Wollstonecraft, C. Brontë, Gilman, Chopin, Woolf, Lessing, Wittig, Walker, Morrison, Churchill, and Winterson.

*ENGL 387A, SCIENCE (AND) FICTION. Paul Grimstad.
TH 11:30-12:50 Hu Meets RP (0)

*ENGL 388B/THST 390B, POETICS OF PERFORMANCE. Joseph Roach.
For description see under Theater Studies.

MW 2:30-3:45, 1 HTBA WR, Hu Meets RP (37) Libr
Study of the Bible as literature, as a collection of works exhibiting a variety of attitudes toward the conflicting claims of tradition and originality, historicity and literariness. Pre-1800 with completion of supplementary assignments in the language of the King James Bible.
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.


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 401a, J. M. Coetzee. Justin Neuman.

M 9.25-11.15 Hu (0)
A study of novels and other writings of J. M. Coetzee, exploring issues of animal and human rights, apartheid, race, gender, colonialism and postcolonialism, sex, pain, religion, and globalization.

For description see under American Studies. Amer

*ENGL 412b, Victorian Poetry. Leslie Brisman.

MW 2.30-3.45 WR, Hu Meets RP (0) Pre-1900
The major Victorian poets, Tennyson and Browning, in the context of the romanticism they inherited and transformed. Some attention to Barrett Browning, Swinburne, the Rossettis, Morris, and minor poets selected by members of the class.

*ENGL 415b*/AMST 439b, Four American Writers since 1950. Amy Hungerford.

T 9.25-11.15 WR, Hu (0) Amer Libr
The work of four American fiction writers since 1950: James Baldwin, Joan Didion, Edward P. Jones, and Dave Eggers. Novels, short stories, essays, criticism, and historical materials. Preparation for the senior research paper. Prerequisite: ENGL <291b> or another seminar on the novel.

*ENGL 416a, Contemporary British Fiction. Caryl Phillips.

M 3.30-5.20 WR, Hu (0)
A study of literature that responds to a changing post—World War II Britain, with attention to the problem of who “belongs” and who is an “outsider.” Authors include Jeanette Winterson, Angela Carter, Alan Hollinghurst, William Trevor, Bernard MacLaverty, Kazuo Ishiguro, Salman Rushdie, V. S. Naipaul, Colin McInnes, and Samuel Selvon.

*ENGL 422a*/LITR 440a, James Joyce’s Ulysses. Pericles Lewis.

TTh 11.35-12.50 Hu Meets RP (0) Libr
Advanced 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*. Joyce’s experiments in form and representation; major themes of the novel; Joyce’s literary and historical context; and critical approaches to *Ulysses*. No previous knowledge of Joyce’s work assumed.

**ENGL 424b, GEORGE ELIOT AND VIRGINIA WOOLF.** Margaret Homans.

*TuTh* 1:30-3:20 Hu (0)

A close study of novels by George Eliot and Virginia Woolf, with special attention to Eliot’s modernity and Woolf’s Victorian heritage. The novelists’ formal innovations, historical contexts such as the changing status of women and the shrinking of Britain’s empire, and the history of critical responses.

**ENGL 431b/HUMS 279b, DICKENS AND THE VISUAL ARTS.**

Janice Carlisle.

*TuTh* 11:35-12:50 WR, Hu (0) Pre-1900

Dickens’s fiction—including selections from his earliest works (*Sketches by Boz*, *Pickwick Papers*, and *Oliver Twist*), several of the Christmas tales, *Bleak House*, and his last, unfinished novel, *The Mystery of Edwin Drood*—in relation to visual texts by artists such as Cruikshank, Lecch, Millais, Frith, Madox Brown, Fildes, and Doré.

**ENGL 435a, HENRY JAMES.** Ruth Yeazell.

*TuTh* 1:30-3:20 WR, Hu (0)

Selected novels by Henry James, from *Roderick Hudson* through *The Golden Bowl*. Particular attention to the international theme and to the ways in which James’s later novels revisit and transform the matter of his earlier ones.

**ENGL 436b/G/AFAM 436b/G, CONTEMPORARY AFRICAN AMERICAN POETRY.** Elizabeth Alexander.

For description see under African American Studies.

**ENGL 437b, WILLIAM FAULKNER.** Caleb Smith.

*MW* 4-5:15 WR, Hu (0) Amer

The fiction of William Faulkner, with attention to literary, historical, and critical sources. Problems of history, memory, race, sexuality, and power. Other authors may include Poe, Hawthorne, Douglass, Anderson, Welty, and Morrison.

**ENGL 439b/AMST 372b/THST 365b, CONTEMPORARY AMERICAN DRAMA.** Marc Robinson.

For description see under Theater Studies. Amer

**ENGL 444a, THE HISTORICAL NOVEL.** Christopher R. Miller.

*MW* 2:30-3:45 WR, Hu (0)

Cultural origins and development of the historical novel in Britain and America, from its journalistic roots in Defoe to recent fiction in the aftermath of 9/11. Authors include Charles Dickens, George Eliot, Virginia Woolf, Toni Morrison, Isaac Bashevis Singer, Primo Levi, Philip Roth, Don DeLillo, and Claire Messud. Supplementary readings in criticism and theory of the novel.

**ENGL 445a/G/AFAM 437a/G/AMST 420a/G, RALPH ELLISON IN CONTEXT.**

Robert Stepto.

*M* 1:30-3:20 WR, Hu (0) Amer

The complete works of Ralph Ellison and related works (in various art forms) of his contemporaries, including Wright, Baldwin, Bearden, and Louis Armstrong.
The history of the book approached through the intersection of medieval manuscript culture and contemporary digital culture. Preprint and postprint technologies considered in attempts to define a book, an author, and the act of reading.

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 application deadlines, consult the English department Web site or visit 107 LC. Application forms are posted on the Web at www.yale.edu/english/undergraduate.html.

*ENGL 140a or b, Introduction to Writing Fiction.
  140a: M 3.30-5.20 (O) Leslie Woodard
  140b: M 1.30-3.20 (O) 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. *Louise Glück.
  T 1.30-3.20 Meets RP (O)
A seminar workshop for freshmen and sophomores who are beginning to write poetry. Interested students should have a solid grasp of nonfiction prose writing.

*ENGL 450b, Daily Themes. *Langdon Hammer.
  T 2.30-4.20, 1 HTBA WR (O)
Writing of prose at the intermediate level. Daily assignments of c. 300 words, a weekly lecture, and a weekly tutorial. Application forms available on the Web by mid-November. Application deadline: noon on Friday, December 11, 2009. *Enrollment limited to sophomores, juniors, and seniors. Counts as a nonfiction course in the writing concentration.*

ENGL 451–459, 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 permission of the instructor.

  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) Staff
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. 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 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 456b, Translation. J. D. McClatchy.
  T 1.30-3.20 Hu Meets RP (o)
A survey and workshop on the translation of poetry. The history of translation of foreign poems into English from Chaucer’s time on; theories of translation from Dryden on.

*ENGL 457b, Profiles and Portraits. Cynthia Zarin.
  Th 1.30-3.20 (o)
Exemplary nonfiction portraits and profiles studied as a basis for student compositions of literary portraits of others. Occasional work in other genres such as poetry, the visual arts, and film.

*ENGL 459b, Genres of Magazine Writing. Jack Hitt.
  M 9.25-11.15 WR Meets RP (o)
Introduction to writing for magazines. Styles include the op-ed argument, the humor piece, the factual pyramid-style article, and the longer narrative report.

Advanced Courses
These courses are primarily for juniors and seniors. Admission is by application, based chiefly on work submitted by the student. For application deadlines, consult the English department Web site or visit 107 LC. Application forms are posted 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 431–439 or permission of the instructor.

*ENGL 460a, Advanced Verse Writing. Louise Glück.
  M 3.30-5.20 (o)
An advanced seminar and workshop in the writing of verse.
*engl 462b, Writing for Television. Amy Bloom.
F 1:30-3:20 (o)
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.

*engl 463a, Fantasy Writing, Science Fiction, and Related Genres. John Crowley.
w 1:30-3:20 Meets RP (o)
A writing workshop that addresses aspects of the craft of fiction that the genres of romance share with all fiction, including tactics and strategy of narrative, point of view and voice, and reader expectations.

*engl 464b, Nonfiction Prose. David Bromwich.
w 1:30-3:20 (o)
An advanced seminar and workshop in prose composition.

*engl 465a or b, Advanced Fiction Writing.
465a: T 2:30-4:20 (o) Caryl Phillips
465b: F 9:25-11:15 (o) Amy Bloom
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 (o)
An intensive workshop in the art and changing role of journalism. 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 nonfiction books; interviewing; fairness; sourcing; the economics of journalism; and 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 (o)
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 (o)
A seminar and 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 (o)
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.

A term-long project 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.

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.

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.
ENGLISH ENGINEERING

Director of undergraduate studies: Jordan Peccia, 313C M.L., 432-4385, jordan.peccia@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM IN ENVIRONMENTAL ENGINEERING

Professors
Gaboury Benoit (Forestry & Environmental Studies), Ruth Blake (Geology & Geophysics),
Stephen Edberg (School of Medicine), 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
Michelle Bell (Chemical Engineering, Forestry & Environmental Studies), Yehia
Khalil (Adjunct) (Chemical Engineering), William Mitch (Chemical Engineering),
Jordan Peccia (Chemical Engineering)

Assistant Professor
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 Class of 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 117Lb, 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 113b 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, 360b, 371a, 373a, and 377a; ENVE 448a or 315b; EVST 344b; MCD 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, ENV 444a, 444y, or any statistics course.

Green engineering and sustainability: ECON 300a, 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 377a; ENVE 448a or 315b; EVST 344b; MCD 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, ENVE 315b, 360b, 373a, 377a, 441a, 444b, 445a, 448a, or EVST 344b

Senior requirement. Students in all three programs must pass ENVE 490a or b in their senior year.

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, 377a; ENVE 448a or 315b; EVST 344b; MCDB 290c; 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, 210a, 360b, 371a, 373a, 377a; ENVE 448a or 315b; EVST 344b; MCDB 290c

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

For description see under Mechanical Engineering.

*CHEM 102a, Introduction to Green Chemistry. Paul Anastas.
enve 120b/ceng 120b/enas 120b, Introduction to Environmental Engineering. Jordan Peccia.

TH 1-2.15 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 emerging environmental technologies. 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.


For description see under Chemical Engineering.

[enve 360b, Green Engineering and Sustainable Design]


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. Yehia Khalil.

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 377a/ceng 377a, 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, Biological Processes in Environmental Engineering. Jordan Peccia.

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, 112b, or 114a, 114b, or 118a; MCDB 290b or equivalent; or with permission of instructor.

**enve 443a**/ENA 443G, **GREENING BUSINESS OPERATIONS.** Thomas Graedel.

**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/ena 444G, MANAGEMENT OF ENVIRONMENTAL RESOURCES AND ENVIRONMENTAL SYSTEMS.** Gideon Oron.

**TT 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/ena 445G, 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**/ena 448G, **ENVIRONMENTAL TRANSPORT PROCESSES.** Joseph Pignatello.

**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: Paul Sabin, 2677 HGS, 436-2516, 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), Ruth Blake (Geology & Geophysics), Derek Briggs (Geology & Geophysics), Kelly Brownnell (Psychology, School of Medicine), Gary Brodvig (Chemistry), 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 Graceland (Forestry & Environmental Studies), Leo Hickey (Geology & Geophysics), Daniel Kevles (History, History of Science), Benedict Kiernan (History), Robert Mendelsohn (Forestry & Environmental Studies, Economics), Jeffrey Powell (Geology & Geophysics), Peter Perdue (History), Jeffrey Powell (Ecology & Evolutionary Biology), Nicholas Robinson (Forestry & Environmental Studies) (Visiting), Susan Rose-Ackerman (Law School, Political Science), James Sayers (Forestry & Environmental Studies), Oswald Schmitz (Forestry & Environmental Studies, Ecology & Evolutionary Biology), James Scott (Political Science, Anthropology), Kalyanakrishnan Sivaramakrishnan (Anthropology, Forestry & Environmental Studies), David Skelly (Forestry & Environmental Studies, Ecology & Evolutionary Biology), Brian Skinner (Geology & Geophysics), Ronald Smith (Geology & Geophysics), Stephen Stearns (Ecology & Evolutionary Biology), Charles Tomlin (Forestry & Environmental Studies) (Visiting), 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
Michelle Addington (School of Architecture), William Mitch (Chemical Engineering), Sheila Olmstead (Forestry & Environmental Studies), Mark Pagani (Geology & Geophysics), David Post (Ecology & Evolutionary Biology), Peter Raymond (Forestry & Environmental Studies)

Assistant Professors
Hagit Affek (Geology & Geophysics), Paul Sabin (History), Melinda Smith (Ecology & Evolutionary Biology), Zhengrong Wang (Geology & Geophysics), Julie Zimmerman (Chemical Engineering)

Lecturers
Shimon Anisfeld (Forestry & Environmental Studies), Carol Carpenter (Forestry & Environmental Studies), Amity Doolittle (Forestry & Environmental Studies), Gordon Geballe (Forestry & Environmental Studies), Julie Newman (Forestry & Environmental Studies), Catherine Skinner (Geology & Geophysics), Carl Zimmer

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.

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 b 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, 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 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 during the spring term of their sophomore year. Application must be made in writing to the director of undergraduate studies no later than Monday, February 1, 2010, in the program office, Room G04 KROON. Applications must include the following information: name, address, phone number, e-mail address, a transcript of work at Yale, and a brief statement of purpose indicating academic interests and a proposed area of individualized concentration. For more information about the application process, visit www.yale.edu/evst. 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 junior year, all majors enroll in a junior seminar approved by the director of undergraduate studies. 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

Distribution of courses: 2 core courses from Group A, 2 from Group B with associated labs, 6 courses in area of concentration, 1 junior sem

Senior requirement: One- or two-term research project and colloq (EVST 496a or b)

**INTRODUCTORY COURSES**

  For description see under Forestry & Environmental Studies.

EVST 100a/ENAS 101a/ENVE 101a/MENG 101a, Energy, Engines, and Environment. Alessandro Gomez.
  For description see under Mechanical Engineering.

*CHEM 102a, Introduction to Green Chemistry. Paul Anastas.

ENVE 120a/CENG 120a/ENAS 120a, Introduction to Environmental Engineering. Jordan Peccia.
  For description see under Environmental Engineering.
CORE COURSES

Group A

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/arcg 226b, Global Environmental History]

evst 253b/f&es 253b/plsc 215b, Environmental Politics and Law.
John Wargo.
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.
Michael Dove.
Th 2.30-4.30 So (O)
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 processes that control Earth’s atmosphere, ocean, and climate. Quantitative methods for constructing energy and water budgets. Topics include clouds, rain, severe storms, regional climate, the ozone layer, air pollution, ocean currents and productivity, the seasons, 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 C Credit (O)
Laboratory and field exercises to accompany EVST 201a. Must be taken concurrently with EVST 201a.

[evst 262a/f&es 262a, Ecology and Conservation]

[evst 263La, Laboratory for Ecology and Conservation]

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**

- **EYST 270a/RLST 263**, **Indigenous Religions and Ecology**.  
  John Grim.  
  For description see under Religious Studies.

- **EYST 310b/HIST 132J**, **U.S. Global Resource Frontiers**.  
  Paul Sabin.  
  For description see under History.

- **EYST 325a/ENGL 248a**, **Nature Writing in the English-Speaking World**.  
  Linda Peterson.  
  For description see under English Language & Literature.

- **EYST 420b/HIST 313Jb**, **Asian Environments and Frontiers**.  
  Peter Perdue.  
  For description see under History.

- **AMST 207a/ARCH 340a**, **American Cultural Landscapes: An Introduction to the History of the Built Environment**.  
  Dolores Hayden.  
  For description see under American Studies.

- **AMST 258a**, **Wilderness in the North American Imagination**.  
  Mary Greenfield.

- **ARCH 163b**, **Environment, Energy, Building**.  
  Michelle Addington.

- **ARCH 344a**, **Urban Life and Landscape**.  
  Elihu Rubin.

- **RLST 280b**, **World Religions and Ecology: Asian Religions**.  
  Mary Evelyn Tucker, John Grim.

**Social Sciences**

- **EYST 170b**, **Sustainability and Institutions: Innovation and Transformation**.  
  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.

- **EYST 272a/EP&E 370a/INTS 330a/PLSC 270a**, **Capitalism: Success, Crisis, and Reform**.  
  Douglas Rae.  
  For description see under International Studies.

- **EYST 424a/PLSC 420a**, **Rivers: Nature and Politics**.  
  James Scott.  
  For description see under Political Science.

- **EYST 440b/EP&E 440b**, **Environmental Hydrology**.  
  James Saiers.  
  Th 1:2-15, 1 HTBA So (26)  
  An overview of the principles that govern the distribution and flows of water and waterborne constituents between the land, atmosphere, and oceans.

- **EYST 473a/ANTH 473a/ARGC 473a/NELC 188a**, **Civilizations and Collapse**.  
  Harvey Weiss.  
  For description see under Anthropology.
Environmental Studies


ECON 330A/G, Economics of Natural Resources. Robert Mendelsohn.


PLSC 212A, Democracy and Sustainability. Michael Fotos.


PLSC 335B, Environmental Ethics. Thomas Donahue.


Natural Sciences

EVST 120B/G&G 120B, Earth’s Changing Climate. Karl Turekian, John Wettlaufer. For description see under Geology & Geophysics.

[EVST 160A and 161B/G&G 160A and 161B, Chemical Applications for Earth and Environmental Sciences]

EVST 260A/G/F&ES 260A/G, Structure, Function, and Development of Vascular Plants. Graeme Berlyn. Th 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 275A/G/F&ES 275A/G, Ecosystems Patterns and Processes. Peter Raymond. Th 9-10:15 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 276LA/G/F&ES 276LA/G, Laboratory for Ecosystem Patterns and Processes. Peter Raymond. WTh or F 1-5 Sc ½ 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.

governing the environmental fate of organic pollutants, e.g., evaporation, sorption, bioconcentration, and biodegradation. Technologies for prevention and remediation of organic pollution. No background in organic chemistry required.

**EVST 330a/E&EB 330a/G & ES 330a, Ecosystem Analysis.** Melinda Smith, Peter Raymond.
For description see under Biology.

**EVST 344b/G & ES 344b/G, Aquatic Chemistry.** Staff.

*TH 4-5:15 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/ARC G 362b/G & G 362b/G, Observing Earth from Space.**
Ronald Smith and staff.
For description see under Geology & Geophysics.

[**EVST 365a/E&EB 365a, Landscape Ecology**]

**EVST 400a/E&EB 275a/G, Biological Oceanography.**
Mary Beth Decker.

*MW 11:35-12:50, 1 HTBA (34)
Exploration of a range of coastal and pelagic ecosystems. Relationships between biological systems in the ocean and the physical processes that control the stratification and movements of water. Anthropogenic impacts on oceans, such as the effects of fishing, aquaculture, and global warming. Includes three optional Friday field trips. *Enrollment limited to 15.*

**E&EB 220a/G, General Ecology.** David Post, David Vasseur.
For description see under Biology.

**G & G 205b, Natural Resources and Their Sustainability.**
David Evans, Jay Ague.

**MCDB 130b/G/HIST 400b, Global Problems of Population Growth.**
Robert Wyman, Fabian Drixler.
For description see under Biology.

**STAT 230b/G/MATH 235b, Introductory Data Analysis.** Staff.
For description see under Statistics.

**Environmental Engineering**

For description see under Environmental Engineering.

**EVNE 373a/CENG 373a, Air Pollution Control.** Yehia Khalil.
For description see under Environmental Engineering.

**EVNE 377a/CENG 377a, Water Quality Control.** William Mitch.
For description see under Environmental Engineering.
enve 443a/enas 443a/f&es 380a, Greening Business Operations.
Thomas Graedel.
For description see under Environmental Engineering.

enve 444a/enas 444a, 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 SEMINARS

*evst 200b/*g&g 200b, Earth System Science.
Jeffrey Park.
For description see under Geology & Geophysics.

*evst 215a, Scientific and Environmental Writing.
Carl Zimmer.
T 9.25-11.15
WR  Meets RP  (0)
An intensive workshop in writing about science and the environment for a broad audience. Translating complex subjects into elegant prose, conducting interviews, handling controversies, researching articles, and finding one’s voice. Readings include exemplary works ranging from newspaper articles to book excerpts.

Amity Doolittle.
T 1.30-3.20
So  (0)
Study of the relationship between society and the environment. Global processes of environmental conservation, development, and conflicts over natural resource use; political-economic contexts of environmental change; ways in which understandings of nature are discursively bound up with notions of culture and identity.

*evst 290a/*f&es 290a, Geographic Information Systems.
Charles Tomlin.
Th 9.25-11.15  (0)
A practical introduction to the nature and use of geographic information systems (GIS) in environmental science and management. Applied techniques for the acquisition, creation, storage, management, visualization, animation, transformation, analysis, and synthesis of cartographic data in digital form.

*evst 320a/*f&es 320a, International Environmental Law.
Nicholas Robinson.
Th 2.30-4.30
So  (0)
Examination of how nations negotiate, establish, and implement international environmental law and how the United Nations and other international agencies function. Simulated negotiations; discussion of diplomatic negotiations regarding climate change that occur during the term.

*evst 355b/*plsc 200b, Political Economy of Environmental Policy.
Susan Rose-Ackerman.
For description see under Political Science.

*evst 367a/*f&es 367a, Water Resources and Environmental Change.
James Saiers.
Trfh 1-2.15  (26)
The effects of variations in the hydrologic cycle on the global distribution of freshwater. The role of environmental change in regulating freshwater supply and quality. The influences of agriculture, industry, mining, urbanization, climate change, and energy-production alternatives on freshwater resources in the United States and abroad.

**evst 398a, Energy, Climate, Law, and Policy.** John Wargo.

Overview of the legal norms governing patterns of energy use and associated adverse effects on climate stability, environmental quality, and human health. Focus on U.S. law and policy, with some consideration of relevant international treaties. Special attention to building efficiency and to land-use regulation and urban growth, particularly coastal prospecting and development.

**Senior Seminar**

**evst 496a or b, Senior Research Project and Colloquium.**

John Wargo, Paul Sabin.

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 [F]; Ellen Lust, Rm. 103, 8 Prospect Pl., 432-3648, ellen.lust-okar@yale.edu [Sp]

**Faculty Associated with the Program of Ethics, Politics, and Economics**

**Professors**

Jeffrey Alexander (Sociology), David Apter (Emeritus) (Sociology), Seyla Benhabib (Political Science, Philosophy), David Cameron (Political Science), Ron Eyerman (Sociology), Bryan Garsten (Political Science), Tamar Gendler (Philosophy), Alan Gerber (Political Science), Philip Gorski (Sociology), Donald Green (Political Science), Shelly Kagan (Philosophy), Stathis Kalyvas (Political Science), Nicoli Nattrass (Visiting), Benjamin Polak (Economics), Douglas Rae (Political Science), John Roemer (Political Science), Susan Rose-Ackerman (Political Science, Law School), Bruce Russett (Political Science), Nicholas Sambanis (Director) (Political Science), Giuseppe Sciortino (Sociology) (Visiting), James Scott (Political Science), Jeremy Seekings (Visiting), Ian Shapiro (Political Science), Steven Smith (Political Science), Shannon Stimson (Political Science) (Visiting), Peter Swenson (Political Science), Ivan Szelenyi (Sociology), Elisabeth Wood (Political Science)

**Associate Professors**

Pierre Landry (Political Science), Ellen Lust (Political Science), Peter Stamatov (Sociology)

**Assistant Professors**

Seokju Cho (Political Science), Justin Fox (Political Science), Karuna Mantena (Political Science), Vivek Sharma (Political Science), Matthew Smith (Philosophy)
Senior Lecturer
Boris Kapustin (*Ethics, Politics, & Economics, International Affairs*)

Lecturers
Thomas Donahue (*Political Science*), Cynthia Farrar (*Political Science*), Howard Forman (*School of Medicine*), Alexander Kirshner (*Political Science*), Stephen Latham, Adam Simon (*Political Science*), James Sleeper (*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 and one intermediate microeconomics course. For students in the Class of 2011 and previous classes, the major also requires four core courses. For students in the Class of 2012 and subsequent classes, the major also requires three core courses and one advanced seminar. In addition, all majors must complete four courses that comprise an 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.** A group of core courses comprises the center of the major in Ethics, Politics, and Economics. The first core course, required for all majors, is **EP&E 215a or b**, Classics of Ethics, Politics, and Economics. Students in the Class of 2011 and previous classes must complete three additional core courses, each selected from a different one of the following four groups: rationality and social choice, political systems, advanced topics in ethics and the human sciences, and social theory and cultural analysis. Three of the four core courses must be taken before the senior year. Students in the Class of 2012 and subsequent classes must complete two additional core courses, each selected from a different one of the following three groups: rationality and social choice, political systems, and social theory and cultural analysis. The three core courses must be taken before the senior year. Core courses are listed by group on the program’s Web site at [www.yale.edu/epe/undergrad/requirements.html](http://www.yale.edu/epe/undergrad/requirements.html).
Advanced seminars. Students in the Class of 2012 and subsequent classes must complete one advanced seminar. The course is selected from an approved group of seminars that focus on how core modes of reasoning drawn from the major’s three areas of inquiry can be applied to a particular area or problem. For information about which courses fulfill the advanced seminar requirement, please see the program’s Web site at www.yale.edu/epe/undergrad/requirements.html.

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 many 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 the seminar or independent study 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. If no appropriate seminar is offered in which the essay might be written, the student may instead enroll in EPE 491a or b with approval of the director of undergraduate studies and a faculty member who will supervise the essay. Students who wish to undertake a more substantial yearlong essay may enroll in EPE 492a, 493b.

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 7, 2009. Senior essays written in the spring term and yearlong essays are due April 12, 2010.
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 7, 2009, 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 2009 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, 2009.

REQUIREMENTS OF THE MAJOR

Prerequisites: None
Number of courses: 14 (incl senior req)
Specific course required: EP&E 215a or b
Distribution of courses: 1 intro course each in microeconomics, macroeconomics, political phil, ethics, and stat; 1 intermediate microeconomics course; 4 courses, incl course for senior req, in area of concentration defined by student in consultation with DUS; Class of 2011 and previous classes—3 addtl core courses, as specified; Class of 2012 and subsequent classes—2 addtl core courses, as specified; 1 advanced sem, as specified
Senior requirement: Senior essay in area of concentration (in a sem or in EP&E 491a or b or in EP&E 492a and 493b)

EP&E 101a/PLSC 452a/STAT 102aG, INTRODUCTION TO STATISTICS: POLITICAL SCIENCE. Jonathan Reuning-Scherer and staff.
For description see under Statistics. (Formerly EP&E 203a)

For description see under Statistics. (Formerly EP&E 209a)

EP&E 215a or b, CLASSICS OF ETHICS, POLITICS, AND ECONOMICS.

215a: T 1.30-3.20 Hu, So Core (o) Shannon Stimson
215b–1: T 1.30-3.20 Hu, So Core (o) Boris Kapustin
215b–2: W 1.30-3.20 Hu, So Core (o) Shannon Stimson
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. (Formerly EP&E 341a or b)

EP&E 220a, COLLECTIVE CHOICE AND POLITICAL MORALITY.
Thomas Donahue.
W 3.30-5.20 So (o) Core
Introduction to social choice theory and its implications for political morality. Challenges involved in creating a collective choice procedure given the diversity of individuals’ preferences. Philosophical foundations of social choice theory, including the assumptions it makes about the nature of liberty. Questions regarding the feasibility of democracy and the existence of a public interest.

**EP&E 222b, Theories of Political Institutions.** Seok-ju Cho.  
M 3.30-4.20 So (0) Core  
A survey of theories of political institutions. Topics include normative frameworks for institutional choices, rational-choice and game-theoretic models of political institutions, and the empirical variations of democratic institutions in the current world.

W 3.30-5.20 So (0) Core  
Introduction to game theory and social choice theory, the primary tools used in the formal modeling of politics. How these tools have been applied to understand the interactions between policymakers and voters, executives and legislatures, bureaucrats and courts, and interest groups and government officials. Focus on ways to design institutions that promote citizen welfare.

**EP&E 240a/#PLSC 428a, Comparative Welfare Policy in Developing Countries.** Jeremy Seekings.  
W 2.30-4.20 So (0)  
Examination of public and private welfare systems in the developing world. Analysis of the evolving relationships between kin or community and states and market. Particular attention is paid to the politics of contemporary reforms.

W 9.25-11.15 So (0) Core  
Overview of developments in social and cultural theory since World War II. Influential authors and their attempts to grasp the changes occurring in the modern world. Theoretical perspectives include critical theory, conservative humanism, poststructuralism, postmodernism, and postcolonialism.

W 3.30-5.20 So Meets RP (37) Core  
Close reading and critical discussion of key classical texts that define important traditions in social theory. Emphasis on reconstructing the conceptual framework and analytical arguments employed by the authors.

W 3.30-5.20 So (37) Core  
Introduction to the principal analytical approaches used by cultural theorists, including underlying conceptual assumptions. Readings from both classical and contemporary texts that explore issues of social meaning and cultural interpretation.

**EP&E 302a/#SOCI 309a, Religious Nationalism.** Philip Gorski.  
For description see under Sociology.

**EP&E 303a/#SOCI 330a, Civil Society and Democracy.** Jeffrey Alexander.  
For description see under Sociology. Core

[EP&E 312A/PLSC 297A, MORAL CHOICES IN POLITICS]

*EP&E 315B/INTS 315B/PLSC 177B, POLITICAL AUTHORITY AND STATE FORMATION. Vivek Sharma. For description see under Political Science.

*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 324B/PLSC 244B, JOURNALISM, LIBERALISM, DEMOCRACY. James Sleeper. For description see under Political Science.

*EP&E 325B/PLSC 289B, OPPRESSION. Thomas Donahue. For description see under Political Science.

*EP&E 326A/INTS 360A/PLSC 141A, ETHICS OF HUMANITARIAN INTERVENTION. Robin Theurkauf. For description see under Political Science. Core


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 335A/SOCY 314A, SOCIAL INEQUALITY. Karl Ulrich Mayer. For description see under Sociology.


*EP&E 342A/INTS 357A/PLSC 354A, THE EUROPEAN UNION. David Cameron. For description see under Political Science. Core

EP&E 343B/PLSC 257B, BIOETHICS AND LAW. Stephen Latham. For description see under Political Science. (Formerly EP&E 210A)
[ep&e 345b, Welfare Economics, Social Choice, and Political Philosophy]

For description see under Political Science.  Core

*ep&e 352a/*econ 473a/*plsc 343a, 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.
For description see under International Studies.  Core

*ep&e 359a, Concepts of Constitution from Antiquity to the Present.  Shannon Stimson.
W 1.30-3.20 So (0)
Exploration of the idea of a constitution, with attention to both political theory and jurisprudence. The purposes constitutions serve; incorporation of cultural differences and conceptions of human rights; methods of interpretation. Comparisons across time and political context. Special attention to the contemporary American Constitution.

*ep&e 361b, Terrorism, Ethics, and the Rule of Law.  Shannon Stimson.
T 1.30-3.20 So (0)
Arguments from moral, political, and legal theory made in the aftermath of 9/11 concerning the scope and limits of governmental action conducted in the name of the national interest. Conceptions of the moral and constitutional limits to national security; attempts to balance the demands of security and liberty. Contested concepts such as terrorism, security, cruelty, torture, national interest, liberty, and rule of law.

*ep&e 362b/*ints 335b/*plsc 131b, International Dimensions of Democratization.  Nikolay Marinov.
For description see under Political Science.  Core

T 2.30-4.20 So (0)
The impact of and responses to the AIDS pandemic in Africa examined from a comparative perspective. Focus on South and southern Africa. Some background in social science and economics desirable.

*ep&e 366a/*plsc 132a, Global Firms and National Governments.  Joseph LaPalombara.
For description see under Political Science.  Core

ep&e 368b/phil 328b/*plsc 293b, European Political Thought from Weber to Derrida.  Seyla Benhabib.
For description see under Political Science.  Core


EP&E 380A/PLSC 313A, Bioethics, Politics, and Economics. Stephen Latham. Th 1-30-3.20 (0) 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&E 382B/PLSC 337B, Democracy and the Politics of Opposition. Alexander Kirshner. T 3.30-5.20 So (0) Theoretical and historical introduction to democratic theory, with a focus on the relationship between democracy and opposition. Readings include works by Rousseau, Burke, Madison, Schumpeter, Adam Michnik, and Martin Luther King, Jr.

EP&E 383A/PLSC 338A, Democracy and Constitutionalism. Alexander Kirshner. T 3.30-5.20 So (0) Introduction to constitutional and democratic theory. Study of the ways in which democracy and constitutionalism function together, as well as the circumstances in which they can undermine one another. Readings include works by Aristotle, Madison, Hamilton, Habermas, Dahl, and Kelsen.

EP&E 384B, Social Studies of Sexuality. Giuseppe Sciortino. T 1.30-3.20 So (26) Human sexuality as a key dimension of social and cultural life. Historical transformations of sexual life as well as its main features in contemporary society. The role of sexual discourses and practices in constructing notions of selfhood and interpersonal relationships.


EP&E 387A/PLSC 204A, Ethics and the Media. Stanley Flink. For description see under Political Science. (Formerly EP&E 211A)


EP&E 413A or ECON 470A or B, Topics in American Economic History: Financial Crises. Benjamin Chabot. For description see under Economics.
EP&E 442b/HIST 133b/INTS 345b, Strategic, Political, and Moral Dilemmas of the Nuclear Age. Jonathan Schell.
For description see under International Studies.

ENAS 333a, Professional Ethics. Mercedes Carreras.

*PHIL 456a/PLSC 307a, John Rawls on Social Justice.
Thomas Pogge.
For description see under Philosophy.

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. 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.


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 II, section K.)
ETHNICITY, RACE, AND MIGRATION

Director of undergraduate studies: Patricia Pessar, 213 LUCE, 432-9344, patricia.pessar@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF ETHNICITY, RACE, AND MIGRATION

Professors
Rolena Adorno (Spanish & Portuguese), Ned Blackhawk (History, American Studies), Michael Denning (American Studies, English), Kathryn Dudley (American Studies, Anthropology), John Mack Faragher (History, American Studies), Donald Green (Political Science), Dolores Hayden (Architecture, American Studies), Jonathan Holloway (History, African American Studies), Margaret Homans (English, Women’s, Gender, & Sexuality Studies), Paula Hyman (History, Religious Studies), Matthew Jacobson (American Studies, African American Studies, History), Gilbert Joseph (History), Kenneth Kidd (School of Medicine), Benedict Kiernan (History), Jennifer Klein (History), Marianne LaFrance (Psychology, Women’s, Gender, & Sexuality Studies), Enrique Mayer (Anthropology), Patricia Pessar (Adjunct) (American Studies, Anthropology), Stephen Pitti (History, American Studies), Jeremy Seekings (Ethics, Politics, & Economics) (Visiting), Helen Siu (Anthropology), John Szwed (Emeritus) (American Studies, Anthropology), Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)

Associate Professors
Bernard Bate (Anthropology), Alicia Schmidt Camacho (American Studies), Mary Lui (American Studies, History), Mridu Rai (History)

Assistant Professors
Jafari Allen (Anthropology, African American Studies), Khalilah Brown-Dean (Political Science, African American Studies), Jason Cortés (Spanish & Portuguese), Terri Francis (Film Studies, African American Studies), Zareena Grewal (American Studies), Alondra Nelson (African American Studies, Sociology), Naomi Pabst (American Studies), Birgit Rasmussen (American Studies), Jing Tsu (East Asian Languages & Literature)

Senior Lecturer
Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies)

Lecturers
Jasmina Beširević-Regan (Sociology), Rani Neault (Ethnicity, Race, & Migration, American Studies), Raymond Orr (Ethnicity, Race, & Migration, American Studies)

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 II, 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 1-2.15 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

Michael Denning.
For description see under American Studies.

Birgit Rasmussen.
For description see under American Studies.

*ER&M 233B/AFAM 233B, Race and Ethnicity in American Politics.
Khalilah Brown-Dean.
For description see under Political Science.

*ER&M 234A/AMST 234A, New Immigrants in the United States.
Patricia Pessar.
For description see under American Studies.

Birgit Rasmussen.
For description see under American Studies.

Mary Lui.
For description see under American Studies.

*ER&M 284A/AMST 284A, Introduction to Chicano and Latino Literatures.
Birgit Rasmussen.
For description see under American Studies.

Hazel Carby.
For description see under African American Studies.

Bernard Bate.
For description see under Anthropology.
**ER&M 312b/AMST 313b, Colonial Visions and Contemporary Revisions.** Birgit Rasmussen.
For description see under American Studies.

**ER&M 328b/WGSS 328b, Popular Culture and Postcolonial India.** Geetanjali Singh Chanda.
For description see under Women's, Gender, & Sexuality Studies.

**ER&M 333b/AFAM 374b/AMST 374b, Black Travel and Transnationality.** Naomi Pabst.
For description see under African American Studies.

**ER&M 341b/HIST 358b, Mexico from the Nineteenth Century to the Present.** Gilbert Joseph.
For description see under History.

**ER&M 342a/HIST 372Ja, Revolutionary Change in Twentieth-Century Latin America.** Gilbert Joseph.
For description see under History.

**ER&M 350a/EALL 250a/ENG 297a/LITR 258a, Literature on Migration in Asian America and East Asia.** Jing Tsu.
For description see under East Asian Languages & Literatures.

**ER&M 363a/EPE & INTS 384a/SOCY 363a, Genocide and Ethnic Conflict.** Jasmina Beširević-Regan.
For description see under Sociology.

**ER&M 363b/AMST 391b, Ethnicity, Race, and Material Culture.** Kariann Yokota.
For description see under American Studies.

**ER&M 367b/ENG 369b/WGSS 369b, Adoption Narratives.** Margaret Homans.
For description see under English Language & Literature.

**ER&M 398a/AFST 398a/INTS 398a, Race and Class in Comparative Perspective.** Jeremy Seekings.
For description see under International Studies.

**ER&M 411a/AMST 437a, Recording Vernacular Musics.** Michael Denning.
For description see under American Studies.

**ER&M 413b/AFAM 411b/AMST 426b/WGSS 411b, The Fiction of Imaginary or Imminent Futures.** Hazel Carby.
For description see under African American Studies.

**ER&M 430a/AMST 450a, Islam in the American Imagination.** Zareena Grewal.

M 1.30–3.20 So Meets RP (0)
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.
For description see under African American Studies.

★AFAM 279a/★AMST 273a/★WGSS 342a, Black Women’s Literature. Naomi Pabst.
For description see under African American Studies.

For description see under African American Studies.

For description see under African American Studies.

For description see under American Studies.

★AMST 380b/★FILM 339b, Cultural Encounters in American Film. Zareena Grewal.
For description see under American Studies.

ANTH 120a, Language, Culture, and Identity. J. Joseph Errington.

ANTH 282a, Sport, Society, and Culture. William Kelly.

For description see under Anthropology.

For description see under Economics.

HIST 148a/G/DST 280a/G/RLST 215a/G, America and Its Jews, 1654 to the Present. Paula Hyman.
For description see under History.

For description see under History.

HIST 310a, History of Modern South Asia. Mridu Rai.

HIST 323b, Southeast Asia since 1900. Benedict Kiernan.

HIST 348b, State, Society, and Culture in the Middle East. Abbas Amanat.

HIST 362b, Colony, Nation, and Diaspora: Cuba and Puerto Rico. Lillian Guerra.

For description see under International Studies.
Yale College Programs of Study 2009–2010

*plsc 264b, Big City Politics in America: New York, Los Angeles, Chicago. Cynthia Horan.

*wgss 295b, Globalizing Gender. Geetanjali Singh Chanda.

*wgss 296a, Introduction to LGBT Studies. Graeme Reid, Timothy Stewart-Winter.


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 (0)

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.

th 3:30-5:20 (0)

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 3:30-5:20 (0)

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

* Dudley Andrew (Co-chair) (Comparative Literature, Film Studies), Ora Avni (French), Hazel Carby (African American Studies, American Studies), Francesco Casetti (Humanities, Film Studies), *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 Kalivas (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 Szwed (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) (Theater Studies, English), *Aaron Gerow (East Asian Languages & Literatures, Film Studies)

Assistant Professors
J. D. Connor (History of Art), *Seth Fein (American Studies, History), Moira Fradinger (Comparative Literature), *Terri Francis (African American Studies, Film Studies), Zareena Grewal (Ethnicity, Race, & Migration), Karen Nakamura (Anthropology)

Assistant Professors
J. D. Connor (History of Art), *Seth Fein (American Studies, History), Moira Fradinger (Comparative Literature), *Terri Francis (African American Studies, Film Studies), Zareena Grewal (Ethnicity, Race, & Migration), Karen Nakamura (Anthropology)

Senior Lecturers
*John Crowley (English), *Ron Gregg (Film Studies), *Richard Maxwell (Comparative Literature, English)

Lecturers
Ashish Chadha (Anthropology), James Charney (School of Medicine), *Michael Kerbel (American Studies), *Marc Lapadula (Film Studies)

Critics
*Jonathan Andrews (Art, Film Studies), *Sandra Luckow (Art)

Senior Lecturers
*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 one course from FILM 330b, Film Theory and Aesthetics, FILM 333a, Early Film Theory and Modernity, or FILM 340a, Issues in Contemporary Film Theory, preferably by the end of their junior year. Students are encouraged to take more than one. 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, 142b, 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 455a, 456b, or 483a, 484b, or 487a, 488b in their senior year. They must take at least seven critical studies courses in the major. FILM 150a, 320b, 330b, 333a, 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 487a, 488b) 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 483a, 484b) or the Documentary Film Workshop (FILM 455a, 456b), and receive three credits for their projects (two credits for FILM 483a, 484b or 455a, 456b, 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
483a, 484b or 455a, 456b. Students may undertake a production project outside the workshops if (1) the Film Studies Committee 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 November 30; those graduating in May, by April 19. A second reader assigned by the director of undergraduate 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 commitment 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 relation 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 programs 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 acceptability 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; one from FILM 330b, 333a, 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 455a, 456b, or 483a, 484b, or 487a, 488b)

**Intensive major:** Both senior essay and senior project

**REQUIRED COURSES**

FILM 150a, INTRODUCTION TO FILM STUDIES. Ron Gregg.

TRH 1:30-2:20, 1 HTBA; screenings T 7 or 9:30 P.M. WR, Hu (26)

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.** J. D. Connor.

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 333a/HUMS 275a/LITR 31a, Early Film Theory and Modernity.** Francesco Casetti.

MW 10:30–11:20, 1 Htba Hu (0)

Introduction to film theory from its beginnings to c.1930, including its emphasis on the spectator's experience. Ways in which early theory highlighted characteristics of modern life such as speed, economy, contingency, and excitation. The role of national identity in defining topics of theoretical research explored through comparison of American and European debates.

[FILM 340a/HUMS 257a/LITR 32a, Issues in Contemporary Film Theory]

**NATIONAL CINEMAS**

**FILM 260a/FREN 395a/LITR 381a, French New Wave Cinema.** Dudley Andrew.

MW 11:35–12:25, 1 Htba; screenings M 6:30 p.m. Hu (0)

The idea of cinema that developed in the wake of World War II as French critics inaugurated the New Wave school. The intellectual development of directors such as Truffaut, Godard, and Rohmer examined via texts by Bazin, Rivette, Robbe-Grillet, and Barthes. The new film aesthetic shaped by postwar cultural life, from Bresson and Cocteau, through the masterworks of the New Wave, to Assayas and Desplechin today. Discussion section in French available.

**FILM 315a/KREN 251a, Korean Cinema after 1961.** Seungja Choi.

For description see under East Asian Languages & Literatures.

**FILM 317a/SAST 310a, Understanding Bollywood.** Ashish Chadha.

MW 4–5:15; screenings T 7 p.m. WR, Hu (0)

Critical introduction to popular cinema of South Asia, its history, culture, and politics. Topics include nationalism, partition, gender, secularism, development, globalization, and diaspora.

**FILM 325a/AMST 225a, American Film Comedy.** Michael Roemer.

For description see under American Studies.

**FILM 330b/AMST 380b, Cultural Encounters in American Film.** Zareena Grewal.

For description see under American Studies.

**FILM 370b/AFAM 242b, Media, the Movies, and Black Folk.** Terri Francis.

T 9:25–11:15; screenings M 7 p.m. Hu (0)

A survey of African American cinema from Oscar Micheaux's *Within Our Gates* (1919) to Julie Dash's *Daughters of the Dust* (1991) and beyond. Topics include the
concept of a black aesthetic, the relationship between commercial and independent filmmaking practices, and the question of genre.

[FILM 461a/ENGL 384a, BRITISH CINEMA]

[FILM 462a/LITR 373a, REALIST FRENCH FILM: RENOIR, BAZIN, ROHMER]

[FILM 466b/GMST 370b/LITR 379b, THE FILMS OF FASSBINDER, HERZOG, AND WENDERS]

FILM THEORY, AUTHORSHIP, AND SPECIAL TOPICS

*FILM 040a/AFAM 040a, SPIKE LEE. Terri Francis.  
MW 1-2:15; screenings M 7 P.M. Hu (36) Fr sem  
Introduction to the study of film and issues in contemporary black culture through study of Spike Lee's films and writings. Close analysis of Lee's style, sources, creative dilemmas, and collaborations, as well as the conversations he and his films generate. Topics include concepts of black leadership, cinematic reflexivity, early film history, race and racism, stereotypes, auteurism, cinema of attractions, defining black cinema, and questions of audience and authenticity. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*FILM 097b/HUMS 089b/ITAL 063b, LITERATURE INTO FILM.  
Millicent Marcus.  
For description see under Italian.

FILM 240b/LITR 143b, WORLD CINEMA. Dudley Andrew.  
For description see under Literature.

[FILM 310b/LITR 353b, THEORY OF TV AND MEDIA]

*FILM 318a/PLSC 352a, POLITICS AND FILM. Stathis Kalyvas.  
For description see under Political Science.

*FILM 323b, AMERICAN EXPERIMENTAL CINEMA. Terri Francis.  
T 1:30-3:20; screenings M 9 P.M. Hu (0)  
Study of the history and aesthetics of American avant-garde films from the 1940s to the present.

*FILM 344b/LITR 425b, LANDSCAPE, FILM, ARCHITECTURE.  
Richard Maxwell.  
For description see under Literature.

*FILM 363a/LITR 360a, RADICAL CINEMAS OF LATIN AMERICA.  
Moira Fradinger.  
W 3:30-5:20; screenings M 7 P.M. Hu (0)  
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/*Czech 246a/*RSEE 2402, 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]

[Film 390b/Amst 380b/Litr 390b, Genre Study: The Western]

[Film 407a/HUMS 256a/THST 357a, The Cinema of War]

**Film 410b/*Gman 406b/*Litr 350b, Theatricality in Film.**
Brigitte Peucker.
T 3:30-5:20 Hu (0)
Examination of the multiple implications of theatricality in and for the cinema. Theatricality as excess; the appropriation of theatrical modes for film; theatricality as modernist self-reflexivity; performance and the relation of theatricality to subjectivity (performing the self); ritual and reenactment in film; theatricality and the real; the material image.

[Film 412a, The Horror Film, 1960–1991]

**Film 426a/G/Amst 430a/G, Contemporary Documentary Film and Video.** Charles Musser.
For description see under American Studies.

[Film 432a/G/Amst 222a, World Documentary]

**Film 433b, Detection and the City in Film Noir and Fiction.**
Alan Trachtenberg.
Th 3:30-5:20 Hu (0)
Study of the themes of crime, detection, and the city in postwar American film noir and fiction. Focus on American films and related novels of the 1940s and 1950s in which cities, crime, and detective work figure prominently.

**Film 442b/Litr 403b, The City in Literature and Film.**
Katerina Clark.
For description see under Literature.

**Film 450a/G/HUMS 282a/Litr 354a, Media: The Logic of Repetition.** Francesco Casetti.
For description see under Humanities.

**Film 467b/Amst 308b, The Films of Woody Allen.** Michael Kerbel.
For description see under American Studies.

[Film 473a/HUMS 234a/Litr 448a, American-French Film Relations and the Culture of Commitment, 1930–1965]

Litr 300b/G/ENGL 300b, Introduction to Theory of Literature.
Haun Saussy.
For description see under Literature.

**Production Seminars**

**Film 350a or b, Screenwriting.** Marc Lapadula.
Th 3:30-5:20 (0)
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.*

**FILM 395b, Intermediate Screenwriting.** Marc Lapadula.

*W 7:30-8:50 P.M. (o)*

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.*

**FILM 435a and 436b, Documentary Film Workshop.** Staff.

*W 12:30-1:30 Meets RP (o)*

A workshop designed primarily for Film Studies majors making documentaries as senior projects. *Seniors in majors other than Film Studies admitted as space permits.*

**FILM 483a and 484b/ART 442a and 443b, Advanced Fiction Film Workshop.** Jonathan Andrews.

For description see under Art.

**FILM 487a and 488b, Advanced Screenwriting.** Marc Lapadula.

*TH 1:30-3:30 (o)*

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.*

**ART 136a or b, Introductory Photography.** Lisa Kereszi, Phillip Pisciotta, and staff.

**ART 141a and 142b, The Language of Film Workshop.**

**ART 145a or b, Introduction to Digital Video.** Staff.

**ART 341a or b, Intermediate Fiction Film Workshop.**

**ENGL 432a/THST 320a, Playwriting.** Donald Margulis.

For description see under English Language & Literature.

**ENGL 462b, Writing for Television.** Amy Bloom.

**MUSI 325a, Fundamentals of Music, Multimedia Art, and Technology.** Michael Klingbeil.

**THST 111b, Survey of Theater and Drama.** Paige McGinley.

**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.
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 455a, 456b or FILM 483a, 484b.*

OTHER COURSES PERTINENT TO FILM

**PLSC 204a/EP&E 387a, Ethics and the Media.** Stanley Flink.

For description see under Political Science.

**SPAN 223b, Spanish in Film: An Introduction to the New Latin American Cinema.** Margherita Tórtora.

FORESTRY & ENVIRONMENTAL STUDIES

Program adviser: John Wargo, 124 KROON, 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. degree from the School of Forestry & Environmental Studies in five years. For more information on the joint program, see the School’s Web site at [http://environment.yale.edu/prospective/Academics](http://environment.yale.edu/prospective/Academics). 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. Most lectures and symposia are open to undergraduates.

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 255b/Evst 255b/Plsc 215b, Environmental Politics and Law. John Wargo. For description see under Environmental Studies.

F&es 260a/G/evst 260a, Structure, Function, and Development of Vascular Plants. Graeme Berlyn. For description see under Environmental Studies.

*F&es 273a/Evst 275a, Ecosystems Patterns and Processes. Peter Raymond. For description see under Environmental Studies.

*F&es 276a/Lab for Ecosystems Patterns and Processes. Peter Raymond. For description see under Environmental Studies.


*F&es 290a/Evst 290a, Geographic Information Systems. Charles Tomlin. For description see under Environmental Studies.


F&es 315a/Eeb 115a, Conservation Biology. Walter Jetz, Jeffrey Powell. For description see under Biology.

*F&es 320a/Evst 320a, International Environmental Law. Nicholas Robinson. For description see under Environmental Studies.

F&es 320a/Eeb 320a/Evst 330a, Ecosystem Analysis. Melinda Smith, Peter Raymond. For description see under Biology.
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, Rm. 316, 82–90 Wall St., 432-4902, edwin.duval@yale.edu

FACULTY OF THE DEPARTMENT OF FRENCH

Professors
Ora Avni, R. Howard Bloch, Edwin Duval, Marie-Hélène Girard (Visiting), Alice Kaplan, Thomas Kavanagh (Chair), Christopher L. Miller, Maurice Samuels

Associate Professor
Jean-Jacques Poucel

Assistant Professors
Edwige Tamaler Talbayev, Yue Zhuo

Senior Lecturer
Maryam Sanjabi

Lecturers
Diane Charney, Farid Laroussi, Alyson Waters

Senior Lectors
Ruth Koizim, Matuku Ngwe, Lauren Pinzka, Françoise Schneider

Lectors
Marie-Dominique Boyce, Kathleen Burton, Karen Duval, Soumia Koundi, Constance Sherak, Candace Walton, Katrien Wynant

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, 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 Center for International Experience (www.yale.edu/yalecollege/international) and from Ruth Koizim, the study abroad adviser for the Department of French. The Kenneth Cornell Charitable Foundation provides some 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 13 (fall term) or April 19 (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 18 (fall-term essay) or November 13 (spring-term essay). A one-page prospectus and bibliography are due September 25 (fall term) or January 22 (spring term). A rough draft must be submitted to the adviser by October 23 (fall term) or March 26 (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 493a, 494b) written in French or English under the direction of a faculty adviser and presented no later than April 19 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 the Freshman Handbook).

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 30, 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, August 31, 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 492a, 492b)

GROUP A COURSES

Preregistration, which is required for all fall-term courses numbered from 110 to 159, is held on Tuesday, September 1, from 2 to 4 P.M. See www.yale.edu/french for details. Preregistration is not required for spring-term courses.

FREN 110a, Elementary and Intermediate French I.

Matuku Ngame and staff.

5 HTBA For sections see www.yale.edu/courseinfo L1 1½ C Credits Meets RP (61)

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 120b. Conducted entirely in French. Daily classroom and laboratory attendance is required. For students with no previous experience of French. Preregistration required. Credit only on completion of FREN 120b. (Formerly the first term of FREN 115)
fren 120b, Elementary and Intermediate French II.
Matuku Ngamé and staff.
§ HTBA  For sections see www.yale.edu/courseinfo  L2  1½ C Credits
Meets RP (61)
Continuation of fren 110a. To be followed by fren 130a or b. After fren 110a.
(Formerly the second term of fren 115)

fren 121a, Intermediate French. Marie-Dominique Boyce.
§ HTBA  For sections see www.yale.edu/courseinfo  L2  1½ 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 pro-
ficiency. 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.
§ HTBA  For sections see www.yale.edu/courseinfo  L3  1½ 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 com-
munication 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.
§ HTBA  For sections see www.yale.edu/courseinfo  L4  1½ C Credits
Meets RP (61)
The second half of a two-term sequence designed to develop students’ profi-
ciency in the four language skill areas. Introduction of more complex grammat-
ical 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 satis-
factory 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 185a or 186b. 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. Prerequisite: FREN 150a and 151b, or a satisfactory placement test score, or permission of the course director. 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) Edwige Tamalet Talbayev
170b–1: MW 11.35-12.50 L5, Hu (61) Lauren Pinzka
170b–2: MW 1-2.15 L5, Hu (61) Yue Zhuo
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 2:30-3:45  L5, Hu (37)
An interdisciplinary introduction to French and francophone cultural history organized around a particular theme or topic. In 2010 the theme is representation of memory in modern France. (Formerly FREN 162b)

*FREN 174a, Contemporary French and Francophone Societies and Cultures.
Farid Laroussi.
MW 11:35-12:50  L4, Hu (0)
Introduction to contemporary French and francophone societies and cultures, with emphasis on political, social, and institutional issues. Organized around a particular theme or topic that varies from year to year. (Formerly FREN 164a)

*FREN 175a, Literary Analysis and Theory.
Yue Zhuo.
TH 11:35-12:50  L4, Hu (0)
Intensive practice in key techniques of writing about French literature, with a focus on acquiring and developing analytical tools and critical vocabulary. 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. (Formerly FREN 165a)

Advanced Language Courses

*FREN 185a, 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. 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 to juniors and seniors.

*FREN 186a, Intermediate Literary Translation.
Alyson Waters.
W 3:30-5:20  L5, Hu (0)
A continuation of FREN 185a for students who wish to work on a longer project and to deepen their reading in translation theory. Prerequisite: FREN 185a.

*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.
Edwige Tamalat Talbayev.
TH 1-2:15  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 Lyazid, Chraïbi, Djebar, Feraoun, Mellah, and Mimouni.


MW 1-2.15  L5, Hu (36)
A survey of the literature of the French Renaissance focusing on major authors, works, and literary movements in their historical and cultural contexts. Works include Rabelais’s *Gargantua*, Marguerite de Navarre’s *Heptameron*, Ronsard’s *Amours*, Du Bellay’s *Regrets*, and Montaigne’s *Essais*.


T1.30-3.20  L5, Hu (0)
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; local and global culture; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bâ, Belaya, Condé, and Lopes.


Th 9-10.15  L5, Hu (22)
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 276b, Art and Literature in Modern France.  Marie-Hélène Girard.

MW 9-10.15  L5, Hu (0)
Aspects of the relationship between art and literature in modern France: wit and humor through caricature and satirical literature. Focus on French history, culture, and media, using texts, prints, comics, films, and television shows.

Advanced Topics

*fren 334b, Women’s Narratives in French Literature.  Maryam Sanjabi.

MW 1-2.15  L5, Hu (36)
Women’s narratives in French from the seventeenth century to the twentieth, including memoirs, diaries, and the epistolary novel. Topics include gender awareness, scientific progress, court scandal, sexuality, and amorous intrigue.

*fren 336a, France and the Islamic Orient.  Edwige Tamaler Talbayev.

Th 2.30-3.45  L5, Hu (0)
A study of French representations of the Islamic Orient since the late eighteenth century. Focus on the Maghreb, with some attention to Islamic countries such as Egypt and Turkey. Topics include exoticism, perceptions of non-Western cultures in a modern context, and relations to imperialism. Readings from French travel narratives, Orientalist fiction and poetry, and essays documenting the development of Orientalism as a genre in the modern period.

**FREN 353a, Jewish Identity and French Culture.**
Maurice Samuels.
**M** 2:30-3:45 L5, Hu (0)
Notions of Jewish identity in France from the French Revolution to the present. Writers and filmmakers include Balzac, Finkelkraut, Memmi, Modiano, Némirovsky, Renoir, Sartre, and Zola.

**FREN 358a, Authorship in France: Proust and Céline.**
Alice Kaplan.
**M** 2:30-4:20 Hu (0)
Studies in twentieth-century French literature and the changing definition of authorship in France. Proust and the problem of the life versus the work of the writer; Céline and the problem of the politically and morally scandalous writer.

**FREN 374b, Letters in French Literature.**
Marie-Hélène Girard.
**MW** 1-2:15 L5, Hu (0)
The letter in French culture, from personal account to historical document, including epistolary novels, travel literature, and manifestos. Authors include Madame de Sévigné, Pascal, Montesquieu, Laclos, Diderot, Balzac, George Sand, Flaubert, Baudelaire, Zola, and Simone de Beauvoir; artists include Delacroix, Manet, van Gogh, Chaissac, and Sophie Calle.

**FREN 387b, French Autobiography after 1945.**
Farid Laroussi.
**MW** 11:35-12:50 L5, Hu (0)
An examination of contemporary French autobiography with a focus on family relationships. The functions of memoirs and confessions, the sociohistorical background of post–World War II France, and the evolution of intellectual life.

**FREN 392b, Manifestos and Theories on Twentieth-Century Literature.**
Yue Zhuo.
**TTh** 2:30-3:45 L5, Hu (0)
A survey of self-reflective texts used as manifestos by literary movements during the twentieth century, among them symbolism, dadaism, surrealism, existentialism, social realism, the *nouveau roman*, and *Tel Quel*. Emphasis on critical self-consciousness in the production of modern literary work and on the importance of the reader-writer relationship. Authors include Proust, Gide, Breton, Aragon, Artaud, Sartre, Blanchot, Ponge, Duras, Sarraute, and Quignard.

**FREN 413b, Twenty-First-Century French Novels.**
Jean-Jacques Poucel.
**TTh** 11:35-12:50 L4, Hu (0)
A study of contemporary French novels. Focus on narrative strategies such as subjectivity and realism as well as on cultural issues such as postcapitalism and hypermodernity. Close readings of both fiction and literary criticism.

**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.

A one-term research project completed under faculty supervision and resulting in a substantial paper in French or English.

**FREN 493A and 494B, The Senior Essay in the Intensive Major.**
Consult the director of undergraduate studies.

A yearlong research project completed under faculty supervision and resulting in a paper of considerable length, in French or English. *Credit only on completion of both terms.*

**GROUP C COURSES**

Courses in this group are conducted in English; readings may be in French or English. Group C courses numbered above 100 are open to all students in Yale College.

**FREN 095B, The French Enlightenment.** Thomas Kavanagh.

*MW 11.35-12.50 Hu (0) Tr Fr sem*

A study of the French Enlightenment through its literature, art, and social thought. The culture of eighteenth-century France as a transition from absolute monarchy to the foundations of a secular society based on new understandings of nature, value, sexuality, liberty, tolerance, and social concord. *Readings and discussion in English. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*


For description see under Humanities.

**FREN 303B/HUMS 303B, Science and Culture in France.**
Brian Reilly.

For description see under Humanities.

**FREN 308B/HUMS 436B, Age of Cathedrals.** R. Howard Bloch.

For description see under Humanities.

**FREN 355B, Camus and the Postwar Era.** Alice Kaplan.

*MF 11.35-12.50 Hu (0) Tr*

The literary and political career of French-Algerian writer Albert Camus (1913–60). His major novels and essays read both from a stylistic point of view and in the context of World War II, the Algerian War, and debates over terrorism, the death penalty, and humanitarianism.

**FREN 373B/AFAM 365B/LITR 211B, Creole Cultures of the Caribbean.** Christopher L. Miller.

*Tu 1.30-2.20 Hu (0)*
Exploration of Creole identity, with a focus on the French and English Caribbean and on Louisiana. The term “Creole” as inseparable from issues of race and slavery. Readings of historical and literary texts, both well-known and obscure, from the eighteenth through the twentieth century. Reading knowledge of French required.

**FREN 382b, The Modern French Novel in English Translation.**
Ora Avni.

**TTh** 11.35-12.50 Hu (24) Tr


**FREN 393a/LITR 230a, Modernism and the Avant-Garde.**
Jean-Jacques Poucel.

**TTh** 1-2.15 Hu (0) Tr

The praxis, politics, and aesthetic of successive avant-gardes from a historical perspective. Shifting modes of media and representation, stylistic analysis, and theorizing the context of experiment. Emphasis on literature, with attention to painting, film, and performance. Cubism, Dada, surrealism, situationals, and the Ouipo.

**FREN 395a/FILM 260a/LITR 381a, French New Wave Cinema.**
Dudley Andrew.

For description see under Film Studies. (Formerly FREN 384b)

**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.

**HIST 273a, Europe in the Age of Total War, 1914–1945.** Jay Winter.

**HIST 275a, France, 1789–1871.** John Merriman.

**HSAR 315a, Nineteenth-Century French Art.** Carol Armstrong.

**READING COURSE**

**FREN 109A or B, French for Reading.** Maryam Sanjabi.


**109A-2: T 3.30-5.20 (0) 109B-2: T 3.30-5.20 (0)**

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. Preregistration 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 online at www.yale.edu/yalecollege/freshmen.

For a full description of each seminar, see the course listings of the originating department.

- **amst 003b**, American Literature and World Religions.  
  Wai Chee Dimock.

- **anth 010b**, Urban Culture, Space, and Power.  
  Erik Harms.

- **anth 011a**, Reproductive Technologies.  
  Marcia Inhorn.

- **anth 030b*/arcg 030b**, Inca Culture and Society.  
  Richard Burger.  
  For description see under Anthropology.

  Daniel Prober.

- **arch 003b**, Making an American Architecture.  
  Turner Brooks.

  Jessica Helfand.

- **art 002b**, Paper.  
  Siobhan Liddell.

- **astr 030a**, Search for Extraterrestrial Life.  
  Hector Arce.

- **clcv 051b**, Performance and Society in Ancient Greece.  
  Pauline LeVen.  
  For description see under Classics.

- **cpsc 079b**, Digital Photorealism.  
  Julie Dorsey.

- **eeng 001a**, Introduction to Nanoscience.  
  Mark Reed.

- **enas 060b*/aphy 060b*/phys 060b**, Energy Technology and Society.  
  Paul Fleury.  
  For description see under Engineering & Applied Science.

  Gordon Geballe.  
  For description see under Forestry & Environmental Studies.

- **film 040a*/afam 040a**, Spike Lee.  
  Terri Francis.  
  For description see under Film Studies.

- **fren 095b**, The French Enlightenment.  
  Thomas Kavanagh.

- **hist 001b*/afam 095b*/amst 001b**, African American Freedom Movements in the Twentieth Century.  
  Glenda Gilmore.  
  For description see under History.
The Rise of Religion in Modern America. Jon Butler. For description see under History.

The First World Historians. Valerie Hansen.

Revolutionary America. Jon Butler. For description see under History.

Medicine and Society in American History. Rebecca Tannenbaum. For description see under History.

The Viking Age. Anders Winroth. For description see under History.

History of Higher Education in America. George Levesque.

History of Food and Cuisine. Paul Freedman.


Writing Japanese History. Fabian Drixler.

Art and Science. Carol Armstrong.

Epidemics in Global Perspective. William Summers.

Literature into Film. Millicent Marcus. For description see under Italian.

Varieties of English. Laurence Horn, Raffaella Zanuttini.

The Experience of Being Foreign. Alice Kaplan. For description see under Literature.

Truth and Lies in Fiction and Film. Carol Jacobs. For description see under Literature.

Topics in Reproductive Biology. Harvey Kliman. For description see under Biology.

Exploring the Nature of Genius. Craig Wright.

Noise. Brian Kane.

Music Cultures of the World. Michael Veal.

Music and Human Evolution. Ian Quinn.

Music and Melancholy. Seth Brodsky.
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: David Evans, 210 KGL, 432-3127, dai.evans@yale.edu, www.yale.edu/geology

FACULTY OF THE DEPARTMENT OF GEOLOGY AND GEOPHYSICS

Professors
Jay Ague, David Bercovici (Chair), Ruth Blake, Mark Brandon, Derek Briggs, Leo Buss, Michael Donoghue, David Evans, Jacques Gauthier, Thomas Graedel, Leo Hickey, Shun-ichiro Karato, Jun Korenaga, Jeffrey Park, Danny Rye, Adolf Seilacher (Visiting), Brian Skinner, Ronald Smith, Karl Turekian, George Veronis, Elisabeth Vrba, John Wettlaufer

Associate Professors
Alexey Fedorov, Mark Pagani
The Geology and Geophysics program prepares students for the application of scientific principles and methods to the understanding of Earth, the environment, and life on a regional and a planetary scale. Subjects range from the history of Earth and life 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 employing basic principles from the core sciences (physics, chemistry, biology) to further an understanding of Earth’s past and present, and addressing issues relating to its future. Students gain a broad background in the natural sciences, and also select 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, environmental, 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, ocean, and climate 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 interest and 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, ocean, and climate track** provides a comprehensive understanding of the theory, observation, and prediction of the atmosphere-ocean-climate system. Topics range from past climate 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 sedimentary 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, 112b; 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, 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 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 490a, 491b), 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, G&G 491b 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 112A 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 — MATH 120A or B; ATMOSPHERE, OCEAN, AND CLIMATE TRACK — ENAS 110B or equivalent; ENAS 114A or B; PHYS 180A, 181B, 165LA, 166LB; ENVIRONMENTAL GEO SCIENCES 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, OCEAN, AND CLIMATE TRACK — 10 1/2 course credits beyond prereqs for letter grades (incl senior req); ENVIRONMENTAL GEO SCIENCES AND SOLID EARTH SCIENCES TRACK — 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, OCEAN, AND CLIMATE TRACK — 1 freshman sem or 100-level course in G&G; 3 electives as specified; ENVIRONMENTAL GEO SCIENCES AND SOLID EARTH SCIENCES TRACK — 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 490A, 491B)

G&G 100A, NATURAL DISASTERS.  David Bercovici.  
MWF 11.35-12.25 Sc (34)  

G&G 110A, INTRODUCTORY GEO SCIENCE.  Danny Rye.  
MW 11.35-12.30; lab F 11.35-12.30  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 123B, EARTH’S CHANGING CLIMATE.  Karl Turekian, John Wettlaufer.  
MWF 9.25-10.15  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/EEEB 125b, History of Life. Derek Briggs, Jacques Gauthier. Th Th 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/EVST 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 200b/EVST 200b, Earth System Science. Jeffrey Park. M W 9-10.15 Sc (0)
A survey of geoscience. Interaction of lithosphere, hydrosphere, atmosphere, and Earth’s deep interior; natural controls on environment and climate in past, present, and future; rocks, minerals, glaciers, earthquakes, and volcanoes; natural hazards and natural resources.

G&G 201a, Mantle Dynamics, Earthquakes, and Volcanoes. Jun Korenaga. Th Th 11.35-12.50, 1 HTBA QR, Sc (24)
Quantitative introduction to the dynamics of Earth’s interior and surface manifestations such as plate tectonics, earthquakes, and volcanoes. Emphasis on understanding various geological phenomena through the framework of mantle convection in the cooling Earth. Discussion of how Earth’s internal processes affect human environments in both the short and the long term. Weekly lab sessions familiarize students with the spatial and temporal scales of geological processes through brief field excursions. Prerequisites: Chem 112a, 113b, or 114a, 115b, or 118a; Math 120a or b, and Phys 150a, 151b, or 180a, 181b, or 200a, 201b; or permission of instructor.

G&G 203b, Natural Resources and Their Sustainability. David Evans, Jay Ague. Th Th 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. David Evans. M W F 10.30-11.20 Sc (33)
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]

*G&G 222b, Origin of Everything. David Bercovici.

MW 11.35-12.50 Sc (0)
Study of major scientific origin hypotheses, including the origin of the universe, galaxies, the solar system and planets, continents, oceans, atmospheres, magnetic fields, and mono- and multicellular life. Climatic and geographical perspectives on the origin of civilizations and human history.

G&G 230a/ARCG 230a, Stratigraphy. Leo Hickey.

TTh 9-10.15; lab TTh 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 250a, 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]

G&G 300b, Mineral Deposits. Brian Skinner.

3 Thba Sc (0)
Introduction to formation and distribution of mineral deposits. After G&G 220b.

G&G 301a, 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 113b or 118a, and math 113a or b; G&G 220b recommended.

[g&g 304a/evst 404a, Minerals and Human Health]

[g&g 308b, The Global Carbon Cycle]


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 113b, math 120a or b, and phys 151b or equivalents, or with permission of instructor.
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.** Derek Briggs, Adolf Seilacher.

MW 11:35-12:50 (0)

Exploration of the basic constraints and potentials that controlled adaptive radiation in the evolution of the invertebrate skeleton.

**[G&G 318aG, Paleobotany]**

**[G&G 318bG, Trace Fossil Analysis]**


TTTh 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 322aG, Physics of Weather and Climate]**

**[G&G 323bG, Theory of Climate]**


MW 10:30-11:20 QR, Sc (33)

An introduction to the structure and dynamics of Earth and other planets in the context of cosmic evolution. Review of basic physical principles and their applications to geophysics and planetary physics. Star formation and nucleosynthesis; planetary accretion and the birth of the solar system; heat flow, plate tectonics, and mantle dynamics; seismology and geodesy; core dynamics, geomagnetism, and planetary magnetism. **Prerequisites:** phys 181b and math 120a or b or equivalents.

**G&G 332aG, Paleogeography.** David Evans.

TTTh 1:30-2:45, 1 HTBA QR, Sc (0)

Quantitative methods for measuring horizontal motions on Earth’s surface. Histories of continental motions and supercontinents during the past three billion years. True polar wander. Study of the foundations of paleomagnetism, including experience with field sampling and laboratory data acquisition. **Prerequisites:** G&G 109a, 110a, or a G&G course numbered 200 or higher; or permission of instructor.

**G&G 333aG, Physical Oceanography.** Alexey Fedorov.

MW 11:35-12:50 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 350b, Petrogenesis of Mountain Belts. Jay Ague.  
MWF 9:25-10:15 Sc Meets RP (32)  
Examination of the fundamental principles governing the formation of metamorphic and igneous rocks during mountain building. Topics include processes of heat and mass transfer in orogenic belts, generation of igneous rocks in continental and subduction settings, ultrahigh pressure and ultrahigh temperature metamorphism, spatial and temporal patterns of petrologic processes throughout geologic time, and pressure-temperature-time paths of metamorphic and igneous rocks. Prerequisites: G&G 220b or equivalent, MATH 120a or b, and CHEM 115b or 118a, or with permission of instructor.

G&G 362b*,arcg 362b*/evst 362b, Observing Earth from Space. Ronald Smith and staff.  
TRh 9-10:15; lab Th or F 1:30-2:20 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. 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 402b, Paleoclimates. Mark Pagani.  
TRH 11:35-12:50 Sc (0)  
A study of the dynamic evolution of Earth’s climate. Topics include warm (the Cretaceous, the Eocene, the PETM, the Pliocene) and cold (the “snowball Earth”) climates of the past, glacial cycles, abrupt climate changes, the climate of the past thousand years, and the climate of the twentieth century. After PHYS 181b and one course in meteorology (G&G 322a) or oceanography (G&G 335a), or with permission of instructor.

G&G 421b, Geophysical Fluid Dynamics. Mary-Louise Timmermans.  
TRh 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.

G&G 440b, Methods in Geomicrobiology. Ruth Blake.  
TRh 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.

TRh 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 456bG, Introduction to Seismology]

G&G 457aG, 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 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. Prerequisite: one course in physics, meteorology, fluid dynamics, electrical engineering, or economics.

★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 490a and 491b, Research and Senior Thesis. Consult the director of undergraduate studies.
Htba (0) Cr/Year only
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 WLH, 432-0782, kirk.wetters@yale.edu

FACULTY OF THE DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURES

Professors
- Rüdiger Campe, Cyrus Hamlin (Emeritus), Carol Jacobs (Chair), Rainer Nägele, Brigitte Peucker, Henry Sussman (Visiting)

Associate Professor
- Kirk Wetters

Assistant Professor
- Paul North

Lecturers
- Anthony Niesz, William Whobrey

Senior Lectors
- Marion Gehlker (Language Coordinator)
- 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, 140a or b, and 150a or b; GMST 180a; two introductory courses in German literature numbered 171–179 and conducted in German; 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 11; a three-page prospectus and bibliography are due by October 2. A rough draft
must be submitted to the adviser by November 6. The completed essay, due on December 4, 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 23 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 II 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 30, from 2 to 3:15 p.m. in 207 WLH. A makeup examination will be administered on Monday, August 31, from 9 to 10:15 a.m. in 207 WLH. Students wishing to take the placement exam in January should sign up with the language coordinator by December 11, 2009. Students may also consult the director of undergraduate studies or the language coordinator for advice about placement and about language study. Regardless of previous German study, students without a score of 5 on the German Advanced Placement test must take the departmental placement exam in order to enroll in any course above GMAN 110a or b or 125a.
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; 2 from Group B courses numbered 171-179; 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)

GROUP A COURSES

GMAN 110a or b, Elementary German I.  Marion Gehlker and staff.
mtwthf 1 HTBA  For sections see www.yale.edu/courseinfo
L1 1 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. 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
L2 1 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. Enrollment limited to 14 per section. (Formerly GMAN 116a or b)

GMAN 125a, Intensive German I.  Howard Stern.
mtwthf 9.25-10.15, mtwthf 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.

GMAN 130a or b, Intermediate German I.  Marion Gehlker and staff.
mtwthf 1 HTBA  For sections see www.yale.edu/courseinfo
L3 1 C Credits  Meets RP (61)

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 Kaschnitz, 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. Enrollment limited to 14 per section.

GMAN 140a or b, Intermediate German II. Marion Gehlker and staff.

MTWTH 1 HTBA For sections see www.yale.edu/courseinfo
L4 1 1/2 C.Credits Meets RP (61)
Continuation of gman 130a or b. Topics include multicultural Germany, 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, with permission of the director of undergraduate studies, by gman 171a. Enrollment limited to 14 per section. (Formerly gman 131a or b)

GMAN 145b, Intensive German II. Howard Stern.

MTWTHF 9.25-10.15, MTWTH 10.30-11.20 L3–L4 2 C.Credits Meets RP (0)
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. Anthony Niesz and staff.

MWF 1 HTBA For sections see www.yale.edu/courseinfo L5 (61)
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 5 on the German Advanced Placement test, or according to results of the placement examination. (Formerly gman 138a)

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, or 150a or b. (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 the equivalent. Conducted in German with readings in German, unless otherwise indicated.

*GMAN 171a, Introduction to German Prose Narrative.*
Kirk Wetters.

**Th 11:35-12:50 L5 (0)**
Study of key authors and works of the German narrative tradition, with a focus on the development of advanced reading comprehension, writing, and speaking skills. Readings from short stories, novellas, and at least one novel. Writings by exemplary storytellers of the German tradition, such as Goethe, Kleist, Hebel, Hoffmann, Stifter, Keller, Kafka, Mann, Musil, Bachmann, and Bernhard.

*GMAN 172b, Introduction to German Theater.*
Paul North.

**Th 11:35-12:50 L5 (0)**
An advanced language course that addresses key authors and works of the German theatrical tradition. Refinement of skills in reading comprehension, writing, and speaking. Authors include Lessing, Goethe, Schiller, Kleist, Büchner, Hebbel, Wedekind, Brecht, and Müller.

*GMAN 347bG, Austrian Novels after Musil.*
Kirk Wetters.

**M 3:30-5:20 Hu (0)**
Study of major Austrian novels written after the influential modernist works of Musil, Canetti, and Broch. Focus on Heimito von Doderer's *Die Strudlhofstiege*, Ingeborg Bachmann's *Malina*, and Thomas Bernhard's *Aushöhung*. Reading knowledge in German required.

*GMAN 354a/GMST 354a/HUMS 345a/LITR 349a/PHIL 411a, Adorno's Aesthetic Theory.*
Rainer Nägele.

**W 3:30-5:20 Hu (0)**
Close reading of Adorno's *Ästhetische Theorie*, with attention to the work's location in the context of modern aesthetics and philosophy. Adorno's interweaving of philosophy, sociology, psychoanalysis, and political theory. Reading knowledge in German required.

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 181b/LITR 334b, Problems of Lyric.*
Howard Stern.

For description see under Literature. (Formerly GMAN 177b)

*GMAN 251a/GMST 251a/HUMS 344a, The Self in German Literature, 1770–1840.*
Ansgar Mohnkern.

**MW 1-2.15 Hu (0) Tr**
The relationship between art and subjectivity in German literary texts of the late eighteenth and early nineteenth centuries. Readings from Kant's first and third *Critiques*, as well as works by Goethe, Hölderlin, Eichendorff, Brentano, Heine, and Büchner.

*GMAN 252b/GMST 252b/LITR 236b, Traditions of the Novella: Short Narratives in the Nineteenth Century.*
Cyrus Hamlin.

**Th 1-2.15 Hu (0) Tr**
Survey of the novella as a narrative form from Goethe to Thomas Mann. Emphasis on narrative technique and the development of literature from romanticism through realism to modernism. Additional authors include Kleist, E. T. A. Hoffmann, Eichendorff, Büchner, Annette von Droste-Hülshoff, Gotthelf, Mörike, Keller, C. F. Meyer, Storm, and Fontane. Readings and discussion in English; texts available in German.

**GMAN 271A/GMST 271A/HUMS 308A/JDST 284A, JEWS AND GERMANS: AN INTERCULTURAL HISTORY.** Paul North.

For description see under German Studies.


Study of narrative texts from the era of classical probabilistic philosophies. The history of probabilistic thinking and contemporary debates on risk and risk taking; contingency as a basic element of narration. Works by Defoe, Wieland, Voltaire, Goethe, Schiller, Kleist, E. T. A. Hoffmann, Poe, and others.


Exploration of triangular communication models, in which one person speaks on behalf of another person before a third party. Communication in law (advocacy), religion (intercession), and politics (representation). Readings from ancient rhetoric, Jewish and Christian religious texts, and modern social and literary theory, as well as paradigmatic works by Kafka, Canetti, and Celan, and selected scenes from ancient and modern drama.


Theories of passion from Descartes and Hobbes to Baumgarten, Burke, and Kant. The relationship between passion and literary representation from Shakespeare and Racine to Richardson and Goethe. Theoretical questions concerning psychology, epistemology, aesthetics, and anthropology. Theatrical performance of passion in the seventeenth century; narrative representation in the eighteenth century.


Transformation of the classical Greek elegy form in modern times by Goethe, Hölderlin, and Rilke. Discussion in English; texts in German and in English translation. Prerequisite: basic reading knowledge of German.

**GMAN 309B/GMST 309B/HUMS 274B/LITR 228B, LITERARY ETHICS: DINESSEN AND SEBALD.** Carol Jacobs.

For description see under German Studies.

**GMAN 327A/HUMS 287A, AROUND KAFKA.** Henry Sussman.

Franz Kafka's writings viewed as a site for the radical questioning and dislocation of Western systems, institutions, and mores of the early twentieth century. Attention to the shorter fiction, the novels, the letters, and their strategic interrelations; examination of the fields of knowledge, ideological presumptions, and aesthetic
and cultural experiments that Kafka touched, and to some degree deranged, with his writing.

*GMAN 406b/FILM 410b/LITR 350b, Theatricality in Film.*
Brigitte Peucker.
For description see under Film Studies.

**GMST 180a, Introduction to German Culture and Thought.**
Paul North.

**READING COURSE**

**GMAN 100a and 101b, German for Reading.** Staff.

*GMAN 478a or b, Directed Readings or Individual Research in Germanic Languages and Literatures.* Consult the director of undergraduate studies.

**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), Michael Friedmann (Adjunct) (Music), Timothy Guinnane (Economics, History), Cyrus Hamlin (Emeritus) (German), *Karsten Harries (Philosophy), Carol Jacobs (German), Rainer Nägele (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)
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; GMAN 150a or b, GMST 180a; one German literature course numbered GMAN 171–179 and conducted in German; 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 11, 2009; a three-page prospectus and a bibliography are due by October 9. A rough draft must be submitted to the adviser by November 13. The completed essay, due on December 4, 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 (GMST 491a, 492b). In the fall term seniors in the intensive major enroll in GMST 491a 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 23, 2009. The student must submit a draft of at least fifteen pages of the essay by December 4 to receive credit for the first term of the course. The second term, GMST 492b, is devoted to completing the essay, which should be substantial (between fifty and sixty pages); the completed essay must be submitted by April 23, 2010. 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 II 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, 140a or b, 150a or b; GMST 180a; 1 course numbered GMAN 171–179, as specified

**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 491a, 492b)
gmst 180a, Introduction to German Culture and Thought.
Paul North.
MW 11:30-12:50 Hu (0)
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 190b)

gmst 212a/*hums 277a/*litr 328a/*mgrk 212a, Folktales and Fairy Tales.
Maria Kaliambou.
For description see under Hellenic Studies.

gmst 231a/*gman 231a/*hums 344a, The Self in German Literature, 1770–1840.
Ansgar Mohnkern.
For description see under Germanic Languages & Literatures.

gmst 232b/*gman 252b/*litr 236b, Traditions of the Novella: Short Narratives in the Nineteenth Century.
Cyrus Hamlin.
For description see under Germanic Languages & Literatures.

gmst 271a/*gman 271a/*hums 308a/*jdst 284a, Jews and Germans: An Intercultural History.
Paul North.
W 1:30-3:20 Hu (0)
Interchanges between German and Jewish cultures from 1750 to 1933. Contextual background for understanding the Holocaust. Primary texts, read in translation, debate enlightenment, civil rights, integration, anti-semitism, Zionism, and diaspora. Comparison with other cultural, religious, and ethnic conflicts.

gmst 284a/*gman 284a/G/litr 329b, Advocates and Representatives.
Rüdiger Campe.
For description see under Germanic Languages & Literatures.

gmst 289a/*gman 289a/G/litr 170a, Passions, 1600–1800.
Rüdiger Campe.
For description see under Germanic Languages & Literatures.

gmst 294a/*hums 272a, Confidence Games: Fakes, Frauds, and Counterfeits.
Kirk Wetters.
M 1:30-3:20 Hu (0)
The tradition of the con artist in literature and film, from eighteenth-century German texts of Goethe and Schiller to Ben Stiller’s Tropic Thunder. Works by Orson Welles, Clifford Irving, Melville, Thomas Mann, André Gide, and Dostoevski. Questions of authenticity, authorship, and authority.
Transformations of the Elegy. Rainer Nägele.
For description see under Germanic Languages & Literatures.

Literary Ethics: Dinesen and Sebald. Carol Jacobs.
M 1:30–2:30 Hu (o) Tr
Close reading of prose works by Isak Dinesen and W. G. Sebald, with a focus on how literature and ethics redefine one another. Ways in which the performance of a work of art and, specifically, reflections on the nature of language and representability can prompt a rethinking of conscience and moral gesture.

Childhood and Memory. Henry Sussman.
For description see under Literature.

The Weimar Republic. Emily Levine.
For description see under Humanities.

Adorno's Aesthetic Theory. Rainer Nägele.
For description see under Germanic Languages & Literatures.

The historical formation of the concept of time, a fundamental idea in the humanities and sciences. The benefits and pitfalls of the specifically modern plan to ground thought and being in a theory of time. Texts in German intellectual history by Kant, Husserl, Heidegger, and Einstein, with reference to Marcel Proust’s novel In Search of Lost Time.

Directed Readings or Individual Research in German Studies. Consult the director of undergraduate studies.

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.

The Senior Essay for the Standard Major. Consult the director of undergraduate studies.

Preparation of a one-term senior essay, typically during the fall term, under the supervision of a member of the faculty.

The Senior Essay for the Intensive Major. Consult the director of undergraduate studies.

Preparation of a two-term senior essay under the supervision of a member of the faculty.

GREEK
(See under Classics and under Hellenic Studies.)
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 may help prepare Yale students to address health-related challenges and inform their studies within a variety of disciplines.

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 interdisciplinary courses on American media and medicine (HLTH 170a), health psychology (HLTH 215b), and 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.
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.

**Anth 114a, Introduction to Medical Anthropology.**
Sean Brotherton.

**Anth 357aG, Anthropology of the Body.** Sean Brotherton.

**Child 350a or b/Psyc 350a or b, Autism and Related Disorders.**
Ami Klin, Fred Volkmar.
For description see under Child Study Center.

**Econ 170a, Health Economics and Public Policy.**
Howard Forman.

**Econ 464b, Information and Incentives in Health Care.**
Andrew Epstein.

**Econ 467a/Ep&E 319a, Issues in Health Economics.**
Howard Forman.
For description see under Economics.

**Ep&E 380a/Plsc 313a, Bioethics, Politics, and Economics.**
Stephen Latham.
For description see under Ethics, Politics, & Economics.

**Evst 255b/F&Es 255b/Plsc 215b, Environmental Politics and Law.**
John Wargo.
For description see under Environmental Studies.

**Hist 006a/Hshm 005a, Medicine and Society in American History.** Rebecca Tannenbaum.
For description see under History.

**Hist 224b/Hshm 235b, Epidemics and Society in the West since 1600.** Frank Snowden.
For description see under History.

**Hshm 277b/G/Mast 170b/Hist 177bG, Genetics, Reproduction, and Society.** Daniel Kevles.
For description see under History of Science, History of Medicine.

**Hist 413a/Hist 145Ja, X-Ray Visions: Medical Imaging since 1895.** Bettyann Kevles.
For description see under History of Science, History of Medicine.

**Hums 076a, Epidemics in Global Perspective.**
William Summers.

**Mcdb 107a, Human Biology.** Mitchell Kundel, William Segraves.
For description see under Biology.

**Mcdb 109b, Immunology and Microorganisms.** Paula Kavathas.
For description see under Biology.
**MCDB 150b/HIST 400b, Global Problems of Population Growth.**
Robert Wyman, Fabian Drixler.
For description see under Biology.

**MCDB 240b, Biology of Reproduction.**
Hugh Taylor, Mary Klein.
For description see under Biology.

**PLSC 257b/EP&E 343b, Bioethics and Law.**
Stephen Latham.
For description see under Political Science.

**PLSC 446b/INTS 354b/SOCY 369b, Welfare States across Nations.**
Sigrun Kahl.
For description see under Political Science.

**PSYC 355a and 356b, Clinical Psychology in the Community.**
Kristi Lockhart.

**WGSS 120a, Women, Food, and Culture.**
Maria Trumpler.

**WGSS 323b/AFST 323b/ANTH 239b, 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 II, 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.)*

**HELLENIC STUDIES**

Directors: Stathis Kalyvas, 8 Prospect Pl., 432-3386, stathis.kalyvas@yale.edu; John Geanakoplos, 30 Hillhouse Ave., 432-3307, 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 110a, Elementary Modern Greek I. Maria Kaliambou.  
MTWTh 9.25-10.15, 1 HTBA L1 1 1/2 C Credits (32)  
An introduction to spoken and written modern Greek. 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 120b, Elementary Modern Greek II. Maria Kaliambou.  
MTWTh 9.25-10.15, 1 HTBA L2 1 1/2 C Credits (32)  
Continuation of mgrk 110a. Prerequisite: mgrk 110a. (formerly the second term of mgrk 115)

mgrk 130a, Intermediate Modern Greek I. Maria Kaliambou.  
MTWTh 10.30-11.20, 1 HTBA L3 1 1/2 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 140b, Intermediate Modern Greek II.  
Maria Kaliambou.  
MTWTh 10.30-11.20, 1 HTBA L4 1 1/2 C Credits (33)  
Continuation of mgrk 130a. Prerequisite: mgrk 130a or permission of instructor. (formerly mgrk 131b)

*mgrk 201a, Modern Greek Poetry and Music.  
George Syrimis.  
TTTh 9-10.15, 1 HTBA L5, Hu (0)  
History of Greek poetry and song from the beginning of the nineteenth century to the present. Aesthetic, literary, and intellectual debates in modern Greece, including the so-called language question, east-west polarity in modern Greece, class and ideological conflict, the diversity of the Greek nation, modernization, and gender and sexual politics. Prerequisite: mgrk 140b, or with permission of instructor.

*mgrk 202b/*/clcv 214b/*/hums 278b/*/litr 225b/*/wgss 337b,  
The Poetry of C. P. Cavafy.  
George Syrimis.  
F 1.30-3.20 WR, Hu (0) Tr  
The interactions of gender, sexuality, and nationalism in the poetry of C. P. Cavafy (1863–1933). Questions of biography, representation, disclosure, and evasion; Cavafy’s aestheticism. Ways in which Cavafy simultaneously appeals to and resists prevailing notions of writing, desire, language, the classical tradition, and modernity. His contributions to our understanding of the history and politics of Greek and gay identity in the twentieth century.
Folktales and Fairy Tales. Maria Kaliambou.
T 2:30-4:20 Hu (0) Tr

History of the folktale from the late seventeenth 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.

Occupied Europe during World War II. Konstantina Maragkou.
Th 1-2:15 Hu (26)
The immediate causes, experience, and consequences of the conquest of European countries during World War II. Comparison of occupation experiences under different conquerors, with an emphasis on Nazi and Soviet rule. Occupational patterns, collaboration and resistance, 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.

History of European Integration. Konstantina Maragkou.
W 1:30-3:20 Hu (0)
The influence of the Marshall Plan and the Cold War in the making of postwar Europe. The antecedents and evolution of European integration from its origins to the Treaty of Maastricht. Greece used as a case study.

Greece in the Twentieth Century. Konstantina Maragkou.
W 1:30-3:20 Hu (0)
The history of modern and contemporary Greece. Recent political developments, economic and cultural aspects, and international relations.

Cold War in Europe. Konstantina Maragkou.

Senior Seminar in Modern Greek Literature. George Syrimis.
3 HTBA L5 (0)
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.

Independent Tutorial. Staff.
HTBA (0)
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: Robert Harms, 237 HGS, 432-1355, robert.harms@yale.edu

FACULTY OF THE DEPARTMENT OF HISTORY

Professors

Associate Professors
Bruno Cabanes, Mary Lui, Michael R. Mahoney, Mridu Rai, Naomi Rogers, Celia Schultz

Assistant Professors
Paola Bertucci, Patrick Cohrs, Fabian Driexler, Seth Fein, Beverly Gage, Michael Gasper, Lillian Guerra, Alyssa Mt. Pleasant, Edward Rugemer, Paul Sabin, Marci Shore, Bruno Strasser, Charles Walton, Kariann Yokota

Senior Lecturers
Annping Chin, Bettyann Keves, Stuart Semmel

Lecturers
Adel Allouche, Becky Conekin, Ivano Dal Prete, Kyle Farley, Jay Gitlin, Walter Goffart, Veronika Grimm, Micaela Larkin, George Levesque, Toby Lincoln, Konstantina Maragkou, William Metcalf, Amanda Moniz, David Musto, Micha Perry, Frank Prochaska, Jonathan Schell, Sarah Snyder, William Summers, Rebecca Tannenbaum

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 online beginning in March 2010.

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 for this orientation online 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. Courses numbered in the 400s address global topics; students must apply to the director of undergraduate studies in History to count a 400-level course toward a particular geographical category. Lecture courses are subject to capping at the beginning of each term.

*DRST 005a and 006b, Directed Studies: Historical and Political Thought. Robert Burt, Cynthia Farrar, Paul Freedman, Charles Hill, Emily Levine, Steven Pincus, Frank Prochaska, Stuart Semmel, Kathryn Slanski, Steven Smith, Justin Zaremby. PreInd [F]*
African American Freedom Movements in the Twentieth Century.
Glenda Gilmore.

TH 1-2.15 Hu (o) Fr sem
Introduction to the study and writing of history, focusing on how African Americans fought for civil rights throughout the twentieth century. The civil rights movement placed in its historical context; African American freedom struggles placed in the larger narrative of U.S. history. Enrollment limited to freshmen. Pre-registration required; see under Freshman Seminar Program.

The Rise of Religion in Modern America.
Jon Butler.

MW 1-2.15 WR, Hu (o) Fr sem
The survival and prosperity of religion in America from the 1870s to 2000. 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.

The First World Historians.
Valerie Hansen.

TH 1-2.15 WR, Hu (o) Prefind Fr sem
An introduction to the historical traditions of Greece and Rome, Islam, and China. Focus on Polybius, Herodotus, al-Tabari, Masudi, Sima Qian, and Sima Guang. Particular attention to their treatment of people and events outside their borders. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

Revolutionary America.
Jon Butler.

MW 1-2.15 WR, Hu (o) Prefind Fr sem
Colonial America and the coming of the Revolution, with special attention to population, economy, religion, politics, and the ways historians assess evidence and develop generalizations. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

Medicine and Society in American History.
Rebecca Tannenbaum.

TH 11.35-12.50 WR, Hu (o) Fr sem
Disease and healing in American history from colonial times to the present. 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.

The Viking Age.
Anders Winroth.

MW 9-10.15 WR, Hu (o) Prefind Fr sem
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.

History of Higher Education in America.
George Levesque.

WF 2.30-3.45 Hu (o) Fr sem
A survey of American higher education from the colonial era to the Cold War. 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.

**HIST 016b, History of Food and Cuisine.** Paul Freedman.

MW 2:30-3:45 Hu (0) Fr sem

The history of food from the Middle Ages to the present, with a focus on the United States and Europe. How societies gathered and prepared food; culinary tastes of different times and places. The influence of taste on trade, colonization, and cultural exchange. The impact of immigration, globalization, and technology on food. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**HIST 022a, What History Teaches.** John Gaddis.

MW 9-10:15 WR, Hu (0) 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.

**HIST 030a, Writing Japanese History.** Fabian Drixler.

TH 1-2:15 WR, Hu (0) Fr sem

Training in different modes of historical writing, including narrative history, biography, and microhistory. Introduction to important debates and key moments in Japanese history. No previous knowledge of Japan required. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**HIST 112a/AMST 190a, The Formation of Modern American Culture, 1876–1919.** Jean-Christophe Agnew.

For description see under American Studies.

**HIST 115a/AMST 188a, The Colonial Period of American History.** John Demos.

TH 11:35-12:50 Hu (24) 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.

**HIST 116b, The American Revolution.** Joanne Freeman.

TH 2:30-3:20, 1 HTBA Hu (27) PreInd

The American Revolution from the perspective of the colonists; their shifting identities as English subjects, colonial settlers, revolutionaries, and Americans. Readings include contemporary correspondence and eyewitness accounts.

**HIST 119b/AFAM 172b, The Civil War and Reconstruction Era, 1845–1877.** 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/ENVST 120A, INTRODUCTION TO ENVIRONMENTAL HISTORY.**
Paul Sabin.
For description see under Environmental Studies.

Paola Bertucci.
For description see under History of Science, History of Medicine.

**HIST 127A/AMST 135A/WGSS 200A, U.S. LESBIAN AND GAY HISTORY.**
George Chauncey.
TTH 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. 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.

**HIST 131A/AMST 131A, U.S. POLITICAL AND SOCIAL HISTORY, 1900–1945.**
Glenda Gilmore.
TTH 11.35-12.50 Hu (24)
The social, political, and economic changes that transformed American society from the turn of the twentieth century through World War II.

**HIST 133B/EPE 442B/INTS 345B, STRATEGIC, POLITICAL, AND MORAL DILEMMAS OF THE NUCLEAR AGE.**
Jonathan Schell.
For description see under International Studies.

**HIST 134A, AMERICAN INDIAN LAW AND POLICY.**
Ned Blackhawk.
MW 9.25-10.15, 1 HTBA Hu (0)
Survey of the history of federal Indian law and policy, highlighting the political achievements of American Indian communities over the past four decades.

**HIST 135B/ECON 182B, AMERICAN ECONOMIC HISTORY.**
Benjamin Chabot.
For description see under Economics.

**HIST 141B/AMST 141B, THE AMERICAN WEST.**
John Mack Faragher.
TTH 1.30-2.20, 1 HTBA Hu (26)
The history of the American West as both frontier and region, real and imagined, from the first contacts between Indians and Europeans in the fifteenth century to the multicultural encounters of the contemporary Sunbelt. Students work with historical texts and images from Yale’s Western Americana Collection.

**HIST 142B, AMERICAN POLITICS SINCE 1945.**
Beverly Gage.
TTH 1.30-2.20, 1 HTBA Hu (26)
A survey of American politics from the late New Deal to the present. Topics include national politics, the presidency, grassroots movements, and the relationship between liberalism and conservatism.

**HIST 145B/AMST 312B/RLST 108B, RELIGION IN MODERN AMERICA, 1865–2000.**
Kathryn Lofton.
For description see under Religious Studies.
Gretchen Berland, John Warner. For description see under History of Science, History of Medicine.

Paula Hyman. MW 10.30-11.20, 1 HTBA Hu (33)
The history of Jews in America from the colonial period to the present. Topics include immigration, religious development, politics, and participation in culture. Special attention to how Jews, as a minority, have negotiated their place in American society.

Rebecca Tannenbaum. MW 1.30-2.20, 1 HTBA Hu (36)
The history of women and gender roles from the English settlement of the North American coast to 1900. Emphasis on work and family roles, social and political movements, and regional, racial, and cultural variation.

Joanne Meyerowitz. TuTh 10.30-11.20, 1 HTBA Hu (23)
U.S. women’s history and the history of gender from 1900 to the present. Changing meanings of femininity, masculinity, sex, gender, and sexuality; intersections of class, race, ethnicity, and gender; women’s labor in industrial and postindustrial economies; women’s participation in politics and social movements; trends in sexual expression, gender presentation, reproduction, child rearing, and marriage; and feminist and other gender-equity movements.

Cynthia Russett. TuTh 10.30-11.20, 1 HTBA Hu (23)
A survey of important intellectual developments from the “Innocent Rebellion” of the pre–World War I period through the 1960s. Topics include coming to terms with the European legacy; intellectuals and the Left in the Depression; the postwar “end of ideology”; and the apocalyptic visions of the 1960s.

Daniel Kevles. For description see under History of Science, History of Medicine.

Mary Lui. For description see under American Studies.

Mary Lui. For description see under American Studies.

Mary Lui. For description see under African American Studies.

Joseph Manning. For description see under Classics. PreInd
MW 10.30–11.20, 1 HTBA Hu (33)
An overview of the economic, social, political, and intellectual history of modern Europe. 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 208b/CLCV 232b/HUMS 233b, 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. Anders Winroth.
MW 11.35–12.25, 1 HTBA Hu (34) 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. Paul Freedman.
MW 11.35–12.25, 1 HTBA Hu (34) 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 213b/CLCV 411b, Historians of the Roman Empire. John Matthews.
For description see under Classics. PreInd

For description see under Classics. PreInd

MW 2.30–3.45 Hu (37) PreInd
Examination of a series of religious revolutions in Europe between 1400 and 1650. 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 217a/CLCV 206a, Introduction to Roman History: The Republic. Celia Schultz.
For description see under Classics. PreInd

HIST 218b/CLCV 207b, The Roman Empire. John Matthews.
For description see under Classics. PreInd

TH 11:35-12:50 Hu (24) PreInd
A broad introduction to the history of the Jews from biblical beginnings until the European Reformation and the Ottoman Empire. Focus on the formative period of classical rabbinic Judaism and on the symbiotic relationships among Jews, Christians, and Muslims. Jewish society and culture in its biblical, rabbinic, and medieval settings. Counts toward either Middle Eastern or European distributional credit within the major.

HIST 226A/G/HUMS 422A/RLST 158A, JESUS TO MUHAMMAD: ANCIENT CHRISTIANITY TO THE RISE OF ISLAM. Stephen Davis.
For description see under Religious Studies.

HIST 229A, NINETEENTH-CENTURY BRITAIN. Stuart Semmel.

TH 11:35-12:50 Hu (24)
British politics, society, and culture in a period of constitutional reform, industrial development, social dislocation, imperial expansion, and cultural criticism.


MW 11:35-12:25, 1 HTBA Hu (34)
A survey of twentieth-century British history. 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.


TH 10:30-11:20, 1 HTBA Hu (23)
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. 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 243A/INTS 374A/MGRK 225A, OCCUPIED EUROPE DURING WORLD WAR II. Konstantina Maragkou.
For description see under Hellenic Studies.


TH 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.


TH 10:30-11:20, 1 HTBA Hu (23)
An introduction to new approaches in the history of war. Focus on a comparative examination of the actors, forms of violence, ideological stakes, and memories of modern war.

HIST 257A, IDEAS AND REVOLUTIONS. Frank Snowden.

TH 11:35-12:25, 1 HTBA Hu (24)
The relationship between ideas and revolution in Europe between the French and Russian Revolutions, 1789–1917. Social and historical context of theorists such as Rousseau, Fourier, Marx and Engels, Mazzini, Bakunin, Bernstein, Kautsky, Lenin, Rosa Luxemburg, and Trotsky.

MW 1:2.15, I HTBA Hu, So (36)
The Cold War from beginning to end, viewed from the perspective of all its major participants, with emphasis on recently released Soviet, East European, and Chinese sources. Counts toward either European or U.S. distributional credit within the major, upon application to the director of undergraduate studies.

MW 9:10.15, I HTBA Hu (32)
German history from the year of Hitler's birth to the fall of the Berlin Wall and the end of the Cold War. The dramatic violence of German history to 1945 and its pacified contentment thereafter.

HIST 273A, Europe in the Age of Total War, 1914–1945.
Jay Winter.
MW 11:35-12.25, I 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.

MW 10:30-11.20, I HTBA Hu (33)
Dimensions of political, social, and economic change in France during its most turbulent period. The causes and impact of the revolutions of 1789, 1830, 1848, and 1871; demographic change and large-scale industrialization; shifting political elites, republican and socialist alternatives to monarchy, and urbanization.

Carlos Eire.
For description see under Religious Studies. PreInd

HIST 295B, Empire and Foreign Policy in Russian History, 1552–1917. Paul Bushkovitch.
THU 2:15 Hu (26)
Formation of the Russian Empire and its interaction with foreign policy. Topics include multiconfessionalism and multinationality, imperial strategy, and economic development on Russia's European and Asian frontiers.

HIST 306B, East Asia, 500 to the Present. Fabian Drixler, Valerie Hansen.
MW 10:30-11.20, I HTBA Hu (33)
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.

THU 2:15 Hu (26)
Survey of the Indian subcontinent’s history from colonial rule, through nationalist resistance, to postcolonial history. 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 315A/HUMS 421A, HISTORY OF TRADITIONAL CHINA TO 1600.
Valerie Hansen.

TH 2:30-3:20, 1 HTBA Hu (0) PreInd
A survey of Chinese history from the introduction of oracle bone writing in c. 1200 B.C. to A.D. 1600, and the effects of the discovery of the New World on China. Use of philosophical, religious, and literary texts in translation as well as archaeological and art-historical evidence.

Peter Perdue.

TH 1:30-2:20, 1 HTBA Hu (26)
The rise and fall of the Qing (1644–1912), China's last dynasty. Traditional Chinese values and the effect of foreign ideas and technologies on those values. China's first Republic (1912–1949) and the impact of foreign imperialism and communism. The People's Republic of China under Mao Zedong and Deng Xiaoping; China's changing economic and political structures.

HIST 323B, SOUTHEAST ASIA SINCE 1900.
Benedict Kiernan.

TH 11:35-12:50 Hu (26)
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 335A or B, CONFUCIANISM AND COMMERCE IN CHINA.
Antonia Finnane.

HTBA Hu (30)
An introduction to Confucianism through a study of Confucius's life, writings, historical importance, and present-day relevance. Confucianism as a cause of China's "backwardness" and a secret of its economic success. Focus on commerce from the late Ming dynasty (sixteenth century) to the present; associated ideological environments, from heterodoxy in the late Ming to contemporary Confucian revivalism. Offered in Beijing, China. For application procedures see under Peking University–Yale University Joint Undergraduate Program.

HIST 336B/AFST 336B, AFRICA SINCE 1800.
Michael R. Mahoney.

MW 10:30-11:20, 1 HTBA Hu (33)
Forces that have shaped the development of Africa since the colonial takeover used as a basis for understanding and interpreting 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 348B, STATE, SOCIETY, AND CULTURE IN THE MIDDLE EAST.
Abbas Amanat.

TH 11:35-12:50 Hu (24)
A survey of the Middle East and its transformation from the age of Islamic empires to modern nation-states; the political, economic, and cultural challenge of the West; nationalism, ideology, and autocracy in the Arab world, Iran, and Turkey; religion, modernity, and social protest; the Arab-Israeli conflict and the United States; the Islamic revolution; and ethnicity, gender, and identity in the contemporary Middle East.
HIST 355a, Colonial Latin America. Stuart Schwartz.
MW 10.30-11.20, 1 HTBA Hu (33) PreInd
A survey of the conquest and colonization of Latin America from pre-Columbian civilizations through the movements for independence. Emphasis on social and economic themes and the formation of identities in the context of multiracial societies.

HIST 358b/ER&M 341b, Mexico from the Nineteenth Century to the Present. Gilbert Joseph.
TTTH 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 360a/MMES 171a/NEIC 402a, The Islamic Near East from Muhammad to the Mongol Invasion. Adel Allouche.
For description see under Near Eastern Languages & Civilizations. PreInd

HIST 361b, History of Brazil. Stuart Schwartz.
MW 10.30-11.20, 1 HTBA Hu (33)
Brazilian history from European contact to the reestablishment of civilian government in the 1990s. Focus on the multiethnic nature of Brazilian society, the formation of social and political patterns, and the relationship of people to the environment.

HIST 362b, Colony, Nation, and Diaspora: Cuba and Puerto Rico. Lillian Guerra.
TTTH 1.30-2.20, 1 HTBA Hu (26)
The cultural, political, and economic dimensions of nationalist struggles for liberation in Cuba and Puerto Rico and their connections to U.S. imperialism. Texts from novels, folkloric sources, and other forms of popular expression. Topics include internal processes of change and diaspora communities in the United States.

HIST 392b/SAST 222b, Indian Merchants in History. Marina Martin.
For description see under South Asian Studies.

For description see under Biology.

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. Seminars numbered 400J to 499J address global topics; students must apply to the director of undergraduate studies to count a 400-level seminar toward a particular geographical category. 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. Preregistration 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 16 in the fall and by March 22 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.


For description see under American Studies.

*HIST 110Jb*, Early American History in the First Person.
Rebecca Tannenbaum.
W 1.30-3.20 WR, Hu (o)
Diaries as eyewitness accounts of historical events and documentation of everyday life. Ways that diaries from the colonial era through the Civil War illuminate the American past.

Cynthia Russett.
T 1.30-3.20 Hu (o)
Introduction to American women who have been religious leaders and activists in different faith traditions.

*HIST 123Ja*, History of the Sunbelt. Micaela Larkin.
W 3.30-5.20 Hu Meets RP (o)
The ascendancy of the Sunbelt and conservatism in American politics. Suburbanization, economic development, and racial politics in the South and the Southwest after World War II. Political conservatism, civil rights, the Cold War, religion, immigration, and labor struggles. Prominent Sunbelt politicians, including Barry Goldwater, Ronald Reagan, Strom Thurmond, George Wallace, Richard Nixon, the Bush family, and Bill and Hillary Clinton.

Th 1.30-3.20 Hu (o) PreInd
A history of British colonialism in North America from the founding of Virginia in 1607 through the end of the Seven Years’ War in 1763. Religion, regionalism, economics, war, politics, slavery, and Native Americans. Focus on the colonies of Massachusetts, Pennsylvania, and Virginia.

**HIST 126Jb, MURDER AND MAYHEM IN OLD NEW YORK.**
Mary Lui.

W 1:30-3:20 Hu (o)
Spectacular episodes of crime and violence in New York City from the colonial period to the end of the Victorian and Progressive eras. Themes of race, class, gender, and sexuality; the place of violence in the making of the modern American metropolis.

**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 128Ja, AMERICAN CULTURE IN THE TWENTIES AND THIRTIES.**
Cynthia Russett.

W 1:30-3:20 WR, Hu (o)
Literature, politics, and social thought examined to determine the intellectual configuration of the decades between the two world wars. Authors may include Malcolm Cowley, John Dos Passos, James Agee, and Sinclair Lewis.

**HIST 130Ja, INDIANS AND THE SPANISH BORDERLANDS.**
Ned Blackhawk.

Th 9:25-11:15 Hu (o)
The experiences of Native Americans during centuries of relations with North America’s first imperial power, Spain. The history and long-term legacies of Spanish colonialism from Florida to California.

**HIST 132Jb/ EVST 310b, U.S. GLOBAL RESOURCE FRONTIERS.**
Paul Sabin.

Th 1:30-3:20 WR, Hu (o)
The history and consequences of the demand for raw materials in the United States during the late nineteenth and twentieth centuries. Development of key commodities such as bananas, rubber, and oil; the emergence of ecotourism; and recent efforts to police the global supply chain.

**HIST 133Ja, THE CREATION OF THE AMERICAN POLITICIAN, 1789–1820.**
Joanne Freeman.

W 1:30-3:20 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 134Jb, YALE AND AMERICA: SELECTED TOPICS IN SOCIAL AND CULTURAL HISTORY.**
Jay Gitlin.

T 1:30-5:20 Hu Meets RP (o)
Relationships between Yale—and Yale people from Ezra Stiles and Noah Webster to Cole Porter, Henry Roe Cloud, and Maya Lin—and American society and culture. Elihu Yale and the global eighteenth century; Benjamin Silliman and the
emergence of American science; Walter Camp, Dink Stover, and the all-American boy; Henry Luce and the information age; and faith and ideology in postwar Yale and America.

**HIST 135Jb, The Age of Hamilton and Jefferson.** Joanne Freeman.  
W 9.25-11.15 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 138Ja, Problems in American Historical Memory.**  
David Blight.  
T 1.30-3.20 WR, Hu (o)  
The problem and the study of “memory” among American and international historians and scholars from other disciplines. Readings drawn from theoretical works, recent secondary literature, and public history controversies.

**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.

**HIST 141Jb/HSHM 462b/HST 394b, Science and Drama.**  
Bettyann Kevles.  
W 1.30-3.20 Hu (o)  
Themes in science, technology, and medicine as they have figured in twentieth-century plays written and produced in the United States and Europe. Fictive treatments compared with historical reality. Playwrights include Ibsen, Brecht, Capek, Frayn, Stoppard, Margaret Edson, and Cassandra Medley.

**HIST 143Ja/HSHM 433a, X-Ray Visions: Medical Imaging since 1895.** Bettyann Kevles.  
For description see under History of Science, History of Medicine.

**HIST 146Jb/HSHM 431b/HUMS 474b, Science and Spectacle in the Enlightenment.** Paola Bertucci.  
For description see under Humanities. PreInd

**HIST 147JbG/HSHM 451b/HINTS 340b, Science, Arms, and the State.**  
Daniel Kevles.  
T 7-8.50 p.m. WR, Hu (27)  
A history of chemical, nuclear, and biological weapons in the twentieth century, focusing on the integration in the United States of national security policy making, scientific research, and military innovation. Consequences of weapons development for the scientific community and the civilian economy, public attitudes toward weapons of mass destruction, and political movements to control such weapons.
**HIST 148Ja/HSHM 426a, History of Astronomy.**
Ivano Dal Prete.
For description see under History of Science, History of Medicine.

**HIST 151Ja/HSHM 448a/WGSS 448a, American Medicine and the Cold War.**
Naomi Rogers.
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.

**HIST 155Jb, United States and International Human Rights.**
Sarah Snyder.
Th 2.30-4.30 Hu (o)
Attention by the United States to human rights abuses since World War II.
Concern for human rights as it has influenced United States foreign policy, beginning with the Holocaust and the subsequent American commitment to protect human rights internationally. Questions about the consistency of that commitment through the Cold War and following. Contemporary struggles to balance morality and adherence to “American values” with the preservation of national security.

**HIST 156Ja/AMST 424a, An Introduction to the Cultural History of Things.**
Kariann Yokota.
For description see under American Studies.

**HIST 157Jb, Humanitarianism in the Eighteenth Century.**
Amanda Moniz.
M 7-8.30 p.m. Hu (o)
The intertwined rise of humanitarianism and capitalism in the eighteenth-century Atlantic world. Power dynamics in movements such as antislavery, medical philanthropy, prison reform, and missionary outreach to native peoples.

**HIST 160Jb/AMST 353b/WGSS 348b, Selected Topics in Lesbian and Gay History.**
George Chauncey.
M 1.30-3.20 WR, Hu (o)
Changing understandings and regulation of same-sex desire and sexual subjectivity from the colonial era to the twentieth century. Interpretation of primary texts in the context of recent theory and historiography. Texts include sermons, diaries, correspondence, police and court records, medical and sociological studies, political tracts, fiction, photographs, and films.

**HIST 161Ja, Communism and Anticommunism in the Twentieth-Century United States.**
Beverly Gage.
T 2.30-4.20 WR, Hu (o)
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.

**HIST 166Ja/AMST 410a, Asian American Women and Gender, 1830 to the Present.**
Mary Lui.
W 1.30-3.20 WR, Hu (o)
Asian American women as key historical actors. Gender analysis is used to reexamine themes in Asian American history: immigration, labor, community, cultural representations, political organizing, sexuality, and marriage and family life.

**HIST 168JA, QUEBEC AND CANADA FROM 1791 TO THE PRESENT.**
Jay Gitlin.
T 3:30-5:20 WR, Hu (o)
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).

**HIST 201JA/CLCV 405A, THE SPARTAN HEGEMONY, 404–362 B.C.**
Donald Kagan.
For description see under Classical Languages & Literatures. PreInd

**HIST 202JB/CLSS 443B, NUMISMATICS.**
William Metcalf.
For description see under Classics.

**HIST 203JA/HUMS 323A, ENLIGHTENMENT AND ROMANTICISM.**
Frank Turner.
For description see under Humanities.

**HIST 205JA/MGRK 228A, GREECE IN THE TWENTIETH CENTURY.**
Konstantina Maragkou.
For description see under Hellenic Studies.

**HIST 207JB/CLCV 407B, THUCYDIDES AND THE PELOPONNESIAN WAR.**
Donald Kagan.
For description see under Classics. PreInd

**HIST 210JB, RELIGIOUS CONVERSION IN MEDIEVAL EUROPE.**
Anders Winroth.
M 9:25-11:15 WR, Hu (o) PreInd
A study of the conversion of European societies, from the forced baptism of the Saxons in the eighth century to the Christianization of the last pagan holdout, Lithuania, in 1387. Exploration of why so many were prepared to abandon their ancestral pagan religions for Christianity or (in some cases) Islam or Judaism.

**HIST 214JA/LATN 427A, TACITUS AND PLINY.**
John Matthews.
For description see under Classics.

**HIST 215JB, THE ART OF BIOGRAPHY.**
John Gaddis.
T 1:30-3:20 WR, Hu (o)
A comparative examination of successful as well as unsuccessful biographies, intended to identify both principles and pitfalls.

**HIST 217JB, DEATH AND THE DEAD.**
Bruce Gordon.
Th 1:30-3:20 Hu (o)
The centrality of the cult of death in the late Middle Ages and its transformation in the early modern period. Ways in which the living remained in close contact with the dead through belief in purgatory and the culture of intercession.

**HIST 218Ja/JDST 263Ag, Jewish Worldviews of the Middle Ages.**
Micha Perry.
For description see under Judaic Studies.

**HIST 219Jb/JDST 274Bd, Jews of Eastern Europe, 1500–1900.**
Moshe Rosman.
For description see under Judaic Studies.

A survey of Soviet history from the Russian Civil War to the collapse of the USSR in 1991. Reasons for the Bolshevik victory in the Civil War; the formation of the Soviet Union; Soviet cultural and educational policy; Stalinism; World War II and the early Cold War; Kruschev’s rise and fall; Brezhnev and the growth of the bureaucracy; efforts to reform the Soviet economy; dissidents and samizdat; the Gorbachev era, perestroika, glasnost, and the Soviet collapse.

**HIST 221Ja, The Russian Revolution.** Laura Engelstein.
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, The Cultural History of the First World War.**
Bruno Cabanes.
An introduction to the historiography of the First World War, drawing on recent work in the cultural history of the war. National sentiment, gender relations, cultural mobilization, violence and its impact on soldiers and civilians, mourning, and memory.

**HIST 223Ja/RESE 386A, The Monarch and the State in Russia, 1500–1825.** Paul Bushkovitch.
The character of the Russian state and its relationship to society, with attention to the court and the bureaucracy as modes of rule and decision making. The evolution of political thought from Orthodox rulership to early liberalism.

**HIST 224Ja/HUMS 392A/JDST 270A/RHST 201A, Medieval Jews, Christians, and Muslims Imagining Each Other.**
Ivan Marcus.
For description see under Humanities. PreInd

**HIST 233Jb, The First World War.**
Jay Winter.
A survey of recent historical interpretations of the military, social, and cultural history of the war of 1914–18.

**HIST 236Ja, Culture, Dissidence, and Control in Golden Age Spain.**
María Jordán.
M 3.30-5.20 WR, Hu (37) PreInd
Aspects of Spanish culture and society in the Golden Age (c. 1550–1650) that demonstrate discontent, dissidence, and suggestions for reform. Emphasis on the intersection of historical and literary sources and the dynamic between popular and elite cultures.

**HIST 237Jb, Cold War in Europe.** Konstantina Maragkou.
T 3.30-5.20 Hu (0)
Highlights of the Cold War in Europe. Focus on political developments and foreign policy, with attention to the impact of the Cold War on European society.

**HIST 239Ja, Political Representation in Britain, 1640–1948.**
Richard Huzzey.
T 9.25-11.15 Hu (0)
Ideas of representation as they changed in Britain from the seventeenth century to the twentieth. How ordinary men and women of unexceptional means understood politics to work, and how parliamentary reform adopted democratic principles to give them the vote.

**HIST 243Jb/HUMS 301b, Darwin and Darwinism.** Frank Turner.
For description see under Humanities.

**HIST 244Jb/JIST 381b/RLST 326b/GWGSS 381b, Women in Modern Jewish History.** Paula Hyman.
For description see under Religious Studies.

**HIST 245Ja/GMST 323a/HUMS 313a, The Weimar Republic.**
Emily Levine.
For description see under Humanities.

**HIST 245Jb/INTS 372b/MGRK 226b, History of European Integration.** Konstantina Maragkou.
For description see under Hellenic Studies.

**HIST 251Jb, London and Modernity, 1880 to the Present.**
Becky Conekin.
Th 1.30-3.20 WR, Hu (26)
Aspects of modernity and the changing character of London as a metropolitan center from the late nineteenth century to the present. Social and economic development of the city, urban cultures, historical geography, sexuality, and the imperial and postimperial metropolis.

**HIST 255Jb, Asian Environments and Frontiers.**
Peter Perdue.
Th 2.30-4.30 WR, Hu (0)
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 314Jb/EAST 442b, Urbanization in China, 1850–2010.**
Toby Lincoln.
For description see under East Asian Studies.

**HIST 372Ja/ER&M 342a, 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. An interdisciplinary study of the process of revolutionary change at the grassroots level.

   T 1.30-3.20   Hu (o) PreInd
The sources, development, and practice of Confucian thought from the second century B.C. to the present. The relationship of Confucian-style scholarship to Chinese legal thought; Confucian learning and the institutionalization of education; rites and family relationships; reform thinking and reevaluation of the tradition; and the writing of history.

*HIST 382Jb, Vietnamese History from Earliest Times to 1920.
   Benedict Kiernan.
   w 2.30-4.20   Hu (o) PreInd
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 383Ja, Turkey and Europe, 1798–1918.
   Sean McMeekin.
   w 1.30-3.20   Hu (o)
Ottoman Turkish history from Napoleon's invasion of Egypt to the end of World War I. Reasons for the Ottoman decline; efforts to stem the decline through modernizing reforms; Islam and the West; and European imperial rivalry in the Near East.

*HIST 384Jb/NELC 403b, The Middle East between Crusaders and Mongols.
   Adel Allouche.
   T 1.30-3.20   WR, Hu (o) PreInd
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 386Ja/AFST 387a, Women and Gender in African History.
   Michael R. Mahoney.
   W 1.30-3.20   Hu (o)
Particularities of the historical experiences of African women, and ways that gender has been defined in an African context. Attention to precolonial, colonial, and postcolonial periods. Masculinity, sexuality, and the representation of African women.

   Lamin Sanneh.
   w 2.30-4.20   WR, Hu (o)
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 388Jb/AFST 486b, Slavery and the Slave Trade in Africa.
   Robert Harms.
   w 1.30-3.20   WR, Hu (o) PreInd
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.
T 3.30-5.20  WR, Hu (0)
The modern nation-states of India, Pakistan, and Bangladesh in the aftermath of British decolonization. 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 391jb/Sast 322b, The Culture of Colonial India.** Mridu Rai.
Th 3.30-5.20  Hu (0)
The history of cultural interactions between the British and the Indians under imperial rule from c. 1780 until formal decolonization in 1947. The establishment and transformation of colonial relationships through cultural and social practices that could mark or diminish the difference between rulers and subjects.

**Hist 393jb/Afst 488b, International Development in Historical Perspective.** Michael R. Mahoney.
T 1.30-3.20  WR, Hu (0)
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.

**Hist 393ja/Sast 3234, India and Globalization.** Marina Martin.
For description see under South Asian Studies.

**Hist 398jb/Nelc 404b, Mamluk Egypt.** Adel Allouche.
Th 1.30-3.20  WR, Hu (0) PreInd
A study of the Mamluks, manumitted slaves who were initially imported to Egypt for military service and who established their own rule over Egypt and Syria (1250–1517). Focus on the structure and workings of the Mamluk state. Military, political, economic, and social factors that contributed to the grandeur and, later, the decline of the Mamluk period in Egypt and its end at the hands of the conquering Ottoman Turks.

M 9.25-11.15  Hu (0)
The ideological struggle in 1917 between democracy and German militarism occasioned by the Russian Revolution and the American entry into World War I. The bitter ironies of the first attempt to make the world safe for democracy by military means.

**Individual Research and Senior Essay Courses**

**Hist 4944 or 4945, Individual Writing Tutorial.** Robert Harms.
HTRA (0)
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.
There will be a mandatory senior essay meeting on Monday, September 7, 2009, 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 7, 2009. Each student majoring in History must present a completed Statement of Intention, signed by a department member who has agreed to serve as adviser, to the undergraduate History administrator in 237 HGS no later than September 14, 2009 (for HIST 495a), or January 22, 2010 (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 7, 2009 (495a), or May 3, 2010 (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 5, 2010, in the spring term, or no later than 5 p.m. on December 7, 2009, 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 II, 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: Milette Gaifman, 557 LORIA, 432-2687, milette.gaifman@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 Yengpruksawan

Associate Professors
Anne Dunlop, Lillian Tseng

Assistant Professors
Milette Gaifman, Jacqueline Jung, Kishwar Rizvi, Tamara Sears, Sebastian Zeidler

Lecturers
Theresa Fairbanks, Jennifer Farrell, Karen Foster, Imogen Hart, Patricia Kane, Barbara Mundy, Margaret Olin, 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. 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 499A 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:

bk, A. Dunlop
BR, M. Gelfman
CC, C. Wood
DC, E. Cooke
TD, R. Thompson
JE, to be announced
MC, A. Nemerov
PC, D. Kleiner
S, M. Miller
SM, to be announced
BK, 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)

*yasar 007a, Art and Science. Carol Armstrong.
MW 2.30-3.45 Hu (0) Fr sem
The historical relationship between art and science in the West, from the Renaissance to the present. Case studies illustrate the similarities and differences between the way artists and scientists each model the world, in the studio and the laboratory. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

MW 11.35-12.25, 1 HUBA 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.
MW 11.35-12.25, 1 HUBA Hu (34)
Painting, sculpture, and graphic arts, with some reference to architecture. Major works and artists treated in terms of form, function, and historical context.
HSAR 235B/ARGC 235B/HUMS 245B/NELC 106B, THE WORLDS OF HOMER.
Karen Foster.
MW 2:30-3:45 Hu (37)
Interdisciplinary study of the artistic, literary, and cultural worlds of Homer’s *Iliad* and *Odyssey*, beginning in the Bronze Age of the Trojan War heroes and ending with the Homeric legacy in Western civilization. Topics include Homeric myth and reality, new archaeological evidence, the emergence of Greek art and thought, and Mediterranean and Near Eastern interconnections.

HSAR 238A/ARGC 238A/NELC 107A, BURIED CITIES: THERA, POMPEII, AND Herculaneum.
Karen Foster.
MW 2:30-3:45 Hu (37)
Study of three ancient cities buried by volcanic eruptions—Thera in c. 1530 B.C. and Pompeii and Herculaneum in a.D. 79—with emphasis on their architecture, wall paintings, and small finds in cultural and historical context.

HSAR 252A/ARGC 252A/CLCV 175A, ROMAN ARCHITECTURE.
Diana Kleiner.
TR 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.

HSAR 265B, ART OF BYZANTIUM, 850–1200.
Robert Nelson.
MW 2:30-3:45 Hu (37)
A survey of the art of Byzantium, a multinational empire that considered itself the direct successor to ancient Rome. Mosaics, churches, icons, enamels, silks, and carved ivories are placed in the context of the empire, the theology of religious images, and the history of devotional practices.

HSAR 285A, ITALIAN RENAISSANCE ART.
Anne Dunlop.
MW 11.35-12.25, 1 HTBA Hu (0)
A thematic survey of Italian art between c. 1300 and 1530. 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.

HSAR 289B/HUMS 289B, ART AND DESIRE IN RENAISSANCE COURTS.
Anne Dunlop.
TR 10.30-11.20, 1 HTBA Hu (0)
The role of art and eros in the visual culture of European courts c. 1350–1600. The depiction of the sovereign’s body; courtly love and the representation of desire; the cult of chivalry and war; the position of the court artist; the theatrical nature of court life. Class sessions are held in the Yale University Art Gallery and other Yale collections.

HSAR 290A, ART AND ARCHITECTURE OF THE NORTHERN RENAISSANCE, 1400–1600.
Christopher Wood.
TR 1:30-2.20, 1 HTBA Hu (26)
Painting, prints, sculpture, and architecture in the Netherlands, Germany, France, and England. Topics include art and popular piety; the impact of the mechanical replication of images; the crisis of the religious image in the Protestant Reformation; the development of the modern art market and art collecting; art as a vehicle for topical commentary on political and social reality; art and the emergence of the modern state; the idea of the artist as “author.” Major artists considered include Jan van Eyck, Albrecht Dürer, Hieronymus Bosch, and Pieter Bruegel.
hsar 296b, **Visual Culture of Early Modern Latin America.**
Barbara Mundy.

**MW 1:30-2:20, 1 HTBA Hu (36)**

Study of visual culture that developed in the Americas under Spanish imperial rule, from the sixteenth to the early nineteenth century. The transformation of indigenous visual culture in the wake of the conquest; the use of art and architecture to consolidate and contest political hegemonies; the mechanics of art production for both local and international markets. *Knowledge of Spanish helpful but not required.*

hsar 309b/sast 257b, **Visual Cultures of British India.**
Tim Barringer.

**TTh 2:30-3:45 Hu (27)**

The impact of British colonial activity in India on visual and material culture since c.1700. Analysis from a range of theoretical positions and historical perspectives. Some attention to contemporary art in South Asia and artists of the Indian diaspora in Britain. Special emphasis on works in Yale and New York collections.

hsar 315a, **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.

hsar 368a, **Practices of Japanese Painting and Printmaking.**
Mimi Yiengpruksawan.

**TTh 1-2:15 Hu (0)**

Introduction to the Japanese painting and print traditions that inform Western modernism. Definition of specific formats, approaches, styles, and transitions. Paintings and prints as artifacts and as imaginative spaces in which social and cultural meanings unfold and can be analyzed in comparative perspective.

hsar 369b, **Visual and Material Cultures of Zen in Japan.**
Mimi Yiengpruksawan.

**TTh 1-2:15 Hu (0)**

Overview of the impact of Zen Buddhism on Japanese art and culture. Consideration of whether there is any such thing as “Zen art.” Traditions in the visual and material cultures of Zen monastic communities. Questions that complicate analysis of Zen art and culture; specific sites and objects in the broader context of critical analysis of Zen theory.

hsar 378b/G/afam 178b/G/afst 188b/G, **From West Africa to the Black Americas: The Black Atlantic Visual Tradition.**
Robert Thompson.

**TTh 11:35-12:50 Hu (24)**

Art, music, and dance in the history of key classical civilizations south of the Sahara—Mali, Asante, Dahomey, Yorùbá, Ejagham, 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/G/afam 112a/G, **New York Mambo: Microcosm of Black Creativity.**
Robert Thompson.

**TTh 11:35-12:50 Hu (24)**

**hsar 381a, INTRODUCTION TO ISLAMIC ART.** Kishwar Rizvi.  
**MW 10.30-11.20, 1 HTBA Hu (33)**  
The theory and practice of art-making in the Middle East, North Africa, and South Asia from the early years of Islam in the seventh century to the present. Illustrated manuscripts and the arts of calligraphy and ceramics as they pertain to the creation of an Islamic visual culture.

**hsar 383a/sast 256a, THE ART OF INDIA, 300 B.C.–A.D. 1650.** Tamara Sears.  
**MW 2.30-3.45 Hu (37)**  
Introduction to the art and architectural history of the Indian subcontinent from the rise of the Mauryan Empire to the building of the Taj Mahal. The development of early Buddhist and Jain art and of Hindu temples and icons; the efflorescence of Islamic visual culture under the Mughal Empire.

**hsar 385b/sast 258b, TEMPLE TOWNS OF SOUTH ASIA.** Tamara Sears.  
**MW 2.30-3.45 Hu (37)**  
Survey of the history, forms, symbolisms, and meanings of South Asian temple architecture. Focus on Hindu structures, with some examination of Buddhist and Jain buildings.

**hsar 389, CRITICAL APPROACHES TO ART HISTORY.**  
**401a: T 1.30-3.20 Hu (0) Edward Cooke, Jr.**  
**401b: TH 2.30-4.20 Hu (0) Kishwar Rizvi**  
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 403a/g, ASPECTS OF CONNOISSEURSHIP AND CONSERVATION.** Theresa Fairbanks.  
**TH 1.30-3.20 Hu Meets RP (0)**  
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.

**hsar 417g, MONUMENTS OF NAPLES: CITY AND SELF.** Mia Genoni.  
For description see under Humanities.

**hsar 418b/clcv 268b, THE ART OF DIONYSOS: DRINK, DRAMA, AND ECSTASY.** Milette Gaifman.  
**W 2.30-4.20 Hu (0)**  
Artifacts of Greek art and architecture made in honor of Dionysos, the god of wine and theater, whose worship involved ecstatic experiences. The Great Dionysia, a festival where theatrical productions were performed, as the source of inspiration for artifacts and architectural monuments. Objects and structures such as painted vases and theaters as means of keeping the realm of Dionysos present in daily experience.
**HSAR 427b/SAST 375b, GURUS AND SAINTS IN INDIAN ART.**  
Tamara Sears.  
T 1.30-2.20 Hu (o)

The visual culture of gurus, saints, and living sages in South Asia. Saints and sages as subjects for artistic works; contributions of holy men to the creation of new forms of visual expression.

**HSAR 439b, EARLY MODERN MASCUlINITY.**  
Anne Dunlop.  
Th 2.30-4.20 Hu (o)

Images and ideals of masculinity and the male body in European art and culture, c. 1400–1600. The influence of such images on contemporary stereotypes and ideals. Readings from both period texts and contemporary theoretical treatments.

**HSAR 447a, GREAT EXHIBITIONS: ART IN BRITAIN, 1848–1914.**  
Imogen Hart.  
W 1.30-3.20 Hu (o)

Display strategies in Britain from the birth of the “great exhibition” to the expansion of art into new galleries, domestic and commercial spaces, and periodicals. Events are placed in an international context. Works include oil paintings, sculpture, prints, and decorative art from Yale collections.

**HSAR 448b/HUMS 312b, THE HISTORICAL IMAGINATION IN EARLY MODERN ENGLAND.**  
Mia Genoni.  
For description see under Humanities.

**HSAR 456b, ART AND POLITICS IN POSTWAR EUROPE.**  
Jennifer Farrell.  
Th 2.30-4.20 Hu (o)

The political, social, historical, and cultural contexts in which postwar Western European art was created and received. Relationships with American art, artists, and critics; the role of European and American galleries, museums, and exhibitions; the importance of painting; ideological implications of realism and abstraction; the legacy of occupation and trauma; institutional critique; the engagement with everyday life and commercial culture. Class meetings are held in the Yale University Art Gallery.

**HSAR 486b, BUDDHIST MANDALAS.**  
Mimi Yiengpruksawan.  
W 3.30-5.20 Hu (o)

Study of Buddhist mandalas, objects such as paintings, relief sculptures, sand works, engravings on stone, and textiles that represent graphically what is written in scripture. Examination of Indian, Japanese, and Tibetan mandalas and the texts on which they are based. Focus on the intersection of text and image in the material or visual representation of Buddhist discourse.

**HSAR 490b/FILM 320b, CLOSE ANALYSIS OF FILM.**  
J. D. Connor.  
For description see under Film Studies.

**HSAR 498a or b, INDEPENDENT TUTORIAL.**  
Consult the director of undergraduate studies.  
HTBA (o)

For students who wish to pursue a subject in the history of art not otherwise covered by departmental offerings. May be used for research or directed reading under faculty supervision. A term paper or its equivalent and regular meetings with the adviser are required. To apply for admission, a student should present a prospectus and a bibliography, signed by the adviser, to the director of undergraduate studies. *Enrollment limited to History of Art majors.*
**HSAR 499a or b, The Senior Essay.** Consult the director of undergraduate studies.

Preparation of a research paper about thirty pages long under the direction of a qualified instructor. The essay is written in either the fall or the spring term of the senior year, though preferably in the fall 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 instructor or with the director of undergraduate studies. No student is permitted to enroll in HSAR 499a 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 suitable project outline and bibliography to the adviser and the director of undergraduate studies early in the term. The outline should indicate the focus and scope of the essay topic, as well as the proposed research methodology; the bibliography should be annotated. Students must also complete a library research colloquium for the senior essay. For essays submitted in the fall term, the deadline for the outline is September 18; for those in the spring term, January 22. Senior essays written in the fall term are due on December 4; those in the spring term on April 26. 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.

Permission may be given to write a two-term essay after consultation with an adviser and the director of undergraduate studies. Only those who have begun to do advanced work in a given area and whose project is considered to be of exceptional promise are eligible. The requirements for the one-term senior essay apply to the two-term essay, except that the essay should be from fifty to sixty pages in length.

**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: Robert Harms, 237 HGS, 432-1355, robert.harms@yale.edu; Adviser: Frank Snowden, G21 BK, 432-0507, frank.snowden@yale.edu

**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
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 HSHM 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/instruction/hist.
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 201b], The Cultures of Western Medicine: A Historical Introduction]**
- **[Hshm 202a], Media and Medicine in Modern America.** Gretchen Berland, John Warner.  
  TTh 10.30-11.20, 1 HTBA Hu (23)
  Relationships between medicine, health, and the media in the United States from 1870 to the present. The changing role of the media in shaping conceptions of the body; creating new diseases; influencing health and health policy; crafting the image of the medical profession; informing expectations of medicine and constructions of citizenship; and the medicalization of American life.

- **[Hshm 215a/Hist 140a], Public Health in America, 1793–2000]**
- **[Hshm 234b], Epidemics and Society in the West since 1600.** Frank Snowden.  
  For description see under History.

- **[Hshm 240a/Hist 121a/Hums 307a], The Making of Modern Science, 1400–1800.** Paola Bertucci.  
  TTh 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]**
- **[Hshm 277b], Genetics, Reproduction, and Society.** Daniel Kevles.  
  MW 11.35-12.25, 1 HTBA Hu (34)
A history of modern biology, especially evolution, genetics, and molecular biology, within its social, economic, legal, and cultural context. Topics include eugenics and sterilization, the Scopes trial, contraception and abortion, new reproductive technologies, medical genetics, the Human Genome Project, and human cloning.

**Hshm 328a or b/**Hist 140Ja or Jb, Methods and Literature in the History of Science and Medicine.
Hu (o) Junior sem
328a: Th 7-8.50 P.M. William Summers
328b: Th 1.30-3.20 Mariola Espinosa
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 413a/**Hist 145Ja, X-Ray Visions: Medical Imaging since 1895. Bettyann Kevles.
Th 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.

Th 3.30-5.20 Hu (o)
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.

For description see under Humanities.

**Hshm 448aC/**Hist 151Ja/**Wgss 448a, American Medicine and the Cold War. Naomi Rogers.
M 1.30-3.20 Hu (o)
The social, cultural, and political history of American medicine from 1945 to 1960. The defeat of national health insurance; racism in health care; patient activism; the role of gender in defining medical professionalism and family health; the rise of atomic medicine; McCarthyism in medicine; and the polio vaccine trials and the making of science journalism.

For description see under History.

For description see under Near Eastern Languages & Civilizations.

**Hshm 462b/**Hist 144Jb/**Thst 394b, Science and Drama. Bettyann Kevles.
For description see under History.

**Hshm 470a and 471b, Directed Reading. Staff.**

Yale College Programs of Study 2009–2010
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.

HTRA 0

There will be a mandatory senior essay meeting on Monday, September 7, 2009, 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 2010 enroll in 490a in the fall term and complete their essay in 491b in the spring term. Students expecting to graduate in December 2010 enroll in 490b in the spring term, and should notify the senior essay director by December 7, 2009. 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 14, 2009 (for HSHM 490a), or January 22, 2010 (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 7, 2009 (490a), or May 3, 2010 (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 5, 2010, in the spring term, or no later than 5 P.M. on December 7, 2009, 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/yalecollege/academics/special/seminars.

*HUMS 076a, Epidemics in Global Perspective. William Summers.


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), Charles Bailyn (Astronomy, Physics), R. Howard Bloch (French), Harold Bloom (Humanities), David Bromwich (English), Rüdiger Campe (German), Janice Carlisle (English), Francesco Casetti (Humanities), Carlos Eire (History, Religious Studies), Margot Fassler (School of Music), Benjamin Foster (Near Eastern Languages & Civilizations), Roberta Frank (English, Linguistics), Paul Freedman (Near Eastern Languages & Civilizations), Harold Bloom (Humanities), David Bromwich (English), Rüdiger Campe (German), Janice Carlisle (English), Francesco Casetti (Humanities), Carlos Eire (History, Religious Studies), Margot Fassler (School of Music), Benjamin Foster (Near Eastern Languages & Civilizations), Roberta Frank (English, Linguistics), Paul Freedman (History), Paul Fry (English), Bryan Garsten (Political Science), David Gelernter (Computer Science), Phyllis Granoff (Religious Studies), Beatrice Gruendler (Near Eastern Languages & Civilizations), Valerie Hansen (History), Karsten Harries (Philosophy), Stanley Insler (Linguistics), Carol Jacobs (German), Alice Kaplan (French), Ivan Marcus (History, Religious Studies), Millicent Marcus (Italian), Maria Rosa Menocal (Humanities), Rainer Nägele (German), Leon Plantinga (Emeritus) (Music), Cynthia Russett (History), William Sledge (School of Medicine), Frank Snowden (History, History of Medicine), William Summers (Molecular Biophysics & Biochemistry), Henry Sussman (German), Ivan Szelenyi (Sociology, Political Science), Francesca Trivellato (History), Frank Turner (History), Harvey Weiss (Near Eastern Languages & Civilizations, Anthropology), Anders Winroth (History)

Associate Professors
Ala Alryyes (Comparative Literature, English), Murray Biggs (Adjunct) (Theater Studies, English), Shannon Craigo-Snell (Religious Studies), Eeva-Liisa Pelkonen (Architecture), Ludger Viehues-Bailey (Religious Studies), Kirk Wettters (German)

Assistant Professors
Alexander Beecroft (Humanities, Comparative Literature), Paola Bertucci (History, History of Medicine), Angela Capodivacca (Italian), John Fisher (Classics), Jonathan Gilmore (Philosophy), David Lammus (Italian), Karuna Mantena (Political Science), Barry McCrea (Comparative Literature, English), Paul North (German), Kishwar Rizvi (History of Art), Youval Rotman (History, Marci Shore (History)

Senior Lecturers
Charles Hill (International & Area Studies), Jane Levin (Humanities), Koichi Shinohara (Religious Studies, East Asian Studies), Norma Thompson (Humanities)

Lecturers
Edward Barnaby (Comparative Literature), Hilary Fink (Slavic Languages & Literatures), Karen Foster (Near Eastern Languages & Civilizations), Mia Genoni (Humanities), Veronika Grimm (Classics, History), Virginia Jewiss (Humanities), David Larsen (Humanities), Emily Levine (Humanities), Angar Mohnkern (German), Brian Reilly (Humanities), Timothy Robinson (Classics), Pamela Schirmeister (Comparative Literature, Humanities), Hizky Shoham (Humanities, Religious Studies), Kathryn Slanski (Humanities, Near Eastern Languages & Civilizations), George Syrimis (Hellenic Studies)

Senior Lector II
Risa Sodi (Italian)

Lector
Maria Kaliambou (European Studies)

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, piazzas, 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 sms 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 076a, Epidemics in Global Perspective.*
William Summers.

**MW 2.30–3.45 Hu, So (0) 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 087a/LITR 015a, The Experience of Being Foreign.*
Alice Kaplan.

For description see under Literature.

*HUMS 088a/GMST 016a/LITR 016a, Truth and Lies in Fiction and Film.*
Carol Jacobs.

For description see under Literature.

*HUMS 089b/FILM 097b/ITAL 063b, Literature into Film.*
Millicent Marcus.

For description see under Italian.

THE ARTS IN THE HUMANITIES

*HUMS 226a, Classical to Romantic Epic.*
Jane Levin.

**TH 1-2.15 Hu (26)**
The epic as it has been used in different times and countries to express ideas about the hero, the divine, nature, and art. Poets and poems include Homer, Vergil, Beowulf, The Song of Roland, Milton, Pope, Wordsworth, and Whitman. (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 238a)

*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 239b)
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.

For description see under Classics.

Selections from the entire procession of poetry in English from the sixteenth century to the twenty-first. (Formerly hums 364a)

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)

An introduction to the history, literature, music, and art of the Anglo-Norman world from the eleventh through the thirteenth centuries.

For description see under Italian.

For description see under German Studies.

For description see under German Studies.
**HUMS 275a**/**ENGL 256a**/**LITR 458a**, Class, Desire, and the Novel. Barry McCrea. For description see under Literature.

**HUMS 277a**/**GMSST 212a**/**LITR 328a**/**MGKR 212a**, Folktales and Fairy Tales. Maria Kaliambou. For description see under Hellenic Studies.

**HUMS 278b**/**CLCV 214b**/**LITR 225b**/**MGKR 202b**/**WGSS 337b**, The Poetry of C. P. Cavafy. George Syrimis. For description see under Hellenic Studies.

**HUMS 279b**/**ENGL 431b**, Dickens and the Visual Arts. Janice Carlisle. For description see under English Language & Literature.

**HUMS 280b**/**ENGL 252b**, Romantic Literature and Painting. Paul Fry. For description see under English Language & Literature.

**HUMS 282a**/**FILM 450a**/**LITR 354a**, Media: The Logic of Repetition. Francesco Casetti. T1.30-3.20 Hu (0) Analysis of film practices such as adaptation, remake, prequel, sequel, quotation, formula, and genre that also operate in fiction, TV, painting, and other arts. Examination of repetition from the point of view of semiotics (Barthes, Eco), cultural history (Benjamin), and philosophy (Deleuze).

**HUMS 286a**/**GMAN 289a**/**GMSST 289a**/**LITR 170a**, Passions, 1600–1800. Rüdiger Campe. For description see under Germanic Languages & Literatures.

**HUMS 287a**/**GMAN 327a**, Around Kafka. Henry Sussman. For description see under Germanic Languages & Literatures.

**HUMS 288b**/**ENGL 342b**/**WGSS 408b**, Mythology and Community in Twentieth-Century Queer Literature. Sam See. For description see under English Language & Literature.

HUMS 289b/HSAR 289b, Art and Desire in Renaissance Courts. Anne Dunlop. For description see under History of Art.


**INTELLECTUAL HISTORY**

**HUMS 299a**, Rhetoric and Political Order. Norma Thompson. MW 9-10.15 Hu (0) A study of rhetoric as an indispensable element of politics. Rhetorical perceptions of the sophist Gorgias and the philosophers Plato and Aristotle; foundations of modern rhetoric in Machiavelli, Jane Austen, and Abraham Lincoln; and contemporary rhetorics of gender, social science, natural science, and democratic theory.
**HUMS 306b, 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 309b/HIST 243Jb, Darwin and Darwinism.** Frank Turner.

W 3:30-5:20 Hu (0)

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. (Formerly HUMS 223b)

**HUMS 302a/PLSC 290a/SOCY 151A, Foundations of Modern Social Theory.** Ivan Szelenyi.

For description see under Sociology. (Formerly HUMS 284A or B)

**HUMS 303b/FREN 303b, Science and Culture in France.** Brian Reilly.

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

History of the relations between science and culture in France. The institutionalization of science by the French state; the historicity of worldviews; religious and secular tensions; the literary expression of scientific ideas. Readings from the works of Descartes, Pascal, Voltaire, Condorcet, Maupassant, Teilhard de Chardin, Foucault, and Derrida. *Readings and discussion in English; texts available in French.*


For description see under History of Science, History of Medicine.

**HUMS 308a/GMAN 271A/GMST 271A/JDST 284A, Jews and Germans: An Intercultural History.** Paul North.

For description see under German Studies.

**HUMS 309b, Evidence in Humanistic Inquiry.** Norma Thompson, Mia Genoni.

W 9:25-11:15 Hu (0)

Study of observation and judgment as the critical tools of humanistic inquiry. Textual exegesis of historical, philosophical, rhetorical, and literary works; visual analysis of paintings, prints, sculpture, architecture, and mixed media. Ways in which humans see, evaluate, and understand.

**HUMS 312b/HSAR 448B, The Historical Imagination in Early Modern England.** Mia Genoni.

T 2:30-4:30 Hu (27)

Exploration of the ways in which history and the past were a fundamental part of English culture during the Tudor and early Stuart periods (1485–c. 1640). How the past was used, depicted, and expressed in the words and images of early modern England. Focus on the arts, architecture, and literature, using materials from collections of the Yale University Library and the Yale Center for British Art.

**HUMS 313A/GMST 323A/HIST 245Ja, The Weimar Republic.**

Emily Levine.

MW 4-5:15 Hu (0)
The origins, rise, and fall of Germany’s first democratic experiment between 1919 and 1933 as a paradigmatic example of modernity. Topics include the relationship between culture and politics, social and political reform, the “New Woman,” anti-Semitism, urban culture, and Americanization. Sources from literature, criticism, theater, architecture, fine arts, and film.

**HUMS 323A/ HIST 203A, ENLIGHTENMENT AND ROMANTICISM.**

Frank Turner.

W 3.30-5.20 Hu (0)

Exploration of major European figures associated with the Enlightenment and romanticism. Authors include Voltaire, Hume, Montesquieu, Rousseau, Adam Smith, Burke, Hegel, Carlyle, Marx, J. S. Mill, and Nietzsche. (Formerly HUMS 291A)

**HUMS 336A/HIST 174A, AMERICAN INTELLECTUAL AND CULTURAL LIFE IN THE TWENTIETH CENTURY.** Cynthia Russett.

For description see under History.

**HUMS 338A/PHIL 430A, BIOLOGY, EVOLUTION, AND CULTURE.**

Jonathan Gilmore.

For description see under Philosophy. (Formerly HUMS 381B)


For description see under Germanic Languages & Literatures.


For description see under Germanic Languages & Literatures.

**HUMS 346A/RUSS 316A, RUSSIAN LITERATURE IN THE CONTEXT OF WESTERN PHILOSOPHY.** Hilary Fink.

For description see under Slavic Languages & Literatures.

**HUMS 349B/LITR 347B/PHIL 404B, HISTORY AND CRITIQUE OF SEMIOTICS.** David Larsen.

W 3.30-5.20 Hu (0)

Exploration of the conveyance of meaning in all its aspects. Introduction to contemporary semiotic theory and historical survey of semiotic thought. The uses of semiotics in contemporary humanistic inquiry.

**HUMS 354A/ENGL 276A, WAYS OF KNOWING IN NINETEENTH-CENTURY AMERICAN LITERATURE.** Pamela Schirmmeister.

For description see under English Language & Literature.

**HUMS 361A/ASTR 171A/RIST 401A, RELIGION AND THE BIG BANG.**

Charles Bailyn, Ludger Viethues-Bailey.

W 3.30-5.20 Hu (0)

An exploration of the gap between modern scientific cosmology and religion. The efforts of scientific, philosophical, and religious thinkers to define and bridge this gap. Steady state vs. big bang cosmologies; the anthropic principle; multiverse theories. Objectivity and intentionality in epistemology; meaning and creation; matter and spirit; divine action. Prerequisites: one introductory course in cosmology and one in either philosophy or religious studies, or with permission of instructors. (Formerly HUMS 472B)
THE WEST AND ITS ENCOUNTERS

hums 376a/anth 150a/arcg 100a/nlec 100a, THE GENESIS AND COLLAPSE OF OLD WORLD CIVILIZATIONS. Harvey Weiss.

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/nlec 101b, ORIGINS OF WESTERN CIVILIZATION: THE NEAR EAST FROM AXANDER TO MUHAMMAD. Benjamin Foster.

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)


For description see under History.


For description see under History. (Formerly hums 230b)

hums 383a/mmes 102a/nlec 102a, INTRODUCTION TO THE MIDDLE EAST. Benjamin Foster.

For description see under Near Eastern Languages & Civilizations. (Formerly hums 320a)

hums 384a/nlec 121a, THE HERO IN THE ANCIENT NEAR EAST. Kathryn Slanski.

For description see under Near Eastern Languages & Civilizations. (Formerly hums 331a)

hums 392a/hist 232Ja/jdst 270a/rlst 201a, MEDIEVAL JEWS, CHRISTIANS, AND MUSLIMS IMAGINING EACH OTHER. Ivan Marcus.

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)

Th 11:35-12:50 Hu (24)
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 432a)

*HUMS 417a/HUMS 420a, Monuments of Naples: City and Self. Mia Genoni.
Th 2:30-4:30 Hu (27)
Study of architectural and sculptural monuments erected in Naples and Campania during the Middle Ages and the Renaissance. The effects of changes in both rulers and cultural traditions over time. The structure of monuments; interactions with other monuments and the built environment; issues of patronage; the construction of personal and social identity.

HUMS 418a/RLLST 130a, Traditional Literature of India, China, and Japan. Phyllis Granoff, Koichi Shinohara.
MW 2:30-3:45 Hu (0)
Introduction to literary works that shaped the great civilizations of Asia. Focus on traditional literature from India, China, and Japan. Readings range from religious and philosophical texts to literature of the court, poetry, drama, and epics.

For description see under Near Eastern Languages & Civilizations.

HUMS 421a/HIST 315a, History of Traditional China to 1600. Valerie Hansen.
For description see under History. (Formerly HUMS 406a)

HUMS 422a/HIST 226a/C/RLLST 158a/C, Jesus to Muhammad: Ancient Christianity to the Rise of Islam. Stephen Davis.
For description see under Religious Studies.

THE FRANKE SEMINAR

*HUMS 436b/FREN 308b, Age of Cathedrals. R. Howard Bloch.
T 3:30-5:20 Hu (0)
Study of the culture and monuments of the High Middle Ages in France in their historical and art historical context. Works by Abelard, Suger, Rutebeuf, Saint Bernard, Joinville, and Thibaut de Champagne. Discussion of Gothic architecture, with a focus on Notre Dame de Paris, Saint Denis, Chartres, and Sainte-Chapelle amidst the urban, economic, intellectual, literary, and religious life of twelfth- and thirteenth-century Paris.

THE SHULMAN SEMINAR

T 1:30-3:20 WR, Hu (0)
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.

INDIVIDUAL RESEARCH AND SENIOR ESSAY COURSES

*HUMS 470a and 471b, Special Studies in the Humanities. Consult the director of undergraduate studies.

HTBA (0)
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 (0)
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 20, 2009, if the essay is to be submitted during the spring term, by April 23, 2010, for yearlong or fall-term essays. A rough draft of the essay is due at noon on March 22, 2010, for spring-term essays or on November 2, 2009, for fall-term essays. The final essay is due at noon on April 12, 2010, for spring-term essays or on December 4, 2009, 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/iucb/international

FACULTY ASSOCIATED WITH THE PROGRAM OF INTERNATIONAL STUDIES

Professors
Julia Adams (Chair) (Sociology), David Cameron (Political Science), Mine Eder (Middle East Studies) (Visiting), John Gaddis (History), Jolyon Howorth (Political Science) (Visiting), Stathis Kalyvas (Political Science), Dean Karlan (Economics), Paul Kennedy (History), Daniel Kevles (History), Nicoli Nattrass (Ethics, Politics, & Economics, International Affairs) (Visiting), Patricia Pessar (Adjunct) (American Studies, Anthropology), Douglas Rae (School of Management, Political Science), Frances Rosenbluth (Political Science), Jeremy Seekings (Ethics, Politics, & Economics, International Affairs) (Visiting), Ian Shapiro (Political Science), Gaddis Smith (Emeritus) (History), Alec Stone Sweet (Political Science, Law School), Ivan Szelenyi (Sociology), Elisabeth Wood (Political Science), Qingmin Zhang (Peking University Program), Yun Zhou (Peking University Program)

Associate Professors
Keith Darden (Political Science), Thad Dunning (Political Science), Keller Easterling (School of Architecture), Pierre Landry (Political Science), Ellen Lust (Political Science), Mridu Rai (History)
Assistant Professors
Costas Arkolakis (Economics), Patrick Cohrs (History), Beverly Gage (History),
Susan Hyde (Political Science), Sigrun Kahl (Political Science), Christian Leuprecht
(International Affairs) (Visiting), Nikolay Marinov (Political Science), Jun Saito
(Political Science), Vivek Sharma (Political Science), Jessica Weiss (Political Science)

Senior Lecturers
Charles Hill (International Affairs), Boris Kapustin (Ethics, Politics, & Economics,
International Affairs)

Lecturers
David Alvarez (Political Science), Jasmina Beširević-Regan (Sociology), Elizabeth
Brundidge (International Affairs), Cheryl Doss (Associate Chair) (Economics), Stuart
Gottlieb (Political Science), Alison Holmes (International Affairs), 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), David Siroky (International Affairs), Abbey Steele (Political
Science), Robin Theurkauf (Political Science)

The program in International Studies is designed for students who seek to
combine the discipline-based requirements of a first major with an under-
standing, drawn from several disciplines, of the transformations occurring
on this planet in their interconnected socioeconomic, environmental, polit-
ical, and cultural dimensions. No student may major in International Stud-
ies 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 course in each of five areas that provide alternative lenses for ana-
lyzing 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 interested in 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 online 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 II, 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 172a, International Ideas and Institutions:
   Contemporary Challenges.

2. One term course in each of the following five lens areas: analytic and
   research methods, statecraft and power, ethnicity and culture, international
   political economy, and science and technology. A list of preapproved courses
   is available from the International Studies office or on the program Web site.
   Additional courses 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 lan-
guages other than English. This requirement is normally met by the com-
pletion of two courses at the L5 level in one language or courses in two lan-
guages 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 2009–2010 are indi-
cated 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 172a; 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

[INTS 171a, INTERNATIONAL IDEAS AND INSTITUTIONS: FOUNDATIONS]
INTS 172a, INTERNATIONAL IDEAS AND INSTITUTIONS: CONTEMPORARY
CHALLENGES.
172a–1: MW 11.35-12.30, 1 HTBA   So   (24)   Paul Kennedy
172a–2: ThFr 11.35-12.30, 1 HTBA   So   (24)   Jolyon Howorth
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 263**/PLSC 122, Conflict and Cooperation in Postcommunist Europe. David Siroky.

W 1:30-3:20 So (o)

Politics in the Caucasus, the Balkans, and Eastern Europe after the Cold War. Focus on questions of ethnic conflict and civil war. Problems of sovereignty and stability in the wake of collapsing postcommunist regimes.

**INTS 267**/PLSC 123, International Dimensions of Internal Conflicts. David Siroky.

W 1:30-3:20 So (o)

Study of the relationship between intrastate conflict and international politics. Secessions and irredentas; third-party interventions and the durability of peace; spatial diffusion of conflict within and across borders; management techniques to moderate the occurrence and extent of hostilities. Readings from theoretical literature, with applications to real-world situations.

**INTS 300**, Theories of Global Justice. David Alvarez.

T 3:30-5:20 So (o)

Political problems and theories of justice examined from a cosmopolitan point of view. Special attention to the contrast between international and global theoretical frameworks and to their respective institutional realizations.

**INTS 302**, 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 304**/PLSC 125, British-American Relations after the Cold War. Alison Holmes.

Th 1:30-3:20 So (o)

Historical roots and modern interpretations of the assertion that the United Kingdom is the closest ally of the United States. Attention to international relations theory, practical discussions of politics and policy, diplomacy, and business.


For description see under Political Science.


For description see under Political Science.


For description see under Political Science.
**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 (0)
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 315b/EPI&E 315b/PLSC 177b, Political Authority and State Formation.** Vivek Sharma.
For description see under Political Science.

**INTS 316a, U.S. Foreign Policy Traditions.** Walter Mead.
M 7-8:50 p.m. Meets RP (0)
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 320b/PLSC 194b, Religion in International Relations.** Robin Theurkauf.
For description see under Political Science.

**INTS 324a/PLSC 359a, Violence and Civil Strife.** Stathis Kalyvas.
For description see under Political Science.

**INTS 326a/AFST 356a/PLSC 356a/SOCY 247a, Collective Action and Social Movements.** Elisabeth Wood.
For description see under Political Science.

**INTS 328b/EPI&E 412b/PLSC 158b, Nationalism and Identity.** Keith Darden.
For description see under Political Science.

**INTS 330a/EPI&E 370a/EVST 272a/PLSC 270a, Capitalism: Success, Crisis, and Reform.** Douglas Rae.
MW 1:30-2:20, 1 HTBA (0) (36)
Examination of capitalism as it functions in practice, with extensive use of business cases. The role of capitalism in generating wealth and innovation unprecedented in history. Negative consequences of capitalist development such as radical inequality, disruption of the natural environment, and intermittent social crises.

**INTS 333b/EPI&E 362b/PLSC 151b, International Dimensions of Democratization.** Nikolay Marinov.
For description see under Political Science.

**INTS 340b/HIST 147b/HSHM 451b, Science, Arms, and the State.**
Daniel Kevles.
For description see under History.
INTS 345b/EP&E 442b/HIST 133b, Strategic, Political, and Moral Dilemmas of the Nuclear Age. Jonathan Schell.

TH 11:35-12:50 Hu, So (24)

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, pre-emptive war, and the capacity for human self-extinction.


For description see under Ethics, Politics, & Economics.

*INTS 349a, Science and Society. Nicoli Nattrass.

W 2:30-4:20 So (0)

The role of scientific authority and thinking explored from historical and contemporary perspectives. Theoretical approaches to the study of science in society and their application with regard to the West and Africa. The nature of the scientific method, pseudoscience and its rise in modern society, science as a system of power, and the scientific regulation of medicine.

*INTS 350a/EP&E 182a/PLSC 448a, Contemporary Political Economy of Turkey and the Middle East. Mine Eder.

For description see under Modern Middle East Studies.

INTS 352b/ECON 353b, Economics of Developing Countries.

Dean Karlan.

For description see under Economics.

*INTS 354b/PLSC 446b/SOCY 369b, Welfare States across Nations.

Sigrun Kahl.

For description see under Political Science.


For description see under Political Science.

*INTS 356a/PLSC 186a, International Political Economy.

Allison Kingsley.

For description see under Political Science.

*INTS 357a/EP&E 342a/PLSC 354a, The European Union.

David Cameron.

For description see under Political Science.


For description see under Political Science.

INTS 361a/PLSC 188a, International Human Rights. Staff.

TH 3:30-5:00 Tu Meets RP (50)

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)
*INTS 362a*/*PLSC 139a, *Perspectives on International Law.* Robin Theurkauf.  
For description see under Political Science.

Th 1:30-3:20 So (0)  
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 INTS 294b)

For description see under Political Science. (Formerly INTS 252a)

*INTS 372b*/*HIST 251Jb/*MGRK 226b, *History of European Integration.* Konstantina Maragkou.  
For description see under Hellenic Studies.

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 374a/HIST 243a/MGRK 225a, *Occupied Europe during World War II.* Konstantina Maragkou.  
For description see under Hellenic Studies.

INTS 375a/PLSC 373a, *Comparative Judicial Politics.* Frances Rosenbluth.  
For description see under Political Science.

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.

For description see under Sociology.
  W 9.25-11.15 (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.

*INTS 391b/EAST 291b, Chinese Law and Society. Ling Bin.
  HTBA So (50)
Reforms and changes in China from ancient to modern times examined from a legal perspective. Focus on the fields of economics, politics, and culture. Historical causes for the status quo; difficulties China faces in establishing the rule of law. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

*INTS 392a/SOCY 220a, Population and Society in East Asia. Yun Zhou.
  For description see under Sociology.

*INTS 394b/PLSC 448b, Conflict and Governance in Diverse Societies. Christian Leuprecht.
  W 9.25-11.15 So (0)
Diversity within states as a leading cause of violent conflict in the contemporary world. The relationship between ethnicity and conflict in the context of multinational states; variables that intervene in this relationship to mitigate or exacerbate internece conflict and violence; policy responses to diversity that are defensible in a liberal-democratic framework and under international law.

*INTS 398a/AFST 398a/ER&M 398a, Race and Class in Comparative Perspective. Jeremy Seekings.
  T 2.30-4.20 So (0)
The evolution and character of class stratification and racial inequalities in South Africa, Brazil, and the United States. Twentieth-century analyses of the three societies, including studies of caste and their critiques by Marxist theory. Contemporary issues such as urban inequalities, middle classes and underclasses, identity, and political mobilization.

SENIOR SEMINARS

*INTS 403a and 404b, Comparative Capitalism. Ivan Szelenyi.
  T 2.30-4.30 (0)
Introduction to the analysis of global variations in capitalist systems. Classical theories of market economies; changes in capitalist economic organizations during the twentieth and twenty-first centuries; the Great Depression and the crisis of the liberal model; emergence of the social democratic welfare state; neoliberalism. Attention to Western, East Asian, postcommunist, and Islamic forms of capitalism. Open to senior International Studies majors only.

  T 3.30-5.20 (0)
Maritime aspects since the fifteenth century of international conflict and trade. Attention to naval policies and strategies, economic growth and inequality, free and unfree labor, technology, maritime law and lawlessness, environmental change, fisheries, and seabed resources. Open to senior International Studies majors only.

*ints 415b, Democracy in World Politics I. Ian Shapiro.

M 3.30-5.20 (0)
Exploration of challenges to, and possibilities for, democracy in the twenty-first century. Readings from relevant literature. Students design summer research projects to be completed during the fall term of senior year. Open to junior International Studies majors only. Fulfills the senior seminar requirement for the major when followed by ints 416a.

[INTS 416A, Democracy in World Politics II]

*INTS 425A/ Mmes 103A, Development and Governance in the Middle East and Africa I. Ellen Lust.

W 1.30-3.20 (0)
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. Open to nonmajors with permission of instructor.

*INTS 426B, Development and Governance in the Middle East and Africa II. Ellen Lust.

W 1.30-3.20 (0)
Continuation of INTS 425A. Open to senior International Studies majors only. Prerequisite: INTS 425A.

*INTS 457A, Strategic Fictions I. Charles Hill.

W 3.30-5.20 (37)
Challenges to the international state system as depicted in major works of literature. Core elements of statecraft and power in epics from Vergil to Tolstoy. Issues of state building, war, diplomacy, peace, and development. Native critiques of various nations’ role within world order by contemporary writers from Africa, China, Europe, Latin America, India, and the United States. Open to nonmajors with permission of instructor.

*INTS 458B, Strategic Fictions II. Charles Hill.

W 3.30-5.20 (37)
Continuation of INTS 457A. Open to senior International Studies majors only. Prerequisite: INTS 457A.

*INTS 481A and 482B, Order, Conflict, and Violence.
Vivek Sharma.

T 2.30-4.30 (0)
Introduction to a range of social science approaches to problems of order, conflict, and violence, including assumptions that underlie the various methods. Readings focus on works by Yale faculty members, with some attention to the writings of other historians and anthropologists. Open to senior International Studies majors only.

ISIZULU
(See under African Studies.)
ISLAMIC STUDIES

(See under Ethnicity, Race, and Migration, under History, under History of Art, under Humanities, under Modern Middle East Studies, under Near Eastern Languages and Civilizations, under Political Science, and under Religious Studies.)

ITALIAN

Director of undergraduate studies: David Lummus, Rm. 411, 82–90 Wall St., 432-8299, david.lummus@yale.edu

FACULTY OF THE DEPARTMENT OF ITALIAN

PROFESSORS
Millicent Marcus (Chair), Giuseppe Mazzotta

ASSISTANT PROFESSORS
Angela Capodivacca, David Lummus

SENIOR LECTOR II
Risa Sodi

SENIOR LECTORS
Michael Farina, Monica Georgeo

LECTOR
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 130a or b (L3) 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 140 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).
No more than 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 a meeting with department faculty to discuss the thesis and the student’s overall experience of study in the major.

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 II.

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 1, at 9 A.M.

REQUIREMENTS OF THE MAJOR

Prerequisite: ITAL 130a or b or equivalent
Number of courses: 11 term courses beyond prereq
Distribution of courses: 8 term courses in Italian dept numbered 140 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 5 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.
  mtwrthf 1 HTBA For sections see www.yale.edu/courseinfo
  L1 1% 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 120a or b. (Formerly the first term of ITAL 115)

*ITAL 120a or b, Elementary Italian II. Staff.
  mtwrthf 1 HTBA For sections see www.yale.edu/courseinfo
  L2 1% C Credits (61)
  Continuation of ITAL 110a. (Formerly the second term of ITAL 115)

*ITAL 125a or b, Intensive Elementary Italian. Staff.
  mtwrthf 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 b or 145a or b. Enrollment limited to 15. (Formerly ITAL 117a or b)

*ITAL 130a or b, Intermediate Italian I. Staff.
  mtwrthf 1 HTBA For sections see www.yale.edu/courseinfo
  L3 1% 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 120a or b or equivalent.

*ITAL 140b, Intermediate Italian II. Risa Sodi.
  mwf 1 HTBA For sections see www.yale.edu/courseinfo
  L4 (61)
  Continuation of ITAL 130a or b. 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.
  mtwrthf 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 or b 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 120a or b 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, Composition, Conversation, and Popular Culture.
  Risa Sodi and staff.
  mwf 11.35-12.25 L5 (0)
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)

MW 1-2.15 L5 (0)
Development of advanced writing and speaking skills. Close readings and extensive practice writing in a variety of genres, which may include autobiography, biography, jokes, letter, essay, poem, news article, comic strip, children’s book, and short story. Popular narrative genres such as the giallo and romanzo rosa. Creation and performance of short dramatic texts. (Formerly ital 139b)

*ital 153b, Theater Practicum: Pirandello. Monica Georgeo.  
TH 1-2.15 L5, Hu (0)
An in-depth study of Pirandello’s Sei personaggi in cerca d’autore, culminating in a staged performance of the play in Italian. May be taken more than once for credit. (Formerly ital 140b)

[ital 157a/hums 264a, Italian through Opera and Film]  
[ital 158b, Italian Workshop: Translating Literature]

*ital 185a, Italian History from 1945. Risa Sodi.  
W 1.30-3.20 L5, Hu (0)
An examination of the major events in Italian history from 1945 to the present. Advanced grammar, writing, and speaking explored in the context of Italian history. Topics include World War II, the founding of the Italian Republic, post-war reconstruction, the major political parties, the protest movements of 1968, the collapse of the Left, and the rise of the Northern League and Berlusconi. Consideration also given to immigration, the environment, and cultural issues.

*ital 238b, War, Literature, and Politics in the Italian Renaissance. Andrea Moudarres.  
MW 9-10.15 L5, Hu (37)
Renaissance representations of war explored through the study of Italian literary texts, with attention to the contemporary political discourse. Selected writings of Dante, Pulci, Ariosto, Tasso, and Machiavelli analyzed and discussed in relation to the works’ cultural milieu.

[ital 269b, Italian Cinema]

TR 9-10.15 L5, Hu (0)
The Italian lyric tradition from the thirteenth to the twenty-first century. Attention to historical and formal issues, such as Petrarchism, the Baroque, romanticism, and contemporary poetics, as well as meter, rhythm, rhyme, and free verse.

*ital 470a and 471b, Special Studies in Italian Literature. David Lummus.  
HTBA (0)
A series of tutorials to direct students in special interests and requirements. Students meet regularly with a faculty member.
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**ITAL 491a/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 063b/FILM 097b/HUMS 089b, Literature into Film.**

Millicent Marcus.

TH 4-5.15; screenings M 7 P.M. Hu (0) Tr Fr sem

Strategies employed by filmmakers who adapt literary works to the screen. Detailed comparisons between cinematic adaptations and the novels, plays, and short stories on which they are based. Focus on close textual interpretation and in-depth analysis of video clips. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

[ITAL 3054/LITR 337a, Italian Food and Literature]

**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, Italy’s Cities]

**ITAL 356b/HUMS 271b/JDST 288b, Primo Levi and Holocaust Writing.** Risa Sodi.

TH 2.30-3.45 WR, Hu (0) Tr

A study of Primo Levi’s life and major works. Examination of his memoirs, autobiography, novels, poetry, and essays. Themes include Holocaust testimony and analysis, the interrelation of science and literature, the value of work from a humanistic perspective, and the history, culture, and intellectual life of Italian Jews in the twentieth century. Consideration of Levi’s writing about writing, other Italian and non-Italian Holocaust authors, and authors who were inspired by Levi such as Liana Millu, Paolo Maurensig, and Oliver Sacks. (Formerly ITAL 340b)

[ITAL 378a, Courtly Love]

**READING COURSE**

**ITAL 101b, Italian for Reading.** Risa Sodi.

TH 11.35-12.50 (24)

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 graduate and undergraduate students preparing for Italian reading examinations for graduate school who have had no (or minimal) prior study of Italian. Conducted in English. Does not satisfy the foreign language requirement. (Formerly ITAL 120b)
JUDAIC STUDIES

Director of undergraduate studies: Steven Fraade, steven.fraade@yale.edu [F]; Christine Hayes, christine.hayes@yale.edu [Sp]; 451 College St., 432-0843

FACULTY ASSOCIATED WITH THE PROGRAM OF JUDAIC STUDIES

PROFESSORS
Leslie Brisman (English), Steven Fraade (Chair) (Religious Studies), Benjamin Harshav (Comparative Literature), Christine Hayes (Religious Studies), Paula Hyman (History, Religious Studies), Ivan Marcus (History, Religious Studies), María Rosa Menocal (Spanish & Portuguese), Michael Morgan (Philosophy) (Visiting), Meira Polliack (Religious Studies) (Visiting), Moshe Rosman (History) (Visiting), Steven Smith (Political Science), Laura Wexler (Women’s, Gender, & Sexuality Studies, American Studies), Robert Wilson (Religious Studies)

Assistant Professor
Marci Shore (History)

LECTURERS
Micha Perry (History), Hizky Shoham (Humanities), Sandra Valabregue-Perry (Religious Studies)

SENIOR LECTOR II
Ayala Dvoretzky

SENIOR LECTOR
Shiri Goren

LECTOR
Orna Goldman

Judaic Studies enables students to develop a substantial knowledge of the history, religion, literature, languages, and culture of the Jews. Jewish society, texts, ideologies, and institutions are examined in comparative perspective 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 and 120b (but not HEBR 110a or 120b) 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., J DST 110a); (2) one term course in rabbinic literature; (3) JDST 200a, History of the Jews 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: HEBR 110a, 120b or equivalents
Number of courses: 13 term courses (incl senior essay)
Specific courses required: HEBR 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 HEBR 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 210a/ R LST 148a, History of the Jews to the Reformation. Ivan Marcus.
For description see under History.

[J DST 201b/ H IST 220b/ R LST 149b, History of Jewish Culture, 1300 to the Present]

J DST 202b/ R LST 146b, Judaism: Continuity and Change.
Christine Hayes.
For description see under Religious Studies.

SPECIAL PROJECTS

* J DST 471a or b, Individual Tutorial. Consult the director of undergraduate studies.

HTBA (0)
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 (0)
The essay, written under the supervision of a faculty member, should be a substantial 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)]

* J DST 124a/ R LST 143a, Female Characters in the Hebrew Bible.
Meira Polliack.
Th 9.25-11.15 Hu (0)
Complex female characters in the Hebrew Bible, such as Tamar, Hannah, and Rebecca. Tension between their patriarchal depiction as marginal to male characters and their psychological and literary portrayal as dominant and active heroines who transcend limited social and religious roles.

**jdst 126b/G, Genres of Biblical Literature and Their Interpretive History.** Meira Polliack.

Two major genres of biblical literature: narrative and prophecy. Introduction to contemporary biblical study of literary, psychological, historical, and ideational themes in the modern appreciation of these genres; exploration of their pre-modern and medieval interpretive history.

**Classical Period**

**jdst 233b/G, INTRODUCTION TO JUDAISM IN THE ANCIENT WORLD.** Steven Fraade.
For description see under Religious Studies.

For description see under Religious Studies.

**jdst 391b/G, MIDRASH SEMINAR: THE THEOPHANY AT SINAI.** Steven Fraade.
For description see under Religious Studies.

**jdst 392a/G, MISNAH SEMINAR: TRACTATE SANHEDRIN.** Steven Fraade.
For description see under Religious Studies.

**Medieval and Early Modern Periods**

**jdst 263a/G/HIST 218Ja, JEWISH WORLDVIEWS OF THE MIDDLE AGES.** Micha Perry.
Th 1.30-3.20 Hu (o)
Introduction to the field of history of mentalities, with a focus on Jewish worldviews during the Middle Ages. Topics include time and space, the next world, love, childhood, truth and fraud, the self, life and death, and the “other.” A Jewish worldview as distinct from a Christian one.

**jdst 270a/G/HIST 232Ja/HUMS 392a/G, MEDIEVAL JEWS, CHRISTIANS, AND MUSLIMS IMAGINING EACH OTHER.** Ivan Marcus.
For description see under Humanities.

**Modern Period**

**jdst 274b/G/HIST 219Jb, JEWS OF EASTERN EUROPE, 1500–1900.** Moshe Rosman.
Th 3.30-5.20 Hu (27)
The social, economic, cultural, and political history of the Jews in historical Poland and Russia during the early modern and modern periods.

**jdst 280a/G/HIST 1483a/G, AMERICA AND ITS JEWS, 1654 TO THE PRESENT.** Paula Hyman.
For description see under History.
Major figures in the tradition of Jewish philosophy during the twentieth century. Engagement with the Western philosophical tradition, especially in Europe and in postwar America. The impact of the Six-Day War and the Nazi Holocaust on American Jewish thinkers.

**Jewish Philosophy in the Twentieth Century.** Michael Morgan.

**For description see under German Studies.**

**Jews and Germans: An Intercultural History.** Paul North.

**For description see under German Studies.**

**Primo Levi and Holocaust Writing.** Risa Sodi.

**For description see under Italian.**

**Women in Modern Jewish History.** Paula Hyman.

**For description see under Religious Studies.**

**Jewish Identity and French Culture.** Maurice Samuels.

**For description see under French.**

**Hebrew Language and Literature**

**Introduction to Modern Israeli Literature.** Ayala Dvoretzky.

**For description see under Near Eastern Languages & Civilizations.**

**Reading Academic Texts in Modern Hebrew.** Orna Goldman.

**For description see under Near Eastern Languages & Civilizations.**

**Israeli Identity and Culture: 1948 to the Present.** Shiri Goren.

**For description see under Near Eastern Languages & Civilizations.**

**Contemporary Israeli Society in Film.** Shiri Goren.

**For description see under Near Eastern Languages & Civilizations.**

**Readings in Hebrew Poetry.** Benjamin Harshav.

**For description see under Literature.**

**Directed Reading and Research.** Consult the director of undergraduate studies.

**For description see under Near Eastern Languages & Civilizations.**

**Additional Courses Relevant to the Major**

**Elementary Modern Hebrew I.**

**For description see under Near Eastern Languages & Civilizations.**

**Elementary Modern Hebrew II.**

**For description see under Near Eastern Languages & Civilizations.**

**Intermediate Modern Hebrew I.**

**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 registrar of the schools involved. (See “Courses in the Yale Graduate and Professional Schools” in chapter II, 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: Gilbert Joseph, 224 HGS, 432-1380, gilbert.joseph@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), Garry Brewer (School of Management), Richard Burger (Anthropology), Hazel Carby (African American Studies, American Studies), Amy Chuah (Law School), Lisa Curran (Forestry & Environmental Studies), Carlos Eire (History, Religious Studies), Eduardo Engel (Economia), Robert Evenson (Economia), Paul Freedman (History), Roberto González Echevarría (Spanish & Portuguese), Aníbal González Pérez (Spanish & Portuguese), K. David Jackson (Spanish & Portuguese), Gilbert Joseph (History), Stathis Kalyvas (Political Science), Enrique Mayer (Anthropology), Robert Mendelsohn (Forestry & Environmental Studies), María Rosa Menocal (Spanish & Portuguese), 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 (Economia), Stuart Schwartz (History), Susan Stokes (Political Science), Robert Thompson (History of Art), Noel Valis (Spanish & Portuguese), Michael Veal (Music), Elisabeth Wood (Political Science)

Associate Professors
Alicia Schmidt Camacho (American Studies), Thad Dunning (Political Science), Jaime Lara (Divinity School)
Assistant Professors
Robert Bailiss (Forestry & Environmental Studies), Irene Brambilla (Economics), Susan Byrne (Spanish & Portuguese), Ana De La O (Political Science), Ernesto Estrella (Spanish & Portuguese), Moira Fradinger (Comparative Literature), Lilian Guerra (History), Paulo Moreira (Spanish & Portuguese), Paulina Ochoa Espejo (Political Science), Kevin Poole (Spanish & Portuguese)

Lecturers
Leonard Munstermann (Epidemiology & Public Health), Nancy Ruther (Political Science)

Senior Lecturers
Sybil Alexandrov, Marta Almeida, Teresa Carballal, Mercedes Carreras, Sebastián Díaz, Oscar González Barreto, María Jordán, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Terry Seymour, Margherita Tórtora, Sonia Valle

Lecturers
Pilar Asensio, Yovanna Cifuentes, Ame Cividanes, Maripaz García, Rosamaría León, Tania Martuscelli, Bárbara 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 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 course approved by the director of undergraduate studies; 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 266a 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:** 1 intro course approved by DUS; 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

**Senior requirement:** Senior essay (LAST 491a or b)

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**LAST 314b, CONTEMPORARY ISSUES IN LATIN AMERICAN STUDIES.**

Staff.

W 3:30-5:20 Hu, So (0)

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 (0)

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.

For description see under African American Studies.

*AFAM 347A, CARIBBEAN LIVES: PSYCHO SOCIAL ASPECTS. Ezra Griffith.

*AFAM 352A/AMST 438A/ER&M 291A/LITR 293A/WGSS 343A, CARIBBEAN DIASTORIC LITERATURE. Hazel Carby.
For description see under African American Studies.

*AMST 277A/ER&M 284A, INTRODUCTION TO CHICANO AND LATINO LITERATURES. Birgit Rasmussen.
For description see under American Studies.

*ANTH 030B/ARC 030B, INCA CULTURE AND SOCIETY. Richard Burger.
For description see under Anthropology.


For description see under Anthropology.

*ANTH 374B/ARC 374Bb, ORIGINS OF ANDEAN CIVILIZATION. Richard Burger.
For description see under Anthropology.

ECON 325B/INTS 332B, ECONOMICS OF DEVELOPING COUNTRIES. Dean Karlan.
For description see under Economics.

For description see under Economics.

*HIST 130Ja, INDIANS AND THE SPANISH BORDERLANDS. Ned Blackhawk.

HIST 355A, COLONIAL LATIN AMERICA. Stuart Schwartz.

HIST 358B/ER&M 341B, MEXICO FROM THE NINETEENTH CENTURY TO THE PRESENT. Gilbert Joseph.
For description see under History.

HIST 361B, HISTORY OF BRAZIL. Stuart Schwartz.

HIST 362B, COLONY, NATION, AND DIASPORA: CUBA AND PUERTO RICO. Lillian Guerra.

*HIST 372Ja/ER&M 342A, REVOLUTIONARY CHANGE IN TWENTIETH-CENTURY LATIN AMERICA. Gilbert Joseph.
For description see under History.
hsar 296b, Visual Culture of Early Modern Latin America. Barbara Mundy.

For description see under History of Art.

For description see under History of Art.

plsc 356a/afst 356a/intts 326a/socy 247a, Collective Action and Social Movements. Elisabeth Wood.
For description see under Political Science.

*port 002a, Cultural Encounters in the Portuguese World. K. David Jackson.

*port 222b, Language and Socio-Environmental Issues. Tania Martuscelli.

*port 356b/G, Brazilian Concrete Poetry. K. David Jackson.

port 370a/litr 293a/span 383a, Psychology in Literature: Characters on the Margins of Reality. 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.


*span 220a, Theater and Poetry Workshop. Sonia Valle and staff.

*span 223b, Spanish in Film: An Introduction to the New Latin American Cinema. Margherita Tórtora.

*span 247b, Introduction to the Cultures of Latin America. Roberto González Echevárría.

span 266a, Studies in Latin American Literature I. Aníbal González Pérez.

span 267b, Studies in Latin American Literature II. Rolena Adorno.

span 306b, Hispanic Poetry from Modernismo to the 1930s. Ernesto Estrella.

*span 352a, Ethics and Politics in the Spanish American Short Story. Aníbal González Pérez.

*span 395b, Writing a Nation: Literature of Puerto Rico. Aníbal González Pérez.
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: Raffaella Zanuttini, Rm. 209, 370 Temple St., 432-2452, raffaella.zanuttini@yale.edu

FACULTY OF THE DEPARTMENT OF LINGUISTICS

Professors
Stephen Anderson (Chair), Carol Fowler (Adjunct), Robert Frank, Roberta Frank, Laurence Horn, Stanley Insler, Frank Keil, Rhea Paul, Zoltán Szabó, Raffaella Zanuttini

Associate Professors
Ann Biersteker (Adjunct), Darya Kavitskaya, Maria Piñango

Assistant Professors
Claire Bowern, Ashwini Deo, Gaja Jarosz, Jelena Krivokapić

Lecturers
Thomas Leu, Einar Mencl, Erich Round, Tamina Stephenson, Matthew Wolf

Linguistics is the scientific study of language. The major in Linguistics offers a program of studies leading toward an understanding of phonological, grammatical, and semantic structure and of various approaches to descriptive, experimental, and historical linguistics. It also includes course work leading to proficiency in one or two foreign languages. Majors may concentrate on theoretical, experimental, or computational linguistics, on various aspects of comparative grammar, or on a particular family of languages. Interested students should consult the director of undergraduate studies.

The prerequisite for the major is LING 110b or 117a with a grade of B+ or better. Fourteen additional term courses are required for the major, distributed as follows:

1. Breadth requirement (four courses). All majors must take introductory courses in the core areas of phonology (LING 132a) and syntax (LING 153a). In addition, at least one course must be taken in any two of the six remaining core areas: phonetics, morphology, semantics/pragmatics, computational linguistics, language and mind/brain, and historical linguistics.

2. Depth requirement (two courses). In one of the eight core areas (phonetics, phonology, morphology, syntax, semantics/pragmatics, computational linguistics, language and mind/brain, and historical linguistics), students must take two additional courses beyond the introductory course.
3. Language requirement (three courses). Three term courses (or the equivalent) in one or two foreign languages beyond the elementary level are required; courses designated L3 or higher are normally accepted. This requirement may be fulfilled in part in the freshman or sophomore years.

4. Electives (three courses). Three additional courses relating to linguistics are required. Electives may be selected from Linguistics courses or from approved courses with substantial linguistic content in other departments (including foreign language courses). With the approval of the director of the director of undergraduate studies, one course bearing a less direct relation to linguistics from another program (e.g., Anthropology, Classics, Cognitive Science, Computer Science, English, Philosophy, or Psychology) may be applied to this requirement if it is relevant to the student’s program.

5. Research requirement (two courses). Research Methods in Linguistics (LING 490a) and the Senior Essay (LING 491b) are required, and are usually taken in sequence during the senior year.

**REQUIREMENTS OF THE MAJOR**

Prerequisites: LING 110b or 117a with appropriate grade

Number of courses: 14 term courses beyond prereq (incl senior req)

Specific courses required: LING 132a, 153a, 490a

Distribution of courses: 1 course in 2 of 6 specified core areas; 2 courses beyond intro level in 1 of 8 specified core areas; 3 language courses at level L3 or higher; 3 electives

Senior requirement: Senior essay (LING 491b)

**INTRODUCTORY COURSES**

*LING 007b, Varieties of English.* Laurence Horn, Raffaella Zanuttini.

**MW 11.35-12.50 So (0) Fr sem**

Introduction to the range of variation in English, focusing on phenomena distinguishing U.S. dialects. Regional, social, gender, and age-based factors in variation. Linguistic approaches and “folk” attitudes to nonstandard language. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

[LING 108b, Structure and History of English Words]


**TTh 11.35-12.50 So (24)**

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]


**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 115a/SKRT 110a, Introductory Sanskrit I.  David Brick.
For description see under South Asian Studies.

T 2:30-4:20 (27)
Introduction to the Hittite language. Explanation of grammar, with readings in transcription from old, middle, and new Hittite texts representing different literary genres. **Prerequisite:** familiarity with an inflected language (Latin, Greek, German, Russian). **No knowledge of cuneiform is necessary.**

LING 117a/G, Language and Mind.  Maria Piñango.
TTh 11:35-12:50 So (24)
Knowledge of language as a component of the mind: mental grammars, the nature and subdivisions of linguistic knowledge in connection with the brain. The logical problem of language acquisition. The “universal grammar hypothesis” according to which all humans have an innate ability to acquire language. The connection between language acquisition and general cognitive abilities.

LING 120b/G, General Phonetics.  Matthew Wolf.
TTh 9:40-10:15 So (22)
Investigation of possible ways to describe the speech sounds of human languages. Development of tools such as acoustics and physiology of speech, computer synthesis of speech, and practical exercises in producing and transcribing sounds.

LING 125b/SKRT 120b, Introductory Sanskrit II.  David Brick.
For description see under South Asian Studies.

LING 126b/G/PSYC 137a, Language and Mind.  Maria Piñango.
TTh 11:35-12:50 So (24)
Knowledge of language as a component of the mind: mental grammars, the nature and subdivisions of linguistic knowledge in connection with the brain. The logical problem of language acquisition. The “universal grammar hypothesis” according to which all humans have an innate ability to acquire language. The connection between language acquisition and general cognitive abilities.

LING 132a/G, Introduction to Phonological Analysis.
Matthew Wolf.
TTh 11:35-12:50 So (24)
The structure of sound systems in particular languages. Phonemic and morphophonemic analysis, distinctive-feature theory, formulation of rules, and problems of rule interpretation. Emphasis on problem solving. **Prerequisite:** LING 120b or a grade of B or above in LING 110b.

TTh 4:15-5:15 So (0)
Topics in the architecture of a theory of sound structure. Levels of representation; 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 interactions. Correspondence theory. Opacity and stratal optimality theory. **Prerequisite:** LING 132a or permission of instructor.

MW 1-2:15 So (0)
Introduction to connectionist, symbolic, and statistical techniques used in computational 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 141a/G/PSYC 327a, Language and Computation]
[LING 147aG, Indigenous Languages of Australia]

LING 149b/PSYC 149b, Animal Communication and Human Language. Stephen Anderson.

Examination of animal communication systems found in nature, including those of honeybees, frogs, birds, and primates. Comparison of these systems with human language. Evaluation of efforts to find or induce specifically linguistic abilities in a variety of animals leading to conclusions about animals’ cognitive capacities.

LING 150b/ENGL 150b, Old English. Roberta Frank.

For description see under English Language & Literature.

LING 153aG, Syntax I. Raffaella Zanuttini.

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 163a/PSYC 163a, Language Acquisition. Rhea Paul.

The development of communication and language in children from birth to adolescence. Preverbal communication, lexical learning, morphological and syntactic development, phonological perception and production, the acquisition of pragmatic and communicative competence, and the relation of these skills to literacy.

LING 180bG, Morphology. Maria Piñango.

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 with permission of instructor.

LING 183a/ENGL 155aG, Readings in Old Norse Poetry and Prose: Chronicles of the Vikings. Roberta Frank.

For description see under English Language & Literature.

ADVANCED COURSES


Principles governing linguistic change in phonology and morphology. Status and independence of proposed mechanisms of change. Relations between the principles of historical change and universals of language. Systematic change as the basis of linguistic comparison; assessment of other attempts at establishing linguistic relatedness.


Mathematical methods in linguistics. Topics include set theory, logic and formal systems, model theory, lambda calculus, formal language theory, elementary statistics, and probability.
**LING 230bG, Techniques in Neurolinguistics.** Einar Mencl.
T 9.25-11.15 (22)
Introduction to common techniques and research in cognitive neuroimaging, with applications to the study of language. Techniques include MRI acquisition, preprocessing, single- and multisubject data analysis, visualization, and network analysis. Topics include speech production and perception, literacy, and dyslexia.

**LING 231bG/PSYC 331b, Neurolinguistics.** Maria Piñango.
MW 2.30-3.45 SO (0)
The study of language as a cognitive neuroscience. The interaction between linguistic theory and neurological evidence from brain damage, degenerative diseases (e.g., Alzheimer's disease), mental illness (e.g., schizophrenia), neuroimaging, and neurophysiology. The connection of language as a neurocognitive system to other systems such as memory and music.

**LING 236bG, Articulatory Phonology**

**LING 240aG, Topics in Phonology: Inputs and Bases in Phonological Derivations.** Matthew Wolf.
TH 9.25-11.15 SO (0)
Theories concerning the morphological nature of the inputs to phonological derivations. Uniqueness vs. nonuniqueness of the underlying forms of morphological elements; simultaneous vs. incremental construction of morphologically complex words; relations of similarity and dissimilarity within paradigms. **Prerequisite:** LING 135b, or with permission of instructor.

**LING 241bG, Language Description**

**LING 242bG, Topics in Phonology: The Indigenous Languages of Australia.** Erich Round.
M 1.30-3.20 SO (0)
A critical survey of the facts of Australian language phonologies and their analysis: phonological inventories and phonotactic patterns, their puzzling similarities across the continent, and formal phonological and phonetically based accounts of these; the interface of phonology with morphology; stress systems; patterns of sound change.

**LING 244bG, Phonological Opacity.** Darya Kavitskaya.
T 1.30-3.20 SO (0)
Study of phonological opacity in the world's languages. Survey of the typology of opaque interactions; the relation of opacity and morphology; theoretical approaches to opacity, with emphasis on approaches developed within optimality theory. **Prerequisite:** LING 135b, or with permission of instructor.

**LING 254bG, Syntax II.** Robert Frank.
MW 9-10.15 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 256aG, Grammatical Relations.** Laurence Horn.
MW 2.30-3.45 SO Meets RP (37)
Descriptive and theoretical approaches to grammatical relations (subject, object, etc.) and their role in syntax, argument structure, and universal grammar. Comparison of diverse models: traditional approaches, case grammar, relational grammar, lexical-functional grammar, GB and its developments. Grammatical relations and thematic roles (theta-roles). Grammatical relations in typological and historical perspectives. *Prerequisite:* LING 153a or permission of instructor.

Robert Frank, Thomas Leu.
T 9.25-11.15 So (o)
Components of grammar and their relationships, explored from the Minimalist paradigm. Focus on the interplay between syntactic computation and the systems of morphology, phonology, semantics, and the lexicon.

**LING 261b**, Topics in Syntax: English and Its Kin.
Raffaella Zanuttini.
F 9.25-11.15 So (o)
The syntactic properties of English compared with those of other Germanic languages such as Icelandic, Swedish, and German. What the similarities and differences reveal about the limits of syntactic variation. Examination of both standard and nonstandard varieties of English spoken in the United States and in the United Kingdom. Topics include transitive expletives, object shift, stylistic fronting, and inversion. *Prerequisite:* LING 254b, or with permission of instructor.

**LING 263a**, Introduction to Semantics.
Ashwini Deo.
MW 9-10.15 QR, So (o)
Introduction to truth-conditional compositional semantics. Set theory, first- and higher-order logic, and the lambda calculus as they relate to the study of natural language meaning. Some attention to analyzing the meanings of tense/aspect markers, adverbs, and modals.

**LING 264a**, Topics in Semantics: Conventional Implicature.
Laurence Horn.
T 2.30-4.30 So Meets RP (o)

**LING 270a**, Topics in Semantics: Variation and Change in Tense-Aspect Categories.
Ashwini Deo.
TH 2.30-4.20 So Meets RP (o)
Cross-linguistic differences in the distribution and interpretation of tense and aspect from a comparative and historical perspective. Evaluation of descriptive and empirical accounts from the grammaticalization and typology literature as informed by formal semantic research on tense/aspect categories.

**LING 275b**, Pragmatics.
Laurence Horn.
THH 2.30-3.45 So Meets RP (o)
Context-dependent aspects of meaning and inference. Speech act theory, presupposition, implicature. Role of pragmatics in the lexicon and in meaning change. The semantics-pragmatics distinction from different perspectives; the position of pragmatics in linguistic theory.

**LING 280a**, Topics in Morphology: Agreement.
Stephen Anderson.
M 1.30-3.20 So (o)
Survey of agreement and concord phenomena in the languages of the world. Connections between agreement and pronominal clitics. Theories of the implementation of agreement relations in the syntax and of the realization of agreement morphology.

*LING 471a and 472b, Special Projects. Staff.*

HTBA (0)

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 490a, Research Methods in Linguistics. Raffaella Zanuttini.*

W 3:30-5:20 (0)

Development of skills in research, writing, and presentation. Topics include choosing a research topic; presenting one’s ideas clearly and effectively, both orally and in writing; methodological issues; and the balance between building on existing literature and making a novel contribution. *Enrollment limited to Linguistics majors.*

*LING 491b, The Senior Essay. Raffaella Zanuttini.*

W 4-5:30 (0)

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 413b, Language, Culture, and Ideology.*

J. Joseph Errington.

*CGSC 103a/PSYC 120a, Introduction to Cognitive Science.*

Brian Scholl.

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.*

Kenneth Winkler.

*PHIL 267b, Mathematical Logic.*

Sun-Joo Shin.

*PSYC 140a, Developmental Psychology.*

Frank Keil.

**GRADUATE COURSES OF INTEREST TO UNDERGRADUATES**

Graduate courses in linguistics and in related fields such as anthropology, philosophy, and psychology appear in Online Course Information, www.yale.edu/courseinfo. Graduate courses 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 (Chair) (Comparative Literature, Film Studies), Harold Bloom
(Humanities), 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 (Comparative Literature), Henry Sussman (German)
(Visiting), Katie Trumpener (Comparative Literature, English)

ASSOCIATE PROFESSOR
Ali Alyeyes (Comparative Literature, English)

ASSISTANT PROFESSORS
Alexander Beecroft (Comparative Literature, Humanities), Moira Fradinger
(Comparative Literature), David Gabriel (Comparative Literature), Barry McCrea
(Comparative Literature)

SENIOR LECTURER
Richard Maxwell (Comparative Literature, English)

LECTURER
Edward Barnaby

SENIOR LECTOR
Howard Stern

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 the-
ory, 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. Students with a
particular interest in film may wish to elect the film track within the Litera-
ture major, described below.

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 comparative 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 standard 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 rewrite older works and 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 literature, 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 language course at the L5 level 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 demonstrate they have engaged with the 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 language 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 earn one course credit for the seminar in which the essay is written; no additional course credits are awarded for the essay itself.

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.

Film track. Students may elect to pursue a film-intensive concentration within the Literature Major. Students in the film track must fulfill the same requirements as those in the standard Literature track, with the following exceptions. Film-track students take LITR 143b, World Cinema, instead of LITR 122b as one of the prerequisites to the major. They take two foreign literature courses rather than three; neither may be substituted with an advanced language course. In addition, students in the film track must take one course in film theory and three electives in the field of film studies.

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>
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<tr>
<td>Arabic</td>
<td>ARBC 150a, 151b</td>
<td>ARBC 164a or b or 166b</td>
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<tr>
<td>Chinese</td>
<td>CHNS 150a, 151b</td>
<td>CHNS 170a, 171b</td>
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<tr>
<td>French</td>
<td>FREN 170a or b</td>
<td>Courses in French numbered</td>
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<tr>
<td>German</td>
<td>Courses in German numbered</td>
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<tr>
<td></td>
<td>170 or higher</td>
<td>200 or higher</td>
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<tr>
<td>Ancient Greek</td>
<td>GREEK 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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<td>Biblical Hebrew</td>
<td>HEBR 137a, 147b</td>
<td>HEBR 471a or b</td>
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<td>Modern Hebrew</td>
<td>HEBR 131a</td>
<td>HEBR 151a</td>
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<td>Italian</td>
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<td>Courses in Italian numbered</td>
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<td></td>
<td>200 or higher</td>
<td>200 or higher</td>
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<tr>
<td>Japanese</td>
<td>JAPN 150a, 151b</td>
<td>JAPN 170a or 171b</td>
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<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 151a or 141b</td>
<td>Latin courses numbered</td>
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<td>400 or higher</td>
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<td>Persian</td>
<td>Pers 150b</td>
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<td>Portuguese</td>
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<td>instructor</td>
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<tr>
<td>Russian</td>
<td>Russ 150a, 151b</td>
<td>Courses in Russian numbered</td>
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<tr>
<td>Spanish</td>
<td>SPAN 261a, 262b, 266a,</td>
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<tr>
<td></td>
<td>or 267b</td>
<td>Courses in Spanish numbered</td>
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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:** Both tracks—LITR 120a; completion of Yale College foreign language distributional req; Standard track—LITR 122b; Film track—LITR 143b

**Number of courses:** Both tracks—12 term courses beyond prereqs (incl senior essay)

**Required course:** Both tracks—LITR 300b

**Distribution of courses:** Both tracks—1 course in lit before 1800; 1 course in poetry or drama; 2 core sems; Standard track—3 courses in 1 foreign lit, as specified; Film track—2 courses in 1 foreign lit, as specified; 1 course in film theory; 3 electives in film studies

**Substitution permitted:** Standard track—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:** Both tracks—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. Richard Maxwell, Ala Alryyes, Moira Fradinger, David Gabriel, David Quint.
MW 1-2.15 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, David Gabriel, Richard Maxwell, David Quint.
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 143b/FILM 240b, WORLD CINEMA.
Dudley Andrew.
MWF 11.35-12.25; screenings M 6.30 p.m. WR, Hu (34)
An examination of the varieties of films that have been produced around the globe. Different functions served by the medium, particularly since World War II; analysis and contextualization of selected films from four continents.

LITR 300b/ENGL 300b, INTRODUCTION TO THEORY OF LITERATURE.
Haun Saussy.
TTTh 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 015a/HUMS 087a, THE EXPERIENCE OF BEING FOREIGN.
Alice Kaplan.
MW 1-2.15 WR, Hu (0) Fr sem
Memoirs and novels on the experience of being foreign in various national and psychological settings. Writers include Nabokov, Tanizaki, Baldwin, and Salih. Readings from a variety of genres, such as autobiography, field notes, and stylistic analysis. Focus on issues of exile, travel, and translation. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*LITR 016a/GMST 016a/HUMS 088a, TRUTH AND LIES IN FICTION AND FILM.
Carol Jacobs.
MW 2.30-3.45 Hu (0) Fr sem
Exploration of the concepts of truth, fiction, art, and representation in works of literary and filmic fiction. Emphasis on both textual interpretation and theoretical analysis. The relation between linguistic and visual signs and their claims to various kinds of truth. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
THE ANCIENT WORLD

* Litr 154a/Engl 395a, The Bible as Literature. Leslie Brisman.
  For description see under English Language & Literature.

Litr 158a/Clcv 254a, Introduction to Greek Literature.
  Victor Bers.
  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, Drama and Demos.
  Timothy Robinson.
  For description see under Classics.

MEDIEVAL AND EARLY MODERN LITERATURE TO 1800

* Litr 170a/Gman 289a/Gmst 289a/Hums 286a, Passions, 1600–1800.
  Rüdiger Campe.
  For description see under Germanic Languages & Literatures.

* Litr 171a/Fren 301a/Hums 269a/Musi 269a, The Anglo-Norman
  World after 1066. R. Howard Bloch, Margot Fassler.
  For description see under Humanities.

  For description see under East Asian Languages & Literatures.

Litr 178a/Hums 420a/Mmes 201a/Nelc 156a, Classics: The Arabic-
  Islamic World. Beatrice Gruendler.
  For description see under Near Eastern Languages & Civilizations.

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.

EUROPEAN LITERATURE SINCE 1800

  Vladimir Alexandrov.
  For description see under Slavic Languages & Literatures.
**LITR 208a/rsee 256a/russ 256a, Studies in the Novel: Dostoevsky.**
Hilary Fink.
For description see under Slavic Languages & Literatures.

**LITR 211b/afam 365b/fren 373b, Creole Cultures of the Caribbean.**
Christopher L. Miller.
For description see under French.

**LITR 225b/clcv 214b/hums 278b/mgrk 202b/wgss 337b, The Poetry of C. P. Cavafy.**
George Syrimis.
For description see under Hellenic Studies.

**LITR 226b/jdst 310b, 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 228b/gman 309b/gmst 309b/hums 274b, Literary Ethics: Dinesen and Sebald.**
Carol Jacobs.
For description see under German Studies.

**LITR 230a/fren 393a, Modernism and the Avant-Garde.**
Jean-Jacques Poucel.
For description see under French.

**LITR 231b/port 393b, Modern Brazilian and Portuguese Fiction in Translation.**
K. David Jackson.
For description see under Portuguese.

**LITR 233b/engl 305b, Austen and Brontë and Twentieth-Century Women’s Novels.**
Katie Trumpener.
For description see under English Language & Literature.

**LITR 236b/gman 232b/gmst 232b, Traditions of the Novella: Short Narratives in the Nineteenth Century.**
Cyrus Hamlin.
For description see under Germanic Languages & Literatures.

**LITR 241b/russ 323b, City and Country in the Nineteenth-Century Novel.**
Molly Brunson.
For description see under Slavic Languages & Literatures.

**Non-European Literature Since 1800**

**LITR 251b/japn 251b/japn 250a, Japanese Literature After 1970.**
John Treat.
For description see under East Asian Languages & Literatures.

**LITR 252b/japn 260b/eall 250a, Imagining Space in Japanese Fiction and Film.**
Christopher Hill.
For description see under East Asian Languages & Literatures.

**LITR 258a/eall 250a/engl 297a/zerm 350a, Literature on Migration in Asian America and East Asia.**
Jing Tsu.
For description see under East Asian Languages & Literatures.

**LITR 260a/japn 250a, Modern Japanese Fiction.**
Christopher Hill.
For description see under East Asian Languages & Literatures.
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  For description see under French.

* LTR 267b/EALL 249b/EAST 444b, Translation and Modern Literature in East Asia. Heekyoung Cho.
  For description see under East Asian Studies.

  For description see under Theater Studies.

* LTR 293a/PORT 370a/SPAN 383a, Psychology in Literature: Characters on the Margins of Reality. K. David Jackson.
  For description see under Portuguese.

* LTR 295a/AFAM 352a/AMST 438a/ER&M 291a/WGSS 343a, Caribbean Diasporic Literature. Hazel Carby.
  For description see under African American Studies.

LITERARY THEORY AND SPECIAL TOPICS

* LTR 303a/GMAN 284a/GMST 284a, Narrating Risk and Contingency. Rüdiger Campe.
  For description see under Germanic Languages & Literatures.

* LTR 323b/ENGL 336b/THST 303b, The Opera Libretto. J. D. McClatchy.
  For description see under English Language & Literature.

* LTR 328a/GMST 212a/HUMS 277a/GMRK 212a, Folktales and Fairy Tales. Maria Kaliambou.
  For description see under Hellenic Studies.

  For description see under Germanic Languages & Literatures.

  MW 4-5.15 Hu (c)
  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.

* LTR 336a/GMST 317a/HUMS 371a, Childhood and Memory. Henry Sussman.
  MW 1-2.15 Hu (c)
  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.
Transformations of the Elegy. Rainer Nägele.
For description see under Germanic Languages & Literatures.

History and Critique of Semiotics. David Larsen.
For description see under Humanities.

Adorno's Aesthetic Theory. Rainer Nägele.
For description see under Germanic Languages & Literatures.

Theatricality in Film. Brigitte Peucker.
For description see under Film Studies.

Early Film Theory and Modernity. Francesco Casetti.
For description see under Film Studies.

Media: The Logic of Repetition. Francesco Casetti.
For description see under Humanities.

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.

Radical Cinemas of Latin America. Moira Fradinger.
For description see under Film Studies.

French New Wave Cinema. Dudley Andrew.
For description see under Film Studies.

Picture Book to Graphic Novel. Katie Trumpener.
MW 2:30–3:45, 1 HTBA Hu (o)
History of the picture book from the early modern period to the late twentieth century, focusing on the Anglo-American tradition within a broader European context. The picture book’s relationship to the comic strip and comic book, and to the contemporary graphic novel. The complex relations between image and narrative, format and address.
The Literature Major

*Litr 403b/Film 442b, The City in Literature and Film.
Katerina Clark.
Th 1-2.15; screenings T 7 p.m. Hu (o)
Consideration of the architecture, town planning, and symbolic functions of various cities in Europe, Latin America, the United States, and East Asia. Discussion of the representation of these cities in literature and film. Works include older Soviet and Chinese films about Shanghai and contemporary films about Hong Kong and Beijing.

Katerina Clark.
Th 1-2.15 Hu (o)
Study of principal movements in the avant-garde from the first half of the twentieth century, including futurism, Dada, expressionism, constructivism, and surrealism. Discussion of avant-garde works from a range of media and genres in the literary, visual, and performing arts. Definitions of the avant-garde, and its relationship to postmodernism.

*Litr 425b/Film 344b, Landscape, Film, Architecture.
Richard Maxwell.
M/W 11.35-12.50 Hu (o)
Movement through landscapes and cityscapes as a key to understanding them. Simulation of travel, using movie cameras and other visual-verbal means, as a way to expand historical, aesthetic, and sociological inquiries into how places are inhabited and experienced. Exploration of both real and imaginary places traversed in works by Edgar Allan Poe, Jules Verne, César Aira, Georges Rodenbach, Patrick Keiller, Georges Perec, and Andrei Tarkovsky.

*Litr 429b, Fictional Worlds.
Benjamin Harshav.
W 1.30-3.20 Hu (o)
The construction of fictional worlds in literature, as exemplified in close readings of stories by Joyce, Gogol, and especially the fictions of interpretation in the work of Franz Kafka. All readings in English; papers may be written on texts in other languages.

Richard Maxwell.
M/W 11.30-12.45 Hu (o)
Introduction to lyric poetry in Europe and North America, c. 1900–1940, along with several nineteenth-century precursors, emphasizing the ambition of certain works (as though lyric had taken over the function of epic). Poets studied include Baudelaire, Valéry, Rilke, Pound, MacDiarmid, and Brecht. Some knowledge of French or German useful.

Ala Alryyes.
T 3.30-5.20 Hu (o) Tr
Readings from selected modern Arabic novels in translation, with attention to how their themes and forms emulate and diverge from those of the Western novel. Topics include the persistence of orality and the relation between dialect and formal language; the clash between tradition and modernity; the chasm between ordinary lives and official history; defeat and exile; and patriarchy and gender issues. Works by Haykal, Mahfouz, Jabra, Salih, Khoury, al-Shaykh, and al-Ghitani. Some attention to films and plays.

*Litr 440a/Engl 422a, James Joyce's Ulysses.
Pericles Lewis.
For description see under English Language & Literature.
Marc Chagall: Life and Art. Benjamin Harshav. 
W 1:30-3:20 Hu (0)
The life of Marc Chagall (1887–1985) examined in the context of twentieth-century artistic and political movements. His contributions to revolutionary culture in Russia and the Yiddish avant-garde theater; his Christian iconography and Bible illustrations; his relations with modernist trends of his time. Special attention to the modes of analysis of modern art and the languages of art between surrealism and fictional mythology.

M 9:25-11:15 Hu (0)
Literary plots involving social and erotic progress examined in works from the seventeenth century to the present. Topics include social ambition or decline, the marriage plot and its alternatives, the narrative role of family or social outsiders, and sexuality and narrative form.

Narratives of the Hero from Ireland to China. David Gabriel. 
T 9:25-11:15 Hu (0)
Study of the hero from his appearance at the dawn of literary culture to his present incarnation as the superhero of popular media. Emphasis on the medieval and classical periods. Ways in which heroic narratives relate to each other. Texts include literature from the Germanic, Celtic, Greek, Latin, Indian, and Chinese traditions.

Reconsidering the Categories of East and West. David Gabriel. 
T 9:25-11:15 Hu (0)
Accepted notions of the Western and Eastern worlds examined in literature, film, and other cultural products from regions and peoples who defy or disturb traditional classifications. Examples include indigenous peoples of North America, Central Asia in the post-Soviet world, and countries that occupy a liminal space between East and West, such as Albania and Turkey. Strategies for understanding the culturally unfamiliar without appropriating or negatively affecting it.

Topics in Literary Theory: Psychoanalysis in Literature and Film. Moira Fradinger. 
W 7-8:30 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 2009 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.

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 undergraduate studies. Enrollment limited to Literature majors.
SENIOR COURSES

*ltr 491a or b, The Senior Essay. Consult the director of undergraduate studies.

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 11 (for ltr 491a) or January 22 (for ltr 491b), a three-page prospectus signed by the student’s adviser; (2) by October 23 (for ltr 491a) or March 1 (for ltr 491b), a full rough draft (not notes); (3) by December 4 (for ltr 491a) or April 16 (for ltr 491b), the completed essay. The minimum length for an essay is twenty-five pages. Students are urged to arrange a topic and adviser early in the term before the term in which the essay is to be written.

*ltr 492a or b and 493a or b, The Yearlong Senior Essay. Consult the director of undergraduate studies.

An extended research project. Students must petition the curriculum committee for permission to enroll by the last day of classes in the term preceding enrollment in ltr 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 11, a three-page prospectus signed by the student’s adviser; (2) by January 22, a full rough draft (not notes); (3) by April 16, the completed essay. December graduates should consult the director of undergraduate 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: Roger Howe, 220B LOM, 432-4686, howe@math.yale.edu

FACULTY OF THE DEPARTMENT OF MATHEMATICS

Professors
Donald Brown, Andrew Casson, Ronald Coifman, Igor Frenkel, Howard Garland, Roger Howe, Peter Jones, Mikhail Kapranov, Douglas Lind (Visiting), Benoît Mandelbrot (Emeritus), Gregory Margulis, Yair Minsky, Vincent Moncrief, Steven Orszag, David Pollard, Vladimir Rokhlin, Peter Schültheiss (Emeritus), Katepalli Sreenivasan, Gregg Zuckerman

Associate Professors
Marcos Jardim (Visiting), Mara Neusel (Visiting)

J. W. Gibbs Assistant Professors
Jayadev Athreya, Ian Biringer, Dennis Borisov, Corina Calinescu, Tullia Dymarz, Matt Feiszli, Marketa Havlickova, Anna Lachowska, Triet Le, Jaejeong Lee, 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_. These ten may include no more than five term courses from other institutions. 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 _225 a_ or _b_. To acquire both depth and breadth in the field, 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. Beginning with the Class of 2012, each major program must include at least two courses selected from the three core areas: real analysis (_MATH 300b_ or _301a_ or higher), algebra (_MATH 350a_ or higher), and complex analysis (_MATH 310a_ or higher). Taking courses from all three core areas is strongly recommended.

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 _431b_ 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_, _431b_, 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_, _310a_; _logic and foundations_: _MATH 270a_. Beginning with the Class of 2012, intensive majors must take courses in all three of the core areas: real analysis.
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 II, 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 432 DL. 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., Class of 2011 and earlier — 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., Class of 2011 and earlier — same, with 2 addtl advanced courses in physical sciences approved by DUS; B.A. and B.S., Class of 2012 and later — same as for Class of 2011, with 2 courses from core areas of real analysis, algebra, and complex analysis, as specified

**Specific courses required:** Math 230 (counts as 2 courses) or Math 250a; Math 222a or b or 225a or b

**Substitution permitted:** With DUS permission, certain courses in Applied Math, Comp Sci, Engineering & Applied Science, Econ, Operations Research, Physics, Stat

**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; for Class of 2012 and later, courses in all 3 core areas

**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, 303b, 310a, 315b, 320a, 323b

**STATISTICS AND APPLIED MATHEMATICS:** Math 235b, 241a, 242b, 244a, 246a or b, 251b, 260b, 310a, 320b, 400a; Cpsc 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, 360b, 370b, 380a, 381b, 440a

**GEOMETRY AND TOPOLOGY:** Math 228a, 290b, 360b, 430b, 433b, 440a

**LOGIC AND FOUNDATIONS:** Math 270a; Phil 267b, 433b

**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 1, 2009, from 9:30 A.M. to 4 P.M. in 432 DL; in the spring, preregistration is on Monday, January 11, 2010, 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.
**Math 101b, Geometry of Nature.** Michael Frame.

**Th 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 who have not previously taken a high school or college calculus course.*

**Math 112a or b, Calculus of Functions of One Variable I.**

Gregg Zuckerman [F], Douglas Lind [Sp].

**3 HTBA**

For sections see [www.yale.edu/courseinfo](http://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](http://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.**

Math 118a: **MWF 9:25-10:15 QR (32)** Jaejeong Lee  

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 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](http://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.

**Th 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.

**Th 9:10-10:15 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.**

222a: MWF 10.30-11.20, 1 HTBA  QR  (69)  Matt Feiszli
222b-1: MWF 10.30-11.20, 1 HTBA  QR  (69)  Peter Schultheiss
222b-2: TTH 9-10.15, 1 HTBA  QR  (69)  Peter Schultheiss


**math 225a or b, Linear Algebra and Matrix Theory.**

225a: TTh 11.35-12.50; disc. 2 HTBA  QR  (24)  Marketa Havlickova
225b: TTh 9-10.15; disc. 2 HTBA  QR  (22)  Howard Garland

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]**

*math 230, Vector Calculus and Linear Algebra.

Jayadev Athreya.

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 231b/stat 230b, Introductory Data Analysis.**  Staff.

For description see under Statistics.

**math 241a/stat 241a, Probability Theory.**  Staff.

For description see under Statistics.

**math 242b/stat 242b, Theory of Statistics.**  Staff.

For description see under Statistics.

**math 244a/amth 244a, Discrete Mathematics.**  Staff.

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)  Ronald Coifman
246b: MWF 9.25-10.15  QR  (32)  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 1.2-2.15  QR  (26)
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.** Matt Feiszli.  
**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 270a, SET THEORY.** Mara Neusel.  
**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.** Douglas Lind.  
**TH 11.35-12.50 QR (24)**  
An examination of mathematical patterns repeating on many levels. Mathematical concepts of fractals and chaos, and application of these tools to modeling natural phenomena. **Prerequisites:** MATH 120a or b and 222a or b or equivalent.

**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.  
**TH 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.  
**MWF 11.35-12.25 QR (34)**  
The Lebesgue integral, Fourier series, applications to differential equations. **After MATH 301a or with permission of instructor.**

**MATH 310a, INTRODUCTION TO COMPLEX ANALYSIS.** Gregory Margulis.  
**TH 11.35-12.50 QR (24)**


MW 2:30-3:45 QR Meets RP (37)


**Math 320aG, Measure Theory and Integration.**

Howard Garland.

Tth 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.

**Math 325bG, Introduction to Functional Analysis.**

Yair Minsky.

MWF 11:35-12:25 QR Meets RP (34)

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 320a.


For description see under Statistics.


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.

[Math 353aG, Introduction to Representation Theory]

**Math 354b, Number Theory.** Dennis Borisov.

Tth 1-2:15 QR (26)

Prime numbers; quadratic reciprocity law, Gauss sums; finite fields, equations over finite fields; zeta-functions. After math 350a.


MW 2:30-3:45 QR (37)

Study of fundamental ideas of Lie groups and Lie algebras such as the exponential map. Connections with geometry and physics. After math 230 or 250a or equivalent. Math 300b or 301a and math 350a recommended.

Math 370b, Fields and Galois Theory. Marketa Havlickova.

Tth 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.


* mw 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. Dennis Borisov.

* 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.

Vincent Moncrief.

* mwf 11.35-12.25 (34)

Newton's equations and the Galilean group; the Euler-Lagrange equations and Noether's theorem; the Kepler problem and rigid body motion; symplectic manifolds and Hamiltonian mechanics. After math 120a or b, and 222a or b or 225a or b, or equivalents.

**math 430b**, Introduction to Algebraic Topology.

Tullia Dymarz.

* mwf 1.30-2.20 QR (36)

The theory of fundamental groups and covering spaces, with particular reference to two-dimensional manifolds. After math 350a, and 301a or 300b, or equivalents.

**[math 435b, Differential Geometry]**

**[math 440a], Introduction to Algebraic Geometry**

**math 450a or b**, Individual Studies. Consult the director of undergraduate studies.

* htra (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: th 2.30-3.45 (69) Staff
  480b-1: th 2.30-3.45 (69) Igor Frenkel
  480b-2: mw 2.30-3.45 (69) 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.

CPSc 365b, Design and Analysis of Algorithms. Daniel Spielman.

CPSc 440b, Numerical Computation. Vladimir Rokhlin.

OPRS 235a/AMTH 235a, Optimization. Eric Denardo.

For description see under Operations Research.

Phil 267b, Mathematical Logic. Sun-Joo Shin.

*Phil 433b, Computability and Logic. Sun-Joo Shin.

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 (Phil 267b), Computability and Logic (Phil 433b), an advanced philosophy course (other than Phil 267b or 433b) with a substantive logical component, and one seminar in either Mathematics or Philosophy, other than Phil 433b, that fulfills the senior requirement (see below). Set Theory (Math 270a) and Mathematical Logic (Phil 267b) 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 2009–2010 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, 267b, 433b, a designated seminar (other than PHIL 433b), and two additional electives.

Majors should consult Roger Howe, 220B LOM, 432-4686, roger.howe@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 267b, 433b

**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 or 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 or 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, Udo Schwarz, Mitchell Smooke (Chair), Forman Williams (Adjunct)
Associate Professors
Jerzy Blawzdziewicz, Corey O’Hern, Ainissa Ramirez, Jan Schroers

Assistant Professors
Aaron Dollar, Eric Dufresne, John Morrell, Nicholas Ouellette, † Hong Tang

Lecturers
Beth Anne Bennett, 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 objectives: 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 objectives, the following fundamental educational goals 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 Engineering Accreditation Commission of ABET, Inc. 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 114a, 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 206La or Lb, or equivalents.

Nineteen term courses beyond the prerequisites are required as follows:

1. Advanced mathematics: ENAS 1943 or b and MATH 2223 or b or 225a or b
2. Mechanical engineering and related: MENG 211a, 280a, 285b, 286Lb, 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 non-ABET 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 114a, 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, 206La 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 non-ABET 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.

**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, 285b, 286Lb, 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 286Lb); 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 101a/ENAS 101a/ENVE 101a/EVST 105a, Energy, Engines, and Environment.** Alessandro Gomez.

**Thh 2.30-3.45, 1 HTBA Sc (27)**

Energy sustainability and global warming; thermodynamic fundamentals; engines (combustion technologies, fossil-fuel pollution, carbon capture and sequestration). Wind, solar, biomass, and other renewable energy sources. Designed for non-science majors and for freshmen and sophomores in science and engineering. **Prerequisite:** a strong background in mathematics and/or science, typically demonstrated by a score of 4 or 5 on Advanced Placement examinations.
meng 185b, Mechanical Design.  Aaron Dollar.

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 213a, Thermodynamics for Mechanical Engineers.
Eric Dufresne.

MW 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. Engineering devices such as power and refrigeration systems and their efficiencies. **Prerequisites:** phys 180a or 200a, and math 115a or b.

meng 280a, Mechanical Engineering I: Strength and Deformation of Mechanical Elements.
Kailasnath Purushothaman.

TR 10.30-11.20; prob sess 1 HTBA QR, Sc Meets RP (23)
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. **Prerequisites:** phys 180a or 200a, and math 115a or b.

Udo Schwarz.

TR 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. **Prerequisites:** math 120a or b or ENAS 151a, and phys 180a, 181b.

meng 286Lb, Solid Mechanics and Materials Science Laboratory.
Jan Schroers.

TR 11.35-12.50 Sc ½ 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.

ceng 315b/env 315b, Transport Phenomena.
Michael Loewenberg.
For description see under Chemical Engineering.

meng 361a, Mechanical Engineering II: Fluid Mechanics.
Mitchell Smooke.

TR 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. **Prerequisites:** ENAS 194a or b or equivalent, and physics at least at the level of phys 150a.
**MENG 363Lb, FLUID MECHANICS AND THERMODYNAMICS**  
Laboratory. Nicholas Ouellette.  
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. **Prerequisites:** MENG 211a and 361a.

**MENG 365b, PROPULSION AND ENERGY CONVERSION.** Staff.  
MWF 11.35-12.25 QR, Sc Meets RP (34)  
Review of thermodynamics and fluid dynamics; discussion of elements of gas dynamics. Air-breathing engines for aircraft propulsion, gas turbines, and different forms of rocket propulsion. Engineering aspects of other forms of energy conversion with applications to one of the following areas: internal combustion engines, fossil-fuel power plants, solar energy. **Prerequisite:** MENG 361a or permission of instructor.

**MENG 383a, MECHANICAL ENGINEERING III: DYNAMICS.**  
Corey O’Hern.  
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. **Prerequisites:** PHYS 180a or 200a, and MATH 120a or b or ENAS 151a.

**MENG 385b, MATERIALS SCIENCE OF MICROELECTROMECHANICAL SYSTEMS (MEMS)**

**MENG 386b, MECHANICAL ENGINEERING IV: FLUID AND THERMAL ENERGY SCIENCE.** Kailasnath Purushothaman.  
MWF 9.25-10.15; prob sess 1 HTBA QR, Sc Meets RP (32)  
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 390b, MECHATRONICS LABORATORY.** John Morrell.  
TH 10.30-11.20, 4 HTBA QR Meets RP (0)  
Hands-on synthesis of control systems, electrical engineering, and mechanical engineering. Review of Laplace transforms, transfer functions, software tools for solving ODEs. Review of electronic components and introduction to electronic instrumentation. Introduction to sensors; mechanical power transmission elements; programming microcontrollers; PID control. **Prerequisites:** ENAS 194a or b or equivalent and ENAS 130b, or permission of instructor.

**MENG 400aG, COMPUTER-AIDED ENGINEERING**

**MENG 402LaG**/EENG 402LaG, NANO AND MICROSYSTEM TECHNOLOGY. Hong Tang.  
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/BENG 457bG, Biomechanics. Staff.
For description see under Biomedical Engineering.

MENG 462bG, 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]

★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 489aG, Mechanical Design: Process and Implementation.
Staff.
mw 1.30-2.20; lab t 1-5 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, Rm. 105, 8 Prospect Pl., 432-3648, ellen.lust-okar@yale.edu; Beatrice Gruendler, 317 HGS, 432-7522, beatrice.gruendler@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF MODERN MIDDLE EAST STUDIES

Professors
Abbas Amanat (History), Gerhard Böwering (Religious Studies), Mine Eder (Visiting), Benjamin Foster (Near Eastern Languages & Civilizations), Steven Fraade (Religious Studies), Frank Griffel (Religious Studies), Beatrice Gruendler (Near Eastern Languages & Civilizations), Dimitri Gutas (Near Eastern Languages & Civilizations), Marcia Inhorn (Anthropology), Lilia Labidi (Visiting), Ivan Marcus (History), Asghar Rastegar (School of Medicine), W. Michael Reisman (Law School), Sallama Shaker (Visiting)

Associate Professors
Ala Aleyes (Comparative Literature), Ellen Lust (Political Science)
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, Judaic Studies, 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, 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 one- or two-term senior essay that involves use of materials in one or more modern Middle Eastern languages. The student selects an adviser from among the faculty with competence in an appropriate language. A prospectus and outline, signed by the 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. Senior essays are graded by the adviser and a second reader. See the course description of the senior essay course (MMES 498a, 499b) for additional information. 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 lang
Senior requirement: Senior essay (MMES 498a, 499b) or addtl sem

FOUNDATIONAL COURSES

Modern Thought

*MMES 232b/*PLSC 429b, Political Islam and North Africa.
Nadia Marzouki.
M 2:30-4:20 So (0)
The relationships between political Islam, nationalism, and democracy in the Maghreb from colonization to the present. The impact of French colonialism on North African precolonial religious and political organization; religion and politics in the aftermath of colonization; North Africa and broader academic debates about Muslim-majority countries; notions of “Orientalism,” “postcolonialism,” and “post-Islamism.”

*MMES 407a/*NELC 407aG, Modern Arab Thought.
Hala Khamis Nassar.
For description see under Near Eastern Languages & Civilizations.

*LITR 435bG/*ENGL 348b, The Arabic Novel in Translation.
Ala Alryyes.
For description see under Literature.


Classical Thought

MMES 102a/HUMS 383a/NELC 102a, Introduction to the Middle East.
Benjamin Foster.
For description see under Near Eastern Languages & Civilizations.

Beatrice Gruendler.
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.

RLST 287bG, Islamic Theology and Philosophy. Frank Griffel.

The Modern Middle East

*MMES 493b/*NELC 493bG/*WGSS 493b, Introduction to Modern Middle Eastern Studies.
Hala Khamis Nassar.
For description see under Near Eastern Languages & Civilizations.
Elective Courses

- **MMES 1034/INTS 425A, Development and Governance in the Middle East and Africa I.** Ellen Lust. For description see under International Studies.

- **MMES 1053/SOCY 372A, Comparative Nationalism in North Africa and the Middle East.** Jonathan Wyrtzen. For description see under Sociology.

- **MMES 111b/ANTH 360b, Representing Iran.** Narges Erami. For description see under Anthropology.

- **MMES 171A/HIST 360A/NELC 402A, The Islamic Near East from Muhammad to the Mongol Invasion.** Adel Allouche. For description see under Near Eastern Languages & Civilizations.

- **MMES 174b/NELC 481b, Introducing Palestine: Literary Survey.** Hala Khamis Nassar. For description see under Near Eastern Languages & Civilizations.

- **MMES 181A/PLSC 380A, Middle East Exceptionalism.** Adria Lawrence. For description see under Political Science.

- **MMES 182A/INTS 350A/PLSC 448A, Contemporary Political Economy of Turkey and the Middle East.** Mine Eder. T 1:30-3:20 So Meets RP (26)

  Current problems and prospects faced by the economies of Turkey and other Middle Eastern countries. Links between state building, economic development, and democratization in the region. Comparative discussion of how the Turkish economy diverges from others in the Middle East.

- **MMES 250b, Religion and the Feminization of Poverty in the Middle East.** Sallama Shaker. 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 311A/WGSS 327A, Constructing the Self: From Autobiography to Facebook.** Geetanjali Singh Chanda. For description see under Women’s, Gender, & Sexuality Studies.

- **HIST 384Jb/NELC 403b, The Middle East between Crusaders and Mongols.** Adel Allouche. For description see under History.

- **HIST 398Jb/NELC 404b, Mamluk Egypt.** Adel Allouche. For description see under History.
hsar 381a, Introduction to Islamic Art.  Kishwar Rizvi.

rlst 100b, Introduction to World Religions.  Gerhard Böwering.

rlst 170a, Introduction to Islam.  Gerhard Böwering.

THE SENIOR ESSAY COURSE

*MMES 498a and 499b, Senior Essay.  Consult the director of undergraduate studies.

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 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 (MMES 499b) 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 modern Middle 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 modern Middle 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, 8 Prospect Pl., room 105, 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 faculty associated with the Modern Middle East Studies program unless, for exceptional reasons, different arrangements for another reader are made in advance with the director of undergraduate studies and the faculty adviser.

LANGUAGE COURSES

arbc 110a, Elementary Modern Standard Arabic I.
For description see under Near Eastern Languages & Civilizations.

arbc 120b, Elementary Modern Standard Arabic II.
For description see under Near Eastern Languages & Civilizations.

arbc 130a, Intermediate Modern Standard Arabic I.
For description see under Near Eastern Languages & Civilizations.

arbc 140b, Intermediate Modern Standard Arabic II.
For description see under Near Eastern Languages & Civilizations.

*arbc 150a, Advanced Modern Standard Arabic I.
Muhammad Aziz.
For description see under Near Eastern Languages & Civilizations.

*arbc 151b, Advanced Modern Standard Arabic II.
Muhammad Aziz.
For description see under Near Eastern Languages & Civilizations.


HEBR 110A, Elementary Modern Hebrew I. For description see under Near Eastern Languages & Civilizations.

HEBR 120B, Elementary Modern Hebrew II. For description see under Near Eastern Languages & Civilizations.

HEBR 130A, Intermediate Modern Hebrew I. For description see under Near Eastern Languages & Civilizations.

HEBR 140B, Intermediate Modern Hebrew II. For description see under Near Eastern Languages & Civilizations.


**HEBR 158B**, Contemporary Israeli Society in Film. Shiri Goren. For description see under Near Eastern Languages & Civilizations.

**PERS 110A**, Elementary Persian I. Fereshteh Amanat-Kowssar. For description see under Near Eastern Languages & Civilizations.

PERS 120B, Elementary Persian II. Fereshteh Amanat-Kowssar. For description see under Near Eastern Languages & Civilizations.


PERS 140B, Intermediate Persian II. Fereshteh Amanat-Kowssar. For description see under Near Eastern Languages & Civilizations.


TKSH 110A, Elementary Modern Turkish I. Staff. For description see under Near Eastern Languages & Civilizations.

TKSH 120B, Elementary Modern Turkish II. Staff. For description see under Near Eastern Languages & Civilizations.

TKSH 130A, Intermediate Turkish I. Staff. For description see under Near Eastern Languages & Civilizations.

TKSH 140B, Intermediate Turkish II. Staff. For description see under Near Eastern Languages & Civilizations.

TKSH 150A, Advanced Turkish. Staff. For description see under Near Eastern Languages & Civilizations.
Molecular Biophysics and Biochemistry

Director of undergraduate studies: Michael Koelle, CE 28A SHM, 737-5808, 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, Álan Garen, Mark Gerstein, Nigel Grindley, Mark Hochstrasser, William Konigsberg, † I. George Miller, † Peter Moore, † Thomas Pollard, Anna Marie Pyle, Lynne Regan, † David Scharz, † Michael Snyder, Dieter Söll, Mark Solomon, Joan Steitz, Thomas Steitz, Scott Strobel, † William Summers, Patrick Sung, Kenneth Williams (Adjunct), † Sandra Wolin

Associate Professors
Enrique de la Cruz, Michael Koelle, Anthony Koleske, Andrew Miranker, Vinzenz Unger

Assistant Professors
Thomas Biederer, Yorgo Modis, A. Elizabeth Rhoades, Hongwei Wang, Yong Xiong

Lecturers
Carol Bascom-Slack, Lori-Ann Boulanger, 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 115a or b); and one year of physics with laboratory (either PHYS 180a, 181b and 165La, 166Lb, or 200a, 201b and 205La 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 E&EB 123Lb). Any of these prerequisites may be satisfied by receiving scores on Advanced Placement tests sufficient to earn acceleration credits in the particular subjects, 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, CPS 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, CPS 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 322a, and 335b). 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 b or 225b).

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Junior</th>
<th>Senior</th>
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<tr>
<td>MCDB 120a or E&amp;EB 122b</td>
<td>MB&amp;B 300a, 301b</td>
<td>CHEM 328a</td>
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<tr>
<td>CHEM 112a, 113b; 116La, 117Lb</td>
<td>One quantitative reasoning elective</td>
<td>MB&amp;B 302b</td>
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<td>And, for B.A. major:</td>
<td>PHYS 180a, 181b; 164La, 166Lb</td>
<td>One MB&amp;B elective</td>
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<td>MCDB 121Lb or E&amp;EB 123Lb</td>
<td>And, for B.A. major:</td>
<td>MB&amp;B 490b</td>
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<td>And, for B.S. major:</td>
<td>MB&amp;B 351La</td>
<td>And, for B.S. major:</td>
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<tr>
<td>Sophomore</td>
<td>And, for B.S. major:</td>
<td>One biology elective</td>
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<tr>
<td>CHEM 220a, 221b; 222La, 223Lb</td>
<td>MB&amp;B 360Lb</td>
<td>One science elective</td>
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<tr>
<td>MATH 112a, 113b</td>
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<td>A second MB&amp;B elective</td>
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**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 331b, 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 370a and 371b). 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 2010:**
- D. Söll, 238 BASS (432-6200)
- Y. Modis, 430 BASS (432-4330)

**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)
- S. Strobel, 309A JWG (432-9772)

**Class of 2013:**
- E. de la Cruz, 423C JWG (432-5424)

**Director of B.S./M.S. degree program:**
- M. Koelle, CE 28A SHM (737-5808)

**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 225b, 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; **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, Andrew Miranker, Dieter Söll [Sp].

For description see under Biology.

**MB&B 110a, Current Issues in Biological Science.**

William Summers.

**MB&B 115a, Topics in Forensic Science.**

Lori-Ann Boulanger.
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, Lori-Ann Boulanger. Mwf 10:30-11:20, 1 HTBA Sc (33)

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 251Lb/Mcdb 301Lb, Laboratory for Biochemistry. William Konigsberg, Aruna Pawashe.

Lab and disc. Tth 1-5 Sc ½ C Credit (0)

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 Sc (24)

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.


Tth 11:35-12:50; disc. 1 HTBA Sc (24)

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, Enrique de la Cruz.

Tth 1-2:15 Sc (26)

An introduction to the theoretical basis of biophysical concepts and approaches with selected examples and applications. Prerequisites: MB&B 300a and chem 328a.


Tth 1-5 Sc (0)

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 404aG, Molecular Genetics of Prokaryotes. Nigel Grindley and staff.
MW 11.35–12.50 Sc Meets RP (14)
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, Anna Marie Pyle, 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.

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.

MW 11.35–12.50 Sc (0)
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 200b or equivalent.

MWF 10.30–11.20 QR, Sc (0)
Applied mathematical methods relevant to analysis and interpretation of biophysical and biochemical data. Statistics and error analysis, differential equations, linear algebra, and Fourier transforms. Analysis of real data from research groups in MB&B. Prerequisites: MATH 120a or b and mb&b 300a or equivalents, or with permission of instructors.

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, Nigel Grindley, Mark Hochstrasser, Dieter Söll.
Th 7–8.50 p.m. Sc Meets RP (0)
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.
MB&B 449a, Medical Impact of Basic Science. Joan Steitz,
Mark Hochstrasser, Lynne Regan, David Schatz.
MW 1-2.15 Sc (0)
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 452b/MCDB 452b, Bioinformatics: Practical Application of Simulation and Data Mining. Mark Gerstein.
MW 1-2.15 Sc (0)
Techniques in data mining and simulation applied to bioinformatics, the computational analysis of gene sequences, macromolecular structures, and functional genomics data on a large scale. Sequence alignment, comparative genomics and phylogenetics, biological databases, geometric analysis of protein structure, molecular-dynamics simulation, biological networks, microarray normalization, and machine-learning approaches to data integration. Prerequisites: MB&B 301b and MATH 115a or b, or permission of instructor.

*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. Andrew Miranker,
Hongwei Wang.
HTBA (0)
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. 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

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 McCrealess, Robert Mealy (Adjunct), Leon Plantinga (Emeritus), Ellen Rosand, Michael Veal, Craig Wright

Associate Professors
Kathryn Alexander (Adjunct), Shinik Hahm (Adjunct), Ian Quinn, Toshiyaki Shimada (Adjunct), Sarah Weiss

Assistant Professors
Seth Brodsky, Brian Kane, Michael Klingbeil, Gundula Kreuer, Eve Poudrier

Lecturers

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 352b. 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. For the Class of 2012 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

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 490a, 491b in 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 or composition 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 designated senior 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, 352b, 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 MUS 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, 352b, 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 490a, 491b)

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**MUSI 004a, Exploring the Nature of Genius.** Craig Wright.

*MW 11.35-12.50 WR, Hu (34)*  
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.*

**MUSI 007a, Noise.** Brian Kane.

*MW 1-2.15 WR, Hu (0)*  
Fr sem  
The topic of noise as an introduction to the problems of sound and signification. The surplus of information in white noise, and the meaning perceived when noise is filtered. Contexts in which noise has become filtered for political and aesthetic ends. Topics include sound poetry, literature, electronic music, noise pollution, and consumption. *Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.*

**MUSI 008b, Music Cultures of the World.** Michael Veal.

*MW 11.35-12.50 Hu (0)*  
Fr sem
An introduction to selected music cultures of the world, including those of South Asia (Hindustani and Carnatic classical music), Indonesia (Balinese, Javanese, and Sundanese gamelan), West Africa (traditional musics of Ghana, Mali, and Guinea), and the Caribbean (Cuba and Jamaica). Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*musi 021b, Music and Human Evolution. Ian Quinn.

TuTh 2.30-3.45 Hu (0) Fr sem
The question of whether the human capacity for music is an evolutionary adaptation or a form of nonadaptive pleasure-seeking built on faculties adapted for other purposes. Evaluation of evidence and arguments pertaining to this question from evolutionary psychology; the relationship between the scientific study of the origins of music and musical aesthetics. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*musi 023a, Music and Melancholy. Seth Brodsky.

TuTh 1-2.15 WR, Hu Meets RP (0) Fr sem
Melancholy and its influence on Western music from the Middle Ages through the present day. Melancholy and artistic genius; melancholy, idleness, and immobility; and melancholy as sadness and fear "without cause." How music functions as melancholy's private symptom (the composer as melancholic, music as melancholy's product, expression, or depiction); melancholy's public agent (melancholy as trend, style, public persona, cultural capital); and melancholy's cure or coping mechanism (concepts of musical genius and the restorative powers of the creative act). Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

LEVEL I

musi 10a or b, Introduction to the Elements of Music.

Brian Kane and staff.

TuThba For sections see www.yale.edu/courseinfo Hu (50)
The fundamentals of musical language (notation, rhythm, scales, keys, melodies, and chords), including writing, analysis, singing, and dictation. Intended for students with no music reading ability.

musi 12a, Listening to Music.

TuTh 10.30-11.20, 1 TuThba 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 130a, Introduction to the History of Western Music:

900 to 1800. Seth Brodsky.

MWF 2.30-3.45 Hu (37)
An introduction to the principal styles of Western art music through an examination of works by outstanding composers, beginning with Gregorian chant and ending with the music of Haydn and Mozart. No prerequisites.

musi 131b, Introduction to the History of Western Music:

1800 to the Present. Gundula Kreuzer.

MWF 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 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, August 31, or 6 p.m. on Tuesday, September 1, 2009, in 119 WLH, or 6:30 p.m. on Monday, January 11, 2010, 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 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, August 31, or 6 p.m. on Tuesday, September 1, 2009, in 119 WLH, or 6:30 p.m. on Monday, January 11, 2010, 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 Hu Meets RP (0)
Continuation of MUSI 210A or B. 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, August 31, or 6 p.m. on Tuesday, September 1, 2009, in 119 WLH, or 6:30 p.m. on Monday, January 11, 2010, in 119 WLH.

* MUSI 214A, Introduction to Musical Theater Songwriting.
Andrew Gerle.
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. Prerequisite: MUSI 205A or B. Enrollment limited to 12.

* MUSI 218A or B, Elementary Musicianship I. Sarita Kwok.
MW or TTh 10:30-11:20, 1 Htba ½ C Credit Meets RP (50)
Exercises in melodic and harmonic dictation, sight-singing, keyboard harmony, and aural analysis. Recommended to be taken concurrently with MUSI 210A or B or 211A or B.

* MUSI 219A or B, Elementary Musicianship II. Sarita Kwok.
MW or TTh 9:25-10:15, 1 Htba ½ C Credit Meets RP (50)
Continuation of MUSI 218A or B. Prerequisite: MUSI 218A or B. Recommended to be taken concurrently with MUSI 210A or B or 211A or B.

Wendy Sharp.
3 Htba ½ C Credit per term Meets RP (0)
Coached chamber music emphasizing the development of ensemble skills, familiarization with the repertory, and musical analysis through performance. **Admission by audition only. Credit only on completion of both terms. May be repeated for course credit, but not for distributional credit.** For audition information see www.yale.edu/courseinfo.

**Musi 222a, The Performance of Vocal Music.** Richard Lalli.

T 6-8 p.m. Hu Meets RP (o)

A course for singers and pianists that emphasizes the analysis and musical preparation of classical solo song and operatic repertoire. Examination of structure (poetic, harmonic, motivic), discussion of style, exploration of vocal techniques, and introduction to the International Phonetic Alphabet. Students are strongly encouraged to supplement the course with individual voice instruction. **Admission by audition only. May be repeated for course credit, but not for distributional credit.** For audition information see www.yale.edu/courseinfo.

**Musi 223a, The Performance of Early Music.**

Judith Malafronte.

T 3:30-5:20 Hu Meets RP (o)

A study of musical styles of the twelfth through early eighteenth centuries, including examination of manuscripts, musicological research, transcription, score preparation, and performance. Students in this class form the nucleus of the Yale Collegium Musicum and participate in a concert series at the Beinecke Library. **Admission by audition only. May be repeated for course credit, but not for distributional credit.** For audition information see www.yale.edu/courseinfo.

**Musi 226a or b, Continuo Realization and Performance.**

Ilya Poletaev.

3 HTBA For sections see www.yale.edu/courseinfo Hu Meets RP (o)

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 (o)

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/#Thst 224a, Musical Theater Performance I.**

Annette Jolles.

F 1:30-3:20 Hu Meets RP (o)

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 229b/THST 226b, Musical Theater Performance II.
  Annette Jolles.
  F 1:30-2:20 Meets RP (0)
Study of basic elements of the collaborative process and their effect on musical theater performance. Topics include choreography, music direction, and originating new works. Analysis of texts, scripts, and taped or filmed performances; applications in students' own performance. 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 246a/THST 236a, American Musical Theater History.
  Daniel Egan.
  M 1:30-2:20 WR, Hu Meets RP (0)
Critical examination of relevance and context in the history of the American musical theater. Historical survey, including nonmusical trends, combined with text and musical analysis.

*MUSI 269a/FREN 301a/HUMS 269a/LITR 171a, The Anglo-Norman World after 1066. R. Howard Bloch, Margot Fassler.
For description see under Humanities.

MUSI 275a, Forms of Pop/Rock Music. Daniel Harrison, Jason Summach.
  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.

Level III

All courses numbered 300 and above require the ability to read music.

*MUSI 301b, Modal Counterpoint: Analysis and Composition.
  Patrick McCreless.
  THH 9:10-10:15, 1 HTBA Meets RP (0)
Studies in the theory, analysis, and composition of sixteenth-century modal polyphony. Prerequisite: MUSI 211a or b. Enrollment limited to 18. Preference to Music majors according to class.

*MUSI 303b, Classical Style: Analysis and Model Composition.
  Michael Friedmann.
  THH 1-2:15 Hu (0)
Intermediate studies in the theory, analysis, and composition of the music of the late eighteenth and nineteenth centuries. Prerequisite: MUSI 211a or b. Enrollment limited to 14. Preference to Music majors according to class. (Formerly MUSI 311b)

*MUSI 306a, World Music Theories: Practice and Aesthetics.
  Sarah Weiss.
  THH 1-2:15 Hu (0)
Survey of the musical processes of various mode-based musical systems, selected from the Indian raga, Arabic *maqam*, Irish tune-family, Javanese *patet*, Persian *dastgah*, and Vietnamese *Dieu*. Survey of the musical cultures; notation and analysis of the music; related aesthetics systems. Prerequisite: MUSI 211a or b. Enrollment limited to 18. Preference to Music majors according to class. (Formerly MUSI 376a)

**MUSI 309a, Musical Spaces, Sets, and Geometries.** Richard Cohn. 
MW 9-10.15 (32)
Conception and representation of pitch and rhythm systems using set, group, and graph theory. Focus on European concert music of the late nineteenth and twentieth centuries. Prerequisite: MUSI 211a or b. Enrollment limited to 18. Preference to Music majors according to class.

* MUSI 312a, Composition Seminar I. Kathryn Alexander, Michael Klingbeil. 
Th 2.30-4.20, 1 HTBA (0)
Intermediate project-oriented studies in music composition, either acoustic or technological. Prerequisite: MUSI 211a or b or < 399a 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 9, 2009.

* MUSI 313b, Composition Seminar II. Kathryn Alexander, Michael Klingbeil. 
Th 2.30-4.20, 1 HTBA (0)
Continuation of MUSI 312a.

* MUSI 314b, Composition of Musical Theater. Joshua Rosenblum. 
F 1.30-3.20 Meets RP (0)
Intermediate and advanced project-oriented studies in composition of musical theater. Prerequisite: MUSI 210a or b. May be repeated for credit. Enrollment limited to 12.

**MUSI 318b, Advanced Musicianship I.** Richard Lalli. 
MW 1-2.15 (36)
Training in advanced aural perception, sight-singing, and keyboard skills.

* MUSI 320b, Instrumentation and Orchestration. Michael Klingbeil. 
W 2.30-4.20 (37)
Thorough study of instruments; instrumental demonstrations and orchestrating for small instrumental combinations. Stylistic analysis with respect to the integration of structure and orchestration.

* MUSI 322b/*THST 318b, Analyzing, Directing, and Performing Early Opera. Staff. 
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.
**MUSI 323a or b, Introduction to Conducting.** Shinik Hahm.

TTh 11:35-12:50 (24)

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.** Toshiyuki Shimada.

MW 11:35-12:50 (34)

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 2:30-4:20, 1 HTBA Hu (27)

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 25.

**MUSI 334b, Analysis and Performance of Early Music.** Judith Malanfronte.

T 3:30-5:20 Hu (0)

Continuation of MUSI 223a. Analytical techniques applied to interpretation and performance of early music. Emphasis on the improvement of musical and sight-reading skills. Students in this class form the nucleus of the Yale Collegium Musicum and participate in a concert series at the Beinecke Library. Prerequisite: MUSI 223a or equivalent. Admission by audition only. May be repeated for course credit, but not for distributional credit. For audition information see www.yale.edu/courseinfo.

**MUSI 337b, Stephen Sondheim and the American Musical Theater Tradition.** Daniel Egan.

W 2:30-4:20 Hu Meets RP (0)

The musical theater of Stephen Sondheim, both as a popular phenomenon of the contemporary Broadway stage and in relation to models and forms employed in the past.

**MUSI 343a/CGSC 343a, Music Cognition.** Ian Quinn.

MW 1-2:15, 1 HTBA So (36)

A survey of historical and current approaches to questions about the perception and cognition of music. Topics include psychoacoustics; the cognitive neuroscience of music; relationships between music and language; the nature of musical knowledge; and debates about aesthetics, evolutionary psychology, and musical universals. Prerequisite: MUSI 110a or b or familiarity with music notation.

**MUSI 346a, Javanese Gamelan: Analysis and Performance.** Sarah Weiss.

M 2:30-4:20, 1 HTBA WR, Hu (0)

Javanese musical genres and performance styles from the eighteenth century to the twenty-first. Performance on multiple instruments; study of theoretical, aesthetic, and analytical discourses about gamelan and other Indonesian performance genres. Students in this class form the nucleus of the Yale Javanese Gamelan Ensemble. No previous gamelan experience required.

**MUSI 347b, Improvisation: Analysis and Performance.** Brian Kane.

MW 11:35-12:50 (0)
The relationship between composition and improvisation viewed from critical and performative perspectives. Study of two twentieth-century schools of composition. A public concert features performances of the music studied and new works by the course participants.

[**Musi 30b, History of Western Music: Middle Ages and Renaissance**]

**Musi 31a, History of Western Music: Baroque and Classical.**
James Hepokoski.

**TTh 11.35-12.50, 1 HTBA Hu (24)**
A detailed investigation of the history of musical style from 1600 to 1800. Preference to Music majors according to class.

**Musi 32b, History of Western Music: The Nineteenth and Twentieth Centuries.**
James Hepokoski.

**TTh 11.35-12.50, 1 HTBA Hu (24)**
A detailed investigation of the history of musical style from 1800 to the present. Preference to Music majors according to class.

**Musi 33b/AFST 33b, Topics in World Music.**
Sarah Weiss.

**MW 2.30-3.45, 1 HTBA 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 34a, Klezmer Music.**
Craig Harwood.

**W 9.25-11.15 Hu (0)**
An overview of klezmer music, history, and culture. Topics include the roots of klezmer, the lifestyle of klezmer musicians, early klezmer instrumentation, the first klezmer recordings, Russian klezmer ensembles during the Soviet period, Eastern European wedding rituals, klezmer in America, the klezmer revival, and issues of ethnicity and identity related to klezmer music and culture.

**Musi 35b/SAST 259b, Indian Music Theory and Practice.**
Priya Kanungo.
For description see under South Asian Studies.

**Musi 36b, Composition and Performance of Music, Multimedia Art, and Technology.**
Juraj Kojis.

**W 2.30-4.20, 1 HTBA (0)**
A practical study of software and hardware applications in music and multimedia art. Topics include digital synthesis and sampling, patch design, digital audio effects, digital recording and mixing, digital audio workstations, MIDI controllers, image editing, animation, video production, media encoding, and content delivery. Prerequisite: Musi 325a. Enrollment limited to 20.

**Level IV**

**Musi 41a, Composition Seminar III.**
Kathryn Alexander, Michael Klingbeil.

**Th 2.30-4.20, 1 HTBA (0)**
Advanced project-oriented studies in music composition, either acoustic or technological. Prerequisite: Musi 31a and 31b, or 32a. 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 312a, 313b, 325a, 412a, or 413b to the Department of Music by September 9, 2009.

*MUSI 413b, Composition Seminar IV. Kathryn Alexander, Michael Klingbeil.
  TH 2:30-4:20, 1 HTBA (0)
Continuation of MUSI 412a.

*MUSI 433a/HUMS 231a, Music in European Thought: Three Moments in the Modern Era. Leon Plantinga.
  For description see under Humanities.

  TH 1-2:15 Meets RP (0) Senior sem
A study of selected chamber works by Beethoven, coupling analytical research with practical performance issues. Advanced violinists, violists, cellists, oboists, clarinetists, bassoonists, hornists, vocalists, and pianists admitted by audition.

*MUSI 441a, Handel in Italy. Ellen Rosand.
  W 9:25-11:15 Hu Meets RP (0) Senior sem
Handel’s Italian works approached from the perspectives of biography, patronage, compositional process, and performance practice. Enrollment limited to senior Music majors.

*MUSI 444b, Composing, 1978 to the Present. Seth Brodsky.
  TH 9:25-11:15 Hu (0)
Transformations in musical composition and the role of the composer during the past several decades. Musical works situated against a backdrop of current events, both in popular culture and in the world of composition. Readings in cultural and aesthetic theory, as well as responses from critics, scholars, and composers. Works by Boulez, Berio, Ligeti, and others.

  T 1:30-3:20 Hu (0)
The Schenkerian approach to the analysis of voice-leading structures in tonal music. A practical investigation of concepts and tools applied to works from the Western classical canon, from small-scale structures to entire pieces or movements. Further applications to noncanonical repertoires such as early music and popular music; the interaction of analysis, listening, and performance. Enrollment limited to Music majors.

  M 9:25-11:15 (0) Senior sem
An examination of the works of Shostakovich, including analytical studies and consideration of cultural background, with attention to the composer’s position in twentieth-century music.

*MUSI 484a, The Operas of Verdi. Gundula Kreuzer.
  W 2:30-4:20 Hu (37) Senior sem
An investigation of the operas of Giuseppe Verdi and a review of recent scholarly approaches to musical theater. Selected operas from Nabucco to Otello from historical, historiographical, and critical perspectives, approaching Verdi as both a repertory staple and a key innovator in opera. (Formerly MUSI 335b)
**MUSI 486a**, *The Art of Musical Notation.* Juraj Kojs.
W 9:25-11:15 Hu (0)
Close analysis of historical notational systems, including ancient, medieval, common practice period, and twentieth-century graphic notations. Students use analog and digital technologies to develop unique systems for representing music. *Preference to majors in Music and in Art.*

MW 4-5:15 Hu (0) Senior sem
Advanced study of the traditional and contemporary music of sub-Saharan Africa. Focus on selected musics and music cultures of Guinea, Mali, the Gambia, Senegal, Ghana, Nigeria, Zimbabwe, and South Africa.

**Pertinent Course in Another Program**

**THST 414a or b**, *Writing for Musical Theater and Opera.*
Rachel Sheinkin [F], Michael Korie [Sp].

**Individual Study Courses**

**MUSI 471a and 472b**, *Individual Study.* Consult the director of undergraduate studies.

HTBA (0)
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 490a and 491b**, *Senior Essay for Intensive Majors in the History, Theory, or Composition of Music.* Consult the director of undergraduate studies.

HTBA (0)
Preparation of an original composition or essay under the direction of a faculty adviser. Music majors enroll for two terms; students in the music track of the Computing and the Arts major elect either term. 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.

HTBA (0)
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 210a or b, as determined by the music theory placement test.

Students register for the section specific to their instrument: see www.yale.edu/courseinfo for section information.

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 (0)
  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 (0)
  Continuation of MUSI 361a or b. Prerequisite: MUSI 361a or b.

* MUSI 461a or b, Performance: Fourth Term. Staff.
  1 HTBA (0)
  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: Beatrice Gruendler, 317 HGS, 432-7522, beatrice.gruendler@yale.edu

FACULTY OF THE DEPARTMENT OF NEAR EASTERN LANGUAGES AND CIVILIZATIONS

PROFESSORS
  John Darnell, Hans-Werner Fischer-Elfert (Visiting), 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, Karen Foster, Kathryn Slanski

SENIOR LECTOR II
  Ayala Dvoretzky
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, 108b, and 109a 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.

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.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites:** Arabic and Islamic studies—ARBC 120b; All other areas—none

**Number of courses:** 12 term courses (incl senior essay)

**Distribution of courses:** 2 years of a Near Eastern lang; 3 courses in Near Eastern hist and civ, 1 in ancient and 1 in Islamic Near East; area of concentration as specified

**Specific course required:** Arabic and Islamic studies—NELC 490a or 491b

**Senior requirement:** Senior essay using materials in 1 or more Near Eastern langs (in NELC 492a and/or 493b or in dept sem)

**NEAR EASTERN HISTORY AND CIVILIZATIONS**

**Introductory and Survey Courses**

[NELC 002a/HUMS 002a/LITR 002a/MMES 002a, Classical Arabic Literature in Translation]

NELC 100a/ANTH 150a/ARGC 100a/HUMS 376a, The Genesis and Collapse of Old World Civilizations. Harvey Weiss. For description see under Humanities.

NELC 101b/HUMS 377b, Origins of Western Civilization: The Near East from Alexander to Muhammad. Benjamin Foster. For description see under Humanities.
nelc 102a/hums 383a/mmes 102a, Introduction to the Middle East.
Benjamin Foster.
MW 9-10.15; dis. 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 189b/G/anth 363b/G/arcg 363b/G, Archaeologies of Empire.
Harvey Weiss.
Th 2.30-4.20 Hu, So (0)
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

Karen Foster.
For description see under History of Art.

nelc 107a/arcg 238b/hsar 238b, Buried Cities: Thera, Pompeii, and Herculaneum.
Karen Foster.
For description see under History of Art.

[nelc 112b/G/arcg 222b/rlst 141b, Egyptian Religion through the Ages]
[nelc 11b/G, The Bible in Its Ancient Near Eastern Setting]
nelc 121a/hums 384a, The Hero in the Ancient Near East.
Kathryn Slanski.
MW 10.30-11.20, I HTBA Hu (0)
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 156a/G/hums 420a/litr 178a/mmes 201a, Classics: The Arabic-Islamic World.
Beatrice Greendler.
Th 1-2.15 Hu (26) Tr
Survey of the literary tradition of the Arabic-Islamic world (West Asia, North Africa, and Muslim Spain), a textual conversation among diverse authors in late antiquity. Prose and poetry from the Qur’an to the Arabian Nights; attention to the interdependence of the works and their cultural setting, the agendas authors pursued, and the characters they portrayed.

*nelc 188a/G/anth 473a/G/arcg 473a/G/evst 473a, Civilizations and Collapse.
Harvey Weiss.
For description see under Anthropology.

*nelc 371a/G/hshm 461a, Ancient Egyptian Medicine.
Hans-Werner Fischer-Elfert.
M 3.30-5.20 Hu (0)
Development of medical thought, disease theory, and surgical technique in ancient Egypt from early pharaonic times to the Greco-Roman period. Readings in translation of primary and secondary sources.
*NELC 372b, MAGIC IN ANCIENT EGYPT.  
Hans-Werner Fischer-Elfert.  
M 3.30-4.20 Hu (0)

Examination of magical practice in ancient Egypt, including definitions of magic, magical techniques, and applications of magic.

*NELC 380b/HIST 211Jb/RLST 420b, THE MAKING OF MONASTICISM.  
Bentley Layton.  
For description see under Religious Studies.

NELC 402a/HIST 360a/MMES 171a, THE ISLAMIC NEAR EAST FROM MUHAMMAD TO THE MONGOL INVASION.  
Adel Allouche.  
TTh 11.35-12.50 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 Umayyads 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.

*NELC 404b/HIST 398Jb, MAMLUK EGYPT.  
Adel Allouche.  
For description see under History.

MODERN

[NELC 151b/MMES 151b, DRAMA AND THEATER IN THE ARAB WORLD]

[NELC 152a/MMES 152a, GENDER AND NATIONALISM IN ARAB WOMEN’S WRITING]

*NELC 154b, ISRAELI IDENTITY AND CULTURE: 1948 TO THE PRESENT.  
Shiri Goren.  
TTh 11.35-12.50 Hu (0)

Introduction to contemporary culture and representations of Israeli society. Themes of national and personal identity formation, gender, Zionism and post-Zionism, the writings of women, Israeli-Palestinian relations, Russian immigrants, and Jews of North African origin.

*NELC 407a/MMES 407a, MODERN ARAB THOUGHT.  
Hala Khamis Nassar.  
T 3.30-4.20 Hu (0)

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.

*NELC 481b/MMES 174b, INTRODUCING PALESTINE: LITERARY SURVEY.  
Hala Khamis Nassar.  
T 3.30-4.20 Hu (0) Tr

A survey of genres in Palestinian literature. Themes include resistance, occupation, exile, diaspora, gender and sexuality, and authoritarian and patriarchal relations. Readings in translation.
LANGUAGES AND LITERATURES OF THE ANCIENT NEAR EAST

Akkadian

AKKD 110a, Elementary Akkadian I. Benjamin Foster.
  Th 9-10.15 L1 Meets RP (22)
  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. Benjamin Foster.
  Th 9-10.15 L2 Meets RP (22)
  Continuation of AKKD 110a. Prerequisite: AKKD 110a. (Formerly the second term of AKKD 101)

[AKKD 130bG, Intermediate Akkadian I]

Egyptian

EGYP 110a, Introduction to Classical Hieroglyphic Egyptian I. Julia Hsieh.
  Th 9-10.15, 1 HTBA L1 Meets RP (0)
  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. Kevin Wilkinson.
  Wf 11.35-12.50 L1 Meets RP (14)
  The native Egyptian language in the Roman and Byzantine periods. Thorough grounding in grammar and vocabulary of the Sahidic dialect as a basis for reading biblical, monastic, and Gnostic texts. Credit only on completion of EGYP 127b. (Formerly the first term of EGYP 110)

EGYP 120b, Introduction to Classical Hieroglyphic Egyptian II. Julia Hsieh.
  Th 9-10.15, 1 HTBA L2 Meets RP (0)
  Continuation of EGYP 110a. Prerequisite: EGYP 110a. (Formerly the second term of EGYP 101)

EGYP 127b, Elementary Biblical Coptic II. Kevin Wilkinson.
  Mf 11.35-12.50 L2 Meets RP (34)
  Continuation of EGYP 117a. Prerequisite: EGYP 117a. (Formerly the second term of EGYP 110)

[EGYP 131aG, Intermediate Egyptian I: Literary Texts]

  Mw 9-10.15 L3 (32)
  Readings in Gnostic and Valentinian literature from Nag Hammadi, in several dialects of Coptic. Prerequisite: EGYP 127b or equivalent.

[EGYP 141bG, Intermediate Egyptian II: Historical Texts]

Syriac

Students wishing to study Syriac should consult the director of undergraduate studies.
HEBREW LANGUAGE AND LITERATURE

HEBR 110a, Elementary Modern Hebrew I.

L1 1 1  C Credits Meets RP (61)

110a-1: MTWThF 1:30-2:20 Orna Goldman
110a-2: MTWThF 9:25-10:15 Orna Goldman

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 120b, Elementary Modern Hebrew II.

L2 1 1  C Credits Meets RP (61)

120b-1: MTWThF 1:30-2:20 Ayala Dvoretzky
120b-2: MTWThF 9:25-10:15 Orna Goldman

Continuation of HEBR 110a. Prerequisite: HEBR 110a or equivalent. (Formerly the second term of HEBR 101)

HEBR 130a, Intermediate Modern Hebrew I.

L3  Meets RP (61)

130a-1: MW 11:35-12:50; practice 1 HTBA Ayala Dvoretzky
130a-2: TTh 2:30-3:45; practice 1 HTBA Orna Goldman

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, Intermediate Modern Hebrew II.

L4  Meets RP (61)

140b-1: MW 11:35-12:50; practice 1 HTBA Ayala Dvoretzky
140b-2: TTh 4:5-5:15; practice 1 HTBA Shiri Goren

Continuation of HEBR 130a. Prerequisite: HEBR 130a or equivalent. (Formerly the second term of HEBR 102)

[HEBR 150b, Advanced Modern Hebrew: Israeli Society]

*HEBR 151a, Introduction to Modern Israeli Literature.

Ayala Dvoretzky.

MW 1-2:15 L5 (0)

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 152b, Reading Academic Texts in Modern Hebrew.

Orna Goldman.

TTh 1-2:15 L5 Meets RP (26)

Reading of academic texts in modern Hebrew, for students with a strong background in Hebrew. Discussion of grammar and stylistics, with special concentration on the development of accuracy and fluency. Prerequisite: HEBR 150b or permission of instructor. Conducted in Hebrew. (Formerly HEBR 109b)

*HEBR 158b, Contemporary Israeli Society in Film.

Shiri Goren.

TTh 2:30-3:45 L5, Hu Meets RP (0)
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 (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.

**Biblical Hebrew**

[**hebr 117a, Elementary Biblical Hebrew I**]

[**hebr 127b, Elementary Biblical Hebrew II**]

**HEBR 137a, Intermediate Biblical Hebrew I.** Joshua Burns.

**MW 9-10.15 L3 Meets RP** (32)

Review and continuation of grammatical study leading to a deeper comprehension of biblical Hebrew style. Focus on extended reading of biblical narrative, poetry, prophecy, and Wisdom texts. Prerequisite: **hebr 127b or equivalent.** (Formerly the first term of **hebr 112**)

**HEBR 147b, Intermediate Biblical Hebrew II.** Joshua Burns.

**MW 9-10.15 L4 Meets RP** (32)

Continuation of **hebr 137a.** **Prerequisite: hebr 137a or equivalent.** (Formerly the second term of **hebr 112**)

**ARABIC AND ISLAMIC STUDIES**

**Arabic**

[**arbc 107aG, Spoken Standard Arabic I**]

[**arbc 108bG, Spoken Standard Arabic II**]

[**arbc 109a, Spoken Standard Arabic III**]

**ARbc 110aG, Elementary Modern Standard Arabic I.**

**Li 1 1/3 C Credits Meets RP** (61)

**110a–1:** MTWRF 9.25-10.15; **practice 1 HTBA** Ghassan Husseinali

**110a–2:** MTWRF 10.30-11.20; **practice 1 HTBA** Ghassan Husseinali

**110a–3:** MTWRF 11.30-12.25; **practice 1 HTBA** Shady Nasser

**110a–4:** MTWRF 1.30-2.20; **practice 1 HTBA** Muhammad Aziz

**110a–5:** MTWRF 3.30-4.20; **practice 1 HTBA** Sarab al-Ani

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 120b, Elementary Modern Standard Arabic II.
L2 1 C Credits Meets RP (61)
120b–1: MTWThF 9.25-10.15; practice 1 HTBA Ghassan Husseinali
120b–2: MTWThF 10.30-11.20; practice 1 HTBA Ghassan Husseinali
120b–3: MTWThF 11.35-12.25; practice 1 HTBA Shady Nasser
120b–4: MTWThF 1:30-2.20; practice 1 HTBA Sarab al-Ani
120b–5: MTWThF 3.30-4.20; practice 1 HTBA Muhammad Aziz
Continuation of ARBC 110a. Prerequisite: ARBC 110a or equivalent. (Formerly the second term of ARBC 101)

ARBC 130a, Intermediate Modern Standard Arabic I.
L3 1 C Credits Meets RP (61)
130a–1: MTWThF 9.25-10.15; practice 1 HTBA Sarab al-Ani
130a–2: MTWThF 10.30-11.20; practice 1 HTBA Shady Nasser
130a–3: MTWThF 2.30-3.20; practice 1 HTBA Sarab al-Ani
130a–4: MTWThF 11.35-12.25; practice 1 HTBA Ghassan Husseinali
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. Matteo Di Giovanni.
MW 11.35-12.50 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 137b, Levantine Arabic. Shady Nasser.
TT 2.30-3.20, 1 HTBA L3 Meets RP (27)
A basic course in the Arabic dialect of the Levant (Lebanon, Syria, Jordan, Palestine). Principles of grammar and syntax; foundations for conversation and reading. Prerequisite: ARBC 120b.

ARBC 140b, Intermediate Modern Standard Arabic II.
L4 1 1/2 C Credits Meets RP (61)
140b–1: MTWThF 9.25-10.15; practice 1 HTBA Sarab al-Ani
140b–2: MTWThF 10.30-11.20; practice 1 HTBA Shady Nasser
140b–3: 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. Matteo Di Giovanni.
MW 11.35-12.50 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 110)

*ARBC 150a, Advanced Modern Standard Arabic I. Muhammad Aziz.
MWF 11.35-12.25; practice 1 HTBA L5 Meets RP (34)
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.**
Muhammad Aziz.
**MWF 11.35-12.25; practice 1 HTBA**
L5 Meets RP (34)
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**

**ARBC 165A or bG, Arabic Seminar.** Dimitri Gutas [F]; Beatrice Gruendler [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 166A or bG, Modern Arabic Seminar.** Hala Khamis Nassar.
**T 3.30-5.20**
L5 Meets RP (0)
Study and interpretation of modern Arabic prose and poetry for advanced students. **Prerequisite:** **ARBC 140B.** (Formerly **ARBC 106B**)

**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 110A or bG, Elementary Persian I.** Fereshteh Amanat-Kowssar.
**MTWTHF 9.25-10.15**
L1 1.5 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 120B or bG, Elementary Persian II.** Fereshteh Amanat-Kowssar.
**MTWTHF 9.25-10.15**
L2 1.5 C Credits Meets RP (32)
Continuation of **PERS 110A. Prerequisite: PERS 110A.** (Formerly the second term of **PERS 101**)

**PERS 130A or bG, Intermediate Persian I.** Fereshteh Amanat-Kowssar.
**MTWTHF 10.30-11.20**
L3 1.5 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 140B or bG, Intermediate Persian II.** Fereshteh Amanat-Kowssar.
**MTWTHF 10.30-11.20**
L4 1.5 C Credits Meets RP (0)
Continuation of **PERS 130A. Prerequisite: PERS 130A.** (Formerly the second term of **PERS 102**)

**PERS 150B or bG, Persian Seminar: Identity and Change.**
Fereshteh Amanat-Kowssar.
**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** G, **Elementary Modern Turkish I.** Staff.

mtwtthf 10.30-11.20  
L1  
1 1/2 C Credits  
Meets RP  (33)

Development of a basic knowledge of modern Turkish, with emphasis on grammatical analysis, vocabulary acquisition, and reading and writing skills. **Credit only on completion of tksh 120b.** (Formerly the first term of tksh 101)

**tksh 120b** G, **Elementary Modern Turkish II.** Staff.

mtwtthf 10.30-11.20  
L2  
1 1/2 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** G, **Intermediate Turkish I.** Staff.

th 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** G, **Intermediate Turkish II.** Staff.

th 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.** Staff.

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 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** or **MMES 490a, Introduction to Classical Arabic and Islamic Studies.** Dimitri Gutas.

w 2.30-4.20  (0)

Comprehensive survey of subjects treated in Arabic and Islamic studies, with representative readings from each. 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.**

TH 3:30-5:20 Hu (0)

Survey of debates in the modern and contemporary Arab world concerning heritage, secularism, religion, language, gender equality, modernization, and tradition. Resources in translation include 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.

nelc 492a and 493b, The Senior Essay. Consult the director of undergraduate studies.

Preparation of a research paper of at least thirty pages (sixty pages for a two-term essay) under the supervision of a departmental faculty member, 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.

GRADUATE AND PROFESSIONAL SCHOOL COURSES OF INTEREST TO UNDERGRADUATES

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 www.yale.edu/courseinfo. (Also see “Courses in the Yale Graduate and Professional Schools” in chapter II, 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 123b/amth 125b/math 125b, Introduction to Management Science: Probabilistic Models]

oprs 235a/amth 235a, Optimization. Eric Denardo.

Th 1-2.15 QR (26)
Resource allocation problems solved by linear programming and its generalizations: the simplex method, duality, the Karush-Kuhn-Tucker conditions for non-linear programs, economic equilibria, and selected applications. Prerequisite: math 118a or b, 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 Center for International Experience, 55 Whitney Avenue, third floor.

*CHNS 110a, Elementary Modern Chinese I. William Zhou and staff.
For description see under East Asian Languages & Literatures.

*CHNS 120b, Elementary Modern Chinese II. William Zhou 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 and staff.
For description see under East Asian Languages & Literatures.

*CHNS 140b, Intermediate Modern Chinese II.
Ling Mu 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 180b, Introduction to the Chinese Economy. Dong Chen.

*EENG 235a and 236b, Special Projects. Kumpati Narendra, Tso-Ping Ma.

ENGL 156a, Medieval War: Chaucer and Shakespeare.
Alastair Minnis.

*ENGL 199a, Fictions of Love: Chaucer and Shakespeare.
Alastair Minnis.

HIST 335a or b, Confucianism and Commerce in China.
Antonia Finnane.

INTS 391b/EAST 291b, Chinese Law and Society. Ling Bin.
For description see under International Studies.

*MCDB 470a or b, Tutorial. Douglas Kankel.
For description see under Biology.

*MCDB 475a or b, Research. Mark Mooseker.
For description see under Biology.

SOCY 220a/INTS 392a, Population and Society in East Asia.
Yun Zhou.
For description see under Sociology.

*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 AND ENGINEERING
(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), Keith DeRose, Tamar Gendler, John Hare, Karsten Harries, Verity Harte, Laurence Horn, Shelly Kagan, Thomas Pogge, Scott Shapiro, Sun-Joo Shin, Steven Smith, Zoltán Szabó, Jonathan Vogel (Visiting), Kenneth Winkler

Associate Professor
Katalin Balog

Assistant Professors
Matt Evans (Visiting), Jonathan Gilmore, Joshua Knobe, Jill North, Barbara Sattler, Matthew Smith, Bruno Whittle

Lecturers
Mihaela Fistioc, Gregory Ganssle, David Larsen, Michael Morgan, Raul Saucedo, Tamina Stephenson

Senior Lecturer II
Quang Phu Van

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 490a, 491b). 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 135a and 126b or DRST 003a and 004b, (2) two seminars, one of which may be in the Psychology department, with the approval of the director of undergraduate
studies, 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 110 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 003a and 004b, 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 003a and 004b; 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 490a, 491b)


INTRODUCTORY COURSES

PHIL 110a, INTRODUCTION TO PHILOSOPHY. Jill North.

TH 1.30-2.20, 1 HTBA HU (o)

An introduction to the character of philosophical thought and reasoning. Focus on five issues in philosophy, using historical and contemporary readings: skepticism; free will and determinism; laws of nature; time; and material constitution.

PHIL 115a, FIRST-ORDER LOGIC. Kenneth Winkler.

WF 11.35-12.25, 1 HTBA QR (34)

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

PHIL 125a, INTRODUCTION: ANCIENT PHILOSOPHY. Susanne Bobzien.

WF 1.30-2.20, 1 HTBA HU (o)

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.

**TH 11.35-12.25, 1 HTBA Hu (24)**

An introduction to major figures in the history of modern philosophy, with critical readings of Descartes, Leibniz, Locke, Berkeley, Hume, Reid, 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 178a, Introduction: Political Philosophy. Matthew Smith.

**TH 11.35-12.25, 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 179a, Life. Shelly Kagan.

**MW 10.30-11.20, 1 HTBA Hu (0)**

Examination of elements that may contribute to a good life, including the question of which truly have value and why. Factors to consider in choosing a career; the significance of the decision whether to have children; the value of education; the importance of love and accomplishment.

Phil 180a/PLSC 191a, Ethics and International Affairs.

Thomas Pogge, Markus LaBude.

**TH 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.


**TH 11.35-12.25, 1 HTBA Hu (24)**

Classical theories of human nature examined in light of recent developments in the social sciences. Plato’s discussion of innate ideas and current research on infant development; Aristotle’s conception of character and modern research in social psychology; Epictetus’s writings on human flourishing and contemporary work on happiness; Nietzsche’s genealogy of morals and findings from cognitive science.

**Intermediate Courses**

History of Philosophy

Phil 204b, Kant’s Critique of Pure Reason. Jonathan Vogel.

**MW 2.30-3.20, 1 HTBA Hu (37)**

An examination of the metaphysical and epistemological doctrines of Kant’s Critique of Pure Reason.
TTh 1:30-2:20, 1 HTBA Hu (0)
An introduction to Eastern philosophy through the study of philosophical and religious texts. Topics include reality and illusion, knowledge, self, right and wrong, nonattachment, meditation, aesthetics, meaning of life, and death.

PHIL 212B, Ancient Metaphysics. Matt Evans.
MW 1:20-2:15 Hu (36)
Survey of ancient Greek metaphysics from Anaximander to Aristotle, with an emphasis on Plato’s theory of forms and Aristotle’s theory of substances.

WF 2:30-3:45 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 267B, Mathematical Logic. Sun-Joo Shin.
TTh 1:30-2:20, 1 HTBA 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 269A, Philosophy of Science. Jill North.
TTh 2:30-3:20, 1 HTBA Hu (27)
Consideration of central questions about the nature of scientific theory and practice, including what makes a discipline a science, whether science discovers the objective truth about the world, how and why scientific theories change over time, to what extent observation and experiment determine which theories we accept, what constitutes a good scientific explanation, what laws of nature are, and whether physics has a special status compared to other sciences.

MW 11:35-12:50 Hu (34)
Introduction to current topics in the theory of knowledge. The analysis of knowledge, justified belief, rationality, certainty, and evidence.

TTh 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.

TTh 11:30-12:15 Hu (0)
Examination of some fundamental aspects of reality. Topics include time, persistence, modality, causation, and existence.

MW 11:35-12:50 Hu (0)
The idea of infinity. Traditional and contemporary versions of the paradoxes of space, time, and motion, as well as the paradoxes of classes, chances, and truth. Some elementary arithmetic, geometry, probability theory, and set theory.

PHIL 283B, PHILOSOPHY OF PHYSICS. Jill North.
THu 1:30-2:20, 1 HTBA QR Sc (26)
An introduction to the philosophical foundations of physics, with the goal of understanding the theoretical framework and quantitative methods of different physical theories. Analysis of both conceptual and quantitative problems in classical mechanics, classical electromagnetism, statistical mechanics, thermodynamics, special and general relativity, and quantum mechanics.

Ethics and Value Theory

PHIL 323B, PHILOSOPHY OF LAW. Scott Shapiro.
THu 11:35-12:25, 1 HTBA Hu (0)
An introduction to the problems and methods of the philosophy of law. Topics include the nature of law and legal authority; the philosophical bases of various areas of law, including criminal law and the practice of punishment; and the political philosophy of law, including the nature of rights and the obligation to obey laws.

MW 11:35-12:25, 1 HTBA Hu (34)
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/PLSC 293B, EUROPEAN POLITICAL THOUGHT FROM WEBER TO DERRIDA. Seyla Benhabib.
For description see under Political Science.

SEMINARS

History of Philosophy

⭐PHIL 400A/G, ARISTOTLE ON VOLUNTARY ACTION, CHOICE, AND RESPONSIBILITY. Susanne Bobzien, Verity Harte.
W 3:30-5:30 Hu (0)
Close study of Aristotle’s Nicomachean Ethics in Greek. Focus on Book III, chapters 1–5, in which Aristotle sets out his theories of the voluntary, practical deliberation, choice (or intention), and responsibility. Prerequisites: PHIL 125A or equivalent and intermediate Greek, or with permission of instructor.

⭐PHIL 401B/G, ANCIENT RELATIVISM. Matt Evans.
W 3:30-5:20 Hu (0)
Attempts by ancient Greek philosophers to formulate, defend, and attack the view that certain truths or facts are by their very nature relative to something, someone, or some time. Texts include works by Heraclitus, Plato, Aristotle, Epicurus, and Sextus.

⭐PHIL 402A/G, DESCARTES. Michael Della Rocca.
M 1:30-2:30 Hu (0)
A close examination of Descartes’s views on skepticism, perception, philosophy of mind, causation, and the nature of the physical world. Consideration of writings from throughout his career as well as influential secondary literature.
For description see under Judaic Studies.

**PHIL 404b**, History and Critique of Semiotics. David Larsen.
For description see under Humanities.


*W 1.30-3.20 Hu (o)*

Exploration of Kant’s views on nature and its value. Readings from his work in metaphysics, epistemology, ethics, and aesthetics. Topics include the prospects for reducing all sciences to physics, limits of the scientific understanding of nature, the moral significance of nature’s beauty, and the use of nature to support claims for the existence of God.

**PHIL 406b**, Kant’s Transcendental Idealism. Thomas Pogge.

*T 7-8.30 P.M. Hu (o)*

Philosophical and interpretive issues raised by Kant’s Critique of Pure Reason explored through close reading of key sections of the work.

**PHIL 411a**, Adorno’s Aesthetic Theory. Rainer Nägele.
For description see under Germanic Languages & Literatures.

**Metaphysics, Epistemology, and Logic**


*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.


*T 7-8.30 P.M. Hu (o)*

Introduction to the emerging field of moral cognition. Focus on questions about the philosophical significance of psychological findings. Topics include the role of emotion in moral judgment; the significance of character traits in virtue ethics and personality psychology; the reliability of intuitions and the psychological processes that underlie them.

**PHIL 427b**, Vagueness and the Sorites Paradox. Susanne Bobzien.

*Th 1.30-3.20 Hu (o)*

A study of some of the main approaches to the Sorites paradox. Examination of what semantics (if any) can be given for vague expressions and the role that pragmatic considerations ought to play in an account of vagueness.

**PHIL 428a**, Recent Work in Metaphysics. Raul Saucedo.

*W 1.30-3.20 Hu (o)*

Current debates in metaphysics concerning space and time, modality, parts and wholes, and ontological dependence. Readings from the works of Lewis, Fine, van Inwagen, Sider, Schaffer, Uzquiano, and others.
Attempts to explain the temporal asymmetries we experience at the macroscopic level—coffee cools and ice melts, we have memories of the past and not the future, and so on—given that the underlying laws of physics are symmetric in time. Questions include whether it is possible to have a unified explanation for the different asymmetries we experience and whether time has a direction. Consideration of how the probabilities required by the explanations should be understood metaphysically.

An examination of the nature of definition and essence, their relation to one another and to modality, whether one of these notions is definitionally prior to the others, and whether any of them must be taken as an ultimate primitive.

A study of the concept of a person. Exploration of whether our conception of what it is to be a human being is historically conditioned and culture-relative, and whether our conception of ourselves is related to our knowledge and understanding of other people. Discussion of the problem of personal identity over time, i.e., what makes a person the same individual at different times. Implications for ethics, psychology, and the significance of mortality.

The contributions of Stoic philosophers to various areas of logic, such as speech act theory, theory of meaning, propositional logic, deductive systems, relevance and modal logic, truth theories, and semantic paradoxes.

A technical exposition of Gödel’s first and second incompleteness theorems and of their consequences in proof theory and model theory. Löb’s theorem, Tarski’s undefinability of truth, provability logic, and nonstandard models of arithmetic. Prerequisite: phil 267b or permission of instructor.

Contemporary approaches to the problem of skepticism about the external world. Focus on neo-Moorean arguments, a priori entitlement, and inference to the best explanation.

Eastern and Western philosophical approaches to the nature of the self and personal identity. Particular attention to the view that commonsense concepts of the self are somehow defective.

Semantic paradoxes and the theories of meaning and truth that address them. Focus on the question of whether one can give adequate accounts of propositions and of truth. Topics include varieties of possible worlds, consistent accounts of structured propositions, and languages that contain their own truth predicates.
Metaphysical and epistemological issues raised by mathematics. Questions concerning the notion of a set, whether one can quantify absolutely everything, and whether there are really infinite sets of different sizes; the significance of Gödel’s incompleteness theorems; arguments designed to show that certain mathematical terms are referentially indeterminate.

**Ethics and Value Theory**

*PHIL 450a/G/HUMS 338a, Biology, Evolution, and Culture.* Jonathan Gilmore.

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

A broad investigation into purported evolutionary and biological explanations for such cultural phenomena as language, morals, politics, and art.

*PHIL 451b/G, Aesthetics and Philosophy of Art.* Jonathan Gilmore.

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

The nature and significance of works of art. Topics include aesthetic judgment, art and morality, depiction and cognition, fictions and emotions, imagination, originality and forgery, intention and interpretation, artistic style, and freedom of expression.


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


For description see under Ethics, Politics, & Economics.

*PHIL 456a/G/PLSC 307a, John Rawls on Social Justice.* Thomas Pogge.

T 3:30-5:20 Hu (0)

Critical examination of Rawls’s conception of social justice through close reading of his *Theory of Justice* and related works. His views on what role this concept should play in a democratic society.

**TUTORIAL AND SENIOR ESSAY COURSES**

*PHIL 480a or b, Tutorial.* Consult the director of undergraduate studies.

HTBA (0)

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 490a and 491b, The Senior Essay.* Consult the director of undergraduate studies.

HTBA (0)

The essay, written under the supervision of a member of the department, should be a substantial paper; a suggested length is between 8,000 and 12,000 words for one-term projects, and between 12,500 and 15,000 words for two-term projects.
Students completing a one-term project should enroll in either 490a in the fall or 491b in the spring. Students completing a two-term project should enroll in both 490a and 491b. The deadline for senior essays completed in the fall is December 1; the deadline for both one- and two-term senior essays completed in the spring is April 20.

COURSES RELEVANT TO THE MAJOR IN OTHER DEPARTMENTS

*GMST 355b/GHUM 365b, Theories of Time. Paul North.
For description see under German Studies.

*PLSC 319b, Theory and Practice in Recent Bioethics.
David Smith.

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 II, 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 Balay, Sean 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, 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, † Xiao-Jing Wang, † John Wetlaufer, Michael Zeller

Associate Professors
† Jerzy Blawzdziewicz, Richard Easther, Bonnie Fleming, Jack Harris, † Sohrab Ismail-Beigi, Karyn Le Hur, Daniel McKinsey, † Priya Natarajan, † Corey O’Hern, Witold Skiba
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 110b (one term) and 120a (one term) are for students with little or no previous experience in physics who do not plan to major in the natural sciences. Neither course has a mathematics requirement, and neither course satisfies 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.
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 2009–2010 include PHYS 341a, Biological Physics, and 343b, Gravity, Astrophysics, and Cosmology. Offerings anticipated for 2010–2011 include PHYS 342a, Introduction to Earth and Environmental Physics, and 344b, Quantum and Nanoscale Physics.

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 required. 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 Credit/D/Fail 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, an advanced laboratory such as PHYS 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.

**Senior requirement for the B.S. degree program.** The senior requirement for the B.S. is fulfilled by receiving a passing grade on a one-term research project in PHYS 471a or 472b or equivalent, or on a senior essay. Students should consult the director of undergraduate studies for further information.

**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 one term of advanced laboratory (PHYS 382Lb or equivalent) 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, 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 for the intensive B.S. degree program.** The senior requirement for the intensive B.S. is fulfilled by receiving a passing grade on a two-term research project in PHYS 471a, 472b or equivalent. 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:

**Freshman or Sophomore** | **Sophomore or Junior** | **Senior**
--- | --- | ---
PHYS 180a, 181b, or 200a, 201b, or 260a, 261b | PHYS 206La | APHY 439a or PHYS 445b
PHYS 203Lb | PHYS 401a | Three advanced electives
Mathematics corequisites | PHYS 402b | One advanced elective

A program for a student completing the intensive B.S. in three years might be:

**Freshman or Sophomore** | **Sophomore or Junior** | **Senior**
--- | --- | ---
PHYS 180a, 181b, or 200a, 201b, or 260a, 261b | PHYS 206La | PHYS 441a
PHYS 203Lb | PHYS 401a | PHYS 420a
PHYS 301a | PHYS 410a | PHYS 430b
PHYS 402b | PHYS 440b | PHYS 471a
Mathematics corequisites | PHYS 382Lb | PHYS 472b
| | | One advanced elective

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 203La or Lb, 206La 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 or 472b or equivalent

**INTENSIVE B.S. DEGREE**

**Prerequisites:** PHYS 180a, 181b, or 200a, 201b, or 260a, 261b, with appropriate math coreqs; PHYS 203La or Lb, 206La or Lb

**Number of courses:** 10 term courses beyond prereqs

**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 382Lb

**Senior requirement:** PHYS 471a and 472b or equivalent

*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.
Trh 2.30-3.45 Sc (0) Fr sem
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
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 101b, Movie Physics.** Frank Robinson.

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

A critical evaluation of Hollywood action movies using the laws of physics and Fermi-type estimation techniques to distinguish between fictional and real movie physics. Enrollment limited to freshmen and sophomores.

**phys 110b, Developments in Modern Physics.** Stephen Irons.

**MW 1-2.15 QR, Sc (36)**

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 120a, Quantum Physics and Beyond.** John Harris.

**M 3.30-5.30 Sc (37)**

Current topics in modern physics, beginning with quantum physics and continuing through subatomic physics, special and general relativity, cosmology, astrophysics, and string theory. See comparison of introductory sequences and laboratories in the text above.

**phys 150a and 151b, General Physics.** Michael Zeller.

**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.**

O. Keith Baker [F], Richard Casten [Sp].

**3 HTBA For sections see classesv2.yale.edu Sc ½ C Credit per term Meets RP (0)**

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.** Richard Easther [F], Robert Grober [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 and 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.** Jack Harris [F], Ramamurti Shankar [Sp].

**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.**
Andreas Heinz [F], John Harris [Sp].

3 HTBA For sections see classes.yale.edu Sc ½ 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 mathematical methods and quantitative analysis. **Concurrently with math 230, phys 301a, or equivalent.**

**phil 283b, Philosophy of Physics.** Jill North.

**meng 283b, Introduction to Materials Science.** Udo Schwarz.

**phys 296a/ast 253a, Research Methods in Astrophysics.**
Michael Faison.
For description see under Astronomy.

**phys 301a, Introduction to Mathematical Methods of Physics.**
Vincent Moncrief.

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.** Simon Mochrie.

TTh 2.30-3.45 QR, Sc (27)
An introduction to the physics of biological structures and life processes, and to the burgeoning field of biological physics. Related concepts from probability theory and statistical physics are developed as needed. **Prerequisite:** phys 180a, 181b, or 200a, 201b, or 260a, 261b, or permission of instructor. Phys 301a or other advanced mathematics course recommended.

[phys 342a/g&g 342a, Introduction to Earth and Environmental Physics]
phys 343b/astr 343b, Gravity, Astrophysics, and Cosmology.
Daisuke Nagai.
TTh 11.35-12.50 QR, Sc (24)
In-depth discussion of the physics underlying several recent discoveries in astrophysics and cosmology, including extrasolar planets, black holes, and the accelerating universe. Prerequisite: phys 180a, 181b, or 200a, 201b, or 260a, 261b, or permission of instructor.

[phys 344b, Quantum and Nanoscale Physics]

phys 382Lb, Experimental Research Studies. Steven Lamoreaux.
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, optical, nuclear, and 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 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 developed from the time of Newton to the age of Einstein. Topics include mechanics, 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. Jack Harris.
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, systems of particles, and rigid bodies, as well as free and forced oscillations. Introduction to chaos and special relativity. Prerequisite: phys 180a, 181b, or 200a, 201b, or 260a, 261b. Concurrently with phys 301a or other advanced mathematics course.

phys 420a, Statistical Thermodynamics. Daisuke Nagai.
MW 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, chemical equilibrium, and boson and fermion systems. Prerequisites: phys 301a and 410a or equivalents.

*phil 429b6g, Direction of Time. Jill North.

phys 430b, Electromagnetic Fields and Optics. Volker Werner.
MW 11.35-12.25 QR, Sc (34)
Electrostatics, magnetic fields of steady currents, electromagnetic waves, and relativistic dynamics. Provides a working knowledge of electrodynamics. Prerequisites: phys 301a and 410a or equivalents.
**PHYSICS AND ASTRONOMY**

*(See under Astronomy.)*

**phys 439a/aphy 439aG, Basic Quantum Mechanics.**
Robert Schoelkopf.
For description see under Applied Physics.

**phys 440b, Quantum Mechanics and Natural Phenomena I.**
Thomas Appelquist.
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.**
Steven Lamoreaux.
MWF 11.35-12.25 QR, Sc (34)
Continuation of phys 440b. **Prerequisite:** phys 440b.

**phys 448a/aphy 448aG, Solid-State Physics I.**
Paul Fleury.
For description see under Applied Physics.

**phys 449b/aphy 449bG, Solid-State Physics II.**
Charles Ahn.
For description see under Applied Physics.

**phys 448aG/aphy 448aG, Principles of Optics with Applications.**
Hui Cao.
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.

**phys 461bG/astr 461b, Relativity, Astrophysics, and Cosmology.**
Richard Easther.
MW 2.30-3.45 Sc (37)
An introduction to general relativity, including the differential geometry needed to write down the Einstein field equations, and an investigation of special and general relativity in a variety of astrophysical settings. **Prerequisites:** phys 410a and 430b.

[**phys 465bG, General Relativity: Theory and Experiment**]

**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 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 110b), 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 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 or 472b; (3) PHIL 490a or 491b (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, dus.physics@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 202a, 202b; 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; 382Lb; PHIL 125a, 126b

Senior requirement:  
1 from Physics senior essay, PHYS 471a or 472b, PHIL 490a or 491b, PHIL 480a or b on appropriate topic, or approved Philosophy sem

POLISH  
(See under Slavic Languages and Literatures.)

POLITICAL SCIENCE

Director of undergraduate studies: Peter Swenson, 115 Prospect St., 432-5236, peter.swenson@yale.edu

FACULTY OF THE DEPARTMENT OF POLITICAL SCIENCE

Professors  
Bruce Ackerman, Akhil Amar, Seyla Benhabib, Paul Bracken, David Cameron, Bryan Garsten, Alan Gerber, Donald Green, Jacob Hacker, Jolyon Howorth (Visiting), Stathis Kalyvas, Joseph LaPalombara (Emeritus), David Mayhew, Douglas Rae,
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 005A, 006b may count as a political science course.) To fulfill the standard major’s distributitional 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 distributitional 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 faculty.
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 2011 is April 2, 2010. 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, with the approval of 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 PLSC 474b, a directed reading and research course, in the sixth term of enrollment. In the seventh term the student takes PLSC 490a, the Senior Colloquium (see above under “The yearlong senior essay”). In the eighth term the student takes PLSC 493b, the independent 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 20, 2009. 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, 490a, 493b; Intensive major with interdisciplinary concentration—12 term courses as specified, up to 3 of which may be from other depts; PLSC 474b, 490a, 493b
Senior requirement: 2 sems, 1 in senior year, and senior essay

FRESHMAN SEMINAR

*PLSC 051a, The Ethics of War. Stephen Carter. Th 2.30-3.45 So (0) Fr sem
The development and application of “Just War Theory” in the Western tradition. Practices that might justify killing that would otherwise be considered mass murder; rules for traditions of just and unjust prosecution of war. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

INTRODUCTORY COURSES

PLSC 111a, Introduction to International Relations. Jolyon Howorth. Th 10.30-11.20, 1 HTBA So (23)
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. Samuel DeCanio.  
MW 2.30-3.20, 1 HTBA So (37) 
Introduction to American national government. 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) 
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; differences between ancient and modern conceptions of constitutional government. Readings from Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, and Tocqueville.

plsc 116b, Introduction to Comparative Politics.  
Adria Lawrence.  
nth 10.30-11.20, 1 HTBA So (23) 
Introduction to the study of politics and political life outside the United States. State formation and nationalism, the causes and consequences of democracy, the functioning of authoritarian regimes, social movements and collective action, and violence.

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

For description see under International Studies.

*plsc 123a/INTS 267a, International Dimensions of Internal Conflicts. David Siroky.
For description see under International Studies.

*plsc 124a, Iran in International Relations since 1979.  
Maximilian Terhalle. 
W 3.30-5.20 So (37) 
Iran's international relations since 1979, with consideration of regional dynamics. Domestic politics that affect the foreign policy of the Islamic Republic.

*plsc 125a/INTS 304aG, British-American Relations after the Cold War. Alison Holmes.
For description see under International Studies.

MW 4-5.15 So (37) 
The balance of power in the theory and practice of international relations; the rise and fall of great powers in the past hundred years. Analytic focus on post–Cold War events and trends.
Perspectives on International Law.
Robin Theurkauf.

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.

Ethics of Humanitarian Intervention.
Robin Theurkauf.

Key ethical dilemmas accompanying the practice of humanitarian intervention. 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.

Jean Krasno.

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.

Central Issues in American Foreign Policy.
Stuart Gottlieb.

For description see under International Studies.

International Dimensions of Democratization.
Nikolay Marinov.

The role played by international factors such as socialization, coercion, and emulation in the current wave of democratizations around the world. Focus on the extent to which democratic processes can be affected from the outside.

Global Firms and National Governments.
Joseph LaPalombara.

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.

The Evolution of International Politics.
Keith Darden.

An examination of key shifts in world order from the Middle Ages to the present, focusing on the merits of theories of continuity and change in international relations. Particular attention to the rise, consequences, and potential decline of the system of sovereign states as international institutions spread.

International Relations Theory.
Nuno Monteiro.
Theories of international relations, focusing on explanations of conflict and cooperation. Structural and neoclassical realism, liberalism, constructivism, and rationalism.

**PLSC 156b/INTS 364b, International Organizations.** Susan Hyde.
**TTH 9-10.15 So (0)**
The role international organizations play in solving global problems of political economy, security, development, human rights, democracy promotion, and the environment. Debates over the effects and relative importance of international organizations in world politics, using international relations theory and case studies.

**PLSC 158b/GEP & E 412b/INTS 328b, Nationalism and Identity.**
Keith Darden.
**W 3.30-5.20 So (0)**
The formation of national identity and the expression of nationalist sentiments through ethnic parties, autonomy movements, resistance to occupation, and warfare. Focus on Europe and post-Soviet Eurasia.

**PLSC 162b/G, Japan and the World.** Jun Saito.
**M 9.25-11.15 So (0)**
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.

**PLSC 163b/G, Domestic Politics and International Conflicts.**
Alexandre Debs.
**M 9.25-11.15 So (32)**
The relationship between domestic political institutions and war-proneness. Topics include the democratic peace and diversionary use of force. *Prerequisite: basic knowledge of game theory.*

**PLSC 165a/INTS 310a, International Security.** Matthew Kocher.
**MW 2.30-3.20, 1 HTBA So (37)**
An introduction to international security. General theories of state interests and behavior; the causes, conduct, and regulation of violence among nations.

**PLSC 169a, Classics of World Politics.** Bruce Russett.
**T 1.30-3.20 So (26)**
Examination of classic political theory from Sun-Tzu and Thucydides to the present. Attention to historical context. *Enrollment limited to sophomores.*

**PLSC 170b/AFST 170b, African Poverty and Western Aid.**
Christopher Blattman.
**MW 9.25-10.15, 1 HTBA WR, So (32)**
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.

**PLSC 172a/G, Strategy, Technology, and War.** Paul Bracken.
**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 177b**/**EP&E 315b**/**INTS 315b, Political Authority and State Formation.** Vivek Sharma.  
**TTh 2.30-3.45** So (0)  
European state formation in the context of current debate on the nature of political authority in late medieval and early modern Europe. Applications of historical insights to modern issues of state building and failure. The nature of the state and the difficulty of constructing viable and stable states in troubled regions of the world.

**plsc 179b, CHINA IN WORLD POLITICS.** Jessica Weiss.  
**TTh 2.30-3.45** So (27)  
China's rise to prominence and its foreign relations from 1949 to the present, focusing on the post-Mao period.

**plsc 181b, SOUTH ASIA IN WORLD POLITICS.** Elizabeth Hanson.  
**TTh 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.

**W 1.30-3.20** 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 186a**/**INTS 356a, International Political Economy.**  
Allison Kingsley.  
**T 1.30-3.20** So (26)  
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.**  
Staff.  
For description see under International Studies.

**plsc 191a/PHIL 180a, ETHICS AND INTERNATIONAL AFFAIRS.**  
Thomas Pogge, Markus LaBude.  
For description see under Philosophy.

**plsc 192b**/**INTS 314bG, DEVELOPMENT OF THE INTERNATIONAL HUMAN RIGHTS REGIME.** Robin Theurkauf.  
For description see under International Studies.
T 9.25-11.15 So (0)
The philosophical foundations of the study of international relations. Foundational debates and sociological evolution of international relations since the interwar period.

plsc 194b/INTS 320b, Religion in International Relations. Robin Theurkauf.
W 3.30-5.30 So (0)
Religion as a backdrop to international relations. Interreligious 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.

American Government
plsc 200b/G/ENVST 355b, Political Economy of Environmental Policy. Susan Rose-Ackerman.
W 1.30-3.20 So (36)
Tensions between economic analyses and political realities of environmental problems. Roles of the legislature, the executive, and the courts; federalism and the democratic potential of participatory policy making. Focus on the United States, with selected international cases. Prerequisite: introductory microeconomics and a course with a substantive policy focus.

plsc 201b/PSYC 332b, Essentials of Political Psychology. John Bullock.
TH 10.30-11.20, 1 Htba So (23)
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 202a, Political Regulation. Jennifer Steen.
T 9.25-11.15 So (0)
Political regulation and reform issues explored from both empirical and normative perspectives. Campaign finance reform, lobbying regulations, bribery, voting franchise restrictions, ballot access, redistricting, and term limits.

plsc 204a/EP&E 387a, Ethics and the Media. Stanley Flink.
TH 10.30-11.20, 1 Htba So (23)
Critical thinking about the history, theory, and practice of responsible journalism. Major newspapers, 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 in an age of terrorism and digital communication.

TH 10.30-11.20, 1 Htba So (23)
The development and operations of the American presidency. The political and constitutional evolution of the office, the modern executive establishment, and the politics of presidential leadership.
The United States Congress. Eleanor Powell.

A critical investigation of the United States Congress, the primary democratic institution in the American political system. Focus on individual members of Congress, institutional features, and the role of Congress within the larger separation-of-powers system.

Democracy and Sustainability. Michael Fotos.

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.

Environmental Politics and Law. John Wargo.

For description see under Environmental Studies.


Historical and contemporary political experiences of African Americans in the United States. Traditional and nontraditional strategies for gaining political inclusion. Prerequisite: PLSC 113b or equivalent.


An investigation of electoral realignments, voting for president and Congress, voter turnout, incumbency advantage, nominations, and campaign finance.

Public Economics. Ebonya Washington.

For description see under Economics.


Controversies and challenges in U.S. and international refugee law and policy, with a focus on asylum law and practice in the United States. Emphasis on legal reasoning and analysis through close reading of statutes, regulations, and case law. Final project is a legal brief on behalf of a client.

Perspectives on the City. Harry Wexler.

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.

Parties and Leaders in Congress. Eleanor Powell.

Political parties, party leaders, and committee leaders in the legislative policymaking process. The strengths and weaknesses of parties, agenda setting, and paths to congressional leadership. Individuals from Sam Rayburn to Nancy Pelosi and from LBJ to Harry Reid.

The Imperative of Health Care Systems. William Kissick.

For description see under Economics.
The evolution of American health care from the voluntary hospitals of the 1700s to modern municipal, state, federal, and university medical centers, as well as HMOs. Review of legislative and national initiatives concerning health care, including the 1994 Health Security Act. The need for quality, cost-effective health care systems in the twenty-first century.

**plsc 239b**, Experimental Methods in Political Science.
Alan Gerber, Donald Green.
M 3:30-4:20 So (0)
An introduction to experimental methods as they can be used to study politics. Exploration of strengths and weaknesses of experimental and nonexperimental studies. Applications include the effects of television advertising, formation of political attitudes, and causes of voter turnout. Students participate in the design and implementation of an experiment. *Knowledge of introductory statistics helpful but not required.*

**plsc 240b**, Public Schools and Public Policy. John Bryan Starr.
T 3:30-5:30 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.

**plsc 244b/ep&e 324b**, Journalism, Liberalism, Democracy.
James Sleeper.
T 1:30-3:20 So (0)
A survey of the news media’s role in configuring the democratic public sphere, from the early synergy of print capitalism and liberalism through the corporate consolidation of mass media and the recent fragmentation and fluidity of “news.” Classical-humanist and civic-republican responses to these trends.

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.

**plsc 249b**, Public Opinion. Samuel DeCanio.
T 3:30-5:30 So (0)
Public opinion in democratic societies. Voter ignorance, representation, elite manipulation of public opinion, and attitude formation.

**plsc 250a/arch 347a**, Infrastructure: Politics and Design.
Elihu Rubin.
M 3:30-4:20 So (0)
Infrastructures—the physical frameworks for human settlement, urbanization, and social life, including networks for transportation, water, energy, and communication. Current debates on infrastructure spending in the context of historical investments in the modern American city.

MW 10:30-11:20, I HTBA So (33)
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.
• Plsc 254a, American Founding Debates. Steven Bilakovics.  
  Th 1:30-3:20 So (0)  
  Consideration of whether the Constitution should be rewritten and improved. Relevance of our founding document to modern times. Debates between the Federalists and Anti-Federalists.

• Plsc 256b, American Political Institutions. Michael Fotos.  
  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.

Plsc 257b/Ep&E 343b, Bioethics and Law. Stephen Latham.  
Th 9:25-10:15, 1 htra 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.

For description see under DeVane Lecture Course.

• Plsc 260a, Public Schools and Politics. John Bryan Starr.  
  T 3:30-5:30 So Meets RP (0)  
  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 263g/afam 421aG/er&m 234a, Race and Ethnicity in American Politics. Khalilah Brown-Dean.  
  TTh 1:30-3:20 So (0)  
  Race and ethnicity in American politics. The social construction of race; intersections between race and gender; black, Latino, and Asian American public opinion and political participation; minority representation; the relationship among race, racism, and public policy; immigration and citizenship; state politics; the psychology of racial politics; and the role of race in campaigns.

• Plsc 264b, Big City Politics in America: New York, Los Angeles, Chicago. Cynthia Horan.  
  Th 3:30-5:20 So (0)  
  A theoretical and empirical examination of how globalization and responses to globalization are changing the politics of New York, Los Angeles, and Chicago. Economic restructuring, government reorganization, transformations of urban space, immigration, racial conflicts, and grassroots mobilizations.

• Plsc 265b, Classics of Political Journalism. Mark Oppenheimer.  
  W 2:30-4:20 So (0)  
  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.
For description see under International Studies.

*PLSC 272A, U.S. PARTY FORMATION. Samuel DeCanio.
M 1:30-2:20 So (O)
The ideological development of the Republican and Democratic parties. The rise of contemporary American ideological divisions; economic regulatory issues generating partisan conflict during the nineteenth and twentieth centuries.

*PLSC 274B, EXPLORING THE AMERICAN DREAM. Steven Bilakovics.
Th 1:30-3:20 So (O)
The American Dream, one of the central features of American political, economic, and religious thought. Changing conceptions of the American way of life from the time of the Pilgrims to the present.

*PLSC 277B, POLITICS AND THE NEW MEDIA. Cynthia Farrar.
M 1:30-2:20 So (O)
A study of changes taking place in contemporary American journalism. The impact of these changes on government and political campaigns.

*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.

POLITICAL PHILOSOPHY

Th 11:35-12:50 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 289B/EPRE 323B, OPPRESSION. Thomas Donahue.
W 3:30-5:20 So (O)
The nature of oppression: the harms and wrongs it characteristically does; mechanisms by which it operates and persists; how it originates and how it can be resisted.

For description see under Sociology.

*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 issues in their initial historical context, later use in imperial China, and potential application in contemporary circumstances. Readings include texts of the Confucian, Mohist, Taoist, Legalist, and Militarist canons. No knowledge of Chinese required.
plsc 293b/ep&e 368b/phil 328bG, European Political Thought from Weber to Derrida. Seyla Benhabib.
TTh 2.30-3.20, 1 HTBA So (0)
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 communicative ethics and the inclusion of the “other” in the new Europe.

plsc 303b/ep&e 335b/ints 363b, Critique of Political Violence. Boris Kapustin.
For description see under International Studies.

For description see under Philosophy.

plsc 311bG, Liberalism and the Politics of Empire. Karuna Mantena.
W 9.25-11.15 So (0)
Historical and contemporary theories about the origins, dynamics, and persistence of imperial politics, with a special focus on how liberalism has responded to the problem of empire. Classical and recent writings in political theory and philosophy on liberal justifications of empire, just war, and humanitarian intervention. Prerequisite: a course in political theory.

plsc 313a/ep&e 380a, Bioethics, Politics, and Economics. Stephen Latham.
For description see under Ethics, Politics, & Economics.

plsc 317b, Freedom. Hélène Landemore.
T 3.30-5.20 So (0)
The meaning and political implications of the concept of freedom in Western political theory from Plato to Rawls.

plsc 323a, The Quest for a Just Society. Hélène Landemore.
TTh 4.30-5.20, 1 HTBA So (27)
Exploration of different conceptions of justice and the just society in Western political thought from Plato to Rawls.

plsc 333b, Environmental Ethics. Thomas Donahue.
T 3.30-5.20 So (0)
Issues concerning human responsibility and the environment. Arguments for and against protecting wilderness areas, sustainability as a goal, preservation of species, bearing the costs of fighting global warming, and humans’ right to a healthy environment. Attention to analytical and argumentative skills necessary for successful legal and environmental advocacy.
Analytical Political Theory

*plsc 340b, Qualitative Field Research. Adria Lawrence.
T 3.30-5.20 So Meets RP (ɔ)
Introduction to qualitative field research methods. Basic techniques for collecting, interpreting, and analyzing ethnographic data. Emphasis on the core ethnographic techniques of participant observation and in-depth interviewing.

*plsc 343a/ep&e 352a, Equality. John Roemer.
For description see under Ethics, Politics, & Economics.

Comparative Government

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 348a/socy 148a, Varieties of Capitalism. Ivan Szelenyi.
For description see under Sociology.

*plsc 349a, Political Economy of Civil War and Terrorism.
Christopher Blattman.
Th 9.25-11.15 So (ɔ)
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.

plsc 352a/film 318a, Politics and Film. Stathis Kalyvas.
MW 2.30-3.45; screenings htba Hu, So (ɔ)
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 *City of God*. 

Recommended preparation: PLSC 116b.

**PLSC 355b/SAST 240b, Democracy in Modern India.** Shreyash Palshikar.
For description see under South Asian Studies.

**PLSC 354a/G/EPRE 342a/INTS 357a, The European Union.**
David Cameron.
T 3:30-5:20 So (0)
The history, institutions, and policy-making processes of the European Union. 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 358b/G, Armed Groups and Patterns of Violence.**
Elisabeth Wood.
Th 7-8:30 P.M. So (0)
Characteristics of armed organizations such as state militaries, police forces, insurgent groups, secessionist movements, and terrorist organizations. The patterns of political violence used by these groups. Readings from political science, history, anthropology, and sociology.

**PLSC 356a/AFST 356a/INTS 326a/SOCY 247a, Collective Action and Social Movements.**
Elisabeth Wood.
Th 9:25-10:15, 1 HTBA So (0)
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 369a/INTS 324a, Violence and Civil Strife.**
Stathis Kalyvas.
MW 11:30-12:30 So (34)
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 371a/EAST 355a, Chinese Politics in the Reform Era.**
Pierre Landry.
MW 10:30-11:20, 1 HTBA So (33)
Chinese politics as shaped by the economic, social, and administrative reforms undertaken since 1978. Domestic consequences of the changing international environment of the People’s Republic of China.

**PLSC 373a/INTS 375a, Comparative Judicial Politics.**
Frances Rosenbluth.
MW 10:30-11:20, 1 HTBA WR, So (33)
The development of constitutional forms, historically and theoretically. Special attention to the judicial branch of government. Roman criminal and civil law and its transmission to European states; the origins and development of civil law versus common law systems; the structure and functioning of judicial systems.

**PLSC 375b/SAST 241b, Social Movements in India.** Tariq Thachil.
For description see under South Asian Studies.
*plsc 379a*, **JAPANESE POLITICS AND POLITICAL ECONOMY.**  Jun Saito.  
**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 381a/aest 381a, GOVERNMENT AND POLITICS IN AFRICA.**  
David Simon.  
**MW 9.25-10.15, 1 HTBA So (32)**  
The establishment and use of political power in selected countries of tropical Africa. The political role of ethnic and class cleavages, military coups, and the relation between politics and economic development.

**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.

**plsc 388b, PUBLIC OPINION IN CHINA.**  Pierre Landry.  
**M 1.30-3.20 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 389a/mmies 181a, MIDDLE EAST EXCEPTIONALISM.**  Adria Lawrence.  
**T 9.25-11.15 So (0)**  
The Middle East and North Africa in comparative perspective. Evaluation of claims that the region’s states are exceptionally violent, authoritarian, or religious. Themes include gender, Islam, nation and state formation, oil wealth, terrorism, and war.

**plsc 390a/east 357a/ints 307a, STATE AND SOCIETY IN POST-MAO CHINA.**  Jessica Weiss.  
**W 7-8:30 P.M. So (0)**  
State-society relations in the People’s Republic of China. Popular protest and social mobilization, media commercialization and the Internet, and prospects for political reform and democratization.

**plsc 394b, INTRODUCTION TO MIDDLE EAST POLITICS.**  Ellen Lust.  
**TH 9.25-10.15, 1 HTBA So (22)**  
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 influence regime type, political stability, and economic development.

**plsc 399a, ANTI-AMERICANISM IN WORLD POLITICS.**  Jessica Weiss.  
**W 1.30-3.20 So (0)**  
Anti-Americanism and other varieties of antiforeign sentiment in the developing world, with a focus on the international and domestic sources of anti-Americanism and implications for U.S. foreign policy.

**plsc 401b/ep&e 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.

**PLSC 404b/INTS 315b, ORDER AND DISORDER IN POLITICS.**
Matthew Kocher.

M 1:30-3:20 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 407a/INTS 387a, THE POLITICS OF NATIONALISM AND ETHNICITY.**
Matthew Kocher.

For description see under International Studies.

**PLSC 410b, PATRONAGE AND CLIENTELISM IN DEMOCRATIC SYSTEMS.**
Susan Stokes.

Th 9:25-11:15 So (0)

Clientelism, patronage, and vote buying. Elections and public deliberation as they shape a society's priorities for the distribution of public resources (money, goods, public employment); the diversion of resources to individuals or groups as a quid pro quo for their political support of governments or political parties.

**PLSC 415b/INTS 389b/SOCY 188b, RELIGION AND POLITICS.**
Sigrun Kahl.

MW 2:30-3:45 So (37)

Historical and comparative introduction to the relationship between religion and politics. Different approaches in Europe, the United States, and Latin America to the proper place for religion in the public sphere.

**PLSC 417a/AFST 360a/EP&E 365a/INTS 347a, THE POLITICAL ECONOMY OF AIDS IN AFRICA.**
Nicoli Nattrass.

For description see under Ethics, Politics, & Economics.

**PLSC 420a/EVST 424a, RIVERS: NATURE AND POLITICS.**
James Scott.

W 3:30-5:30 So (0)

The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them.

**PLSC 428a/EP&E 240a, COMPARATIVE WELFARE POLICY IN DEVELOPING COUNTRIES.**
Jeremy Seekings.

For description see under Ethics, Politics, & Economics.

**PLSC 429b/MMES 252b, POLITICAL ISLAM AND NORTH AFRICA.**
Nadia Marzouki.

For description see under Modern Middle East Studies.

**PLSC 430a/AFST 420a/EP&E 347a, THE POLITICS OF DEVELOPMENT ASSISTANCE.**
David Simon.

T 1:30-3:20 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.

**PLSC 433b/EAST 356b/INTS 335b, EAST ASIAN CAPITALISM.**
Jun Saito.

WF 2:30-3:45 So (0)
Comparative political economy of six political systems in East Asia: China, Japan, North and South Korea, Taiwan, and Vietnam. Historical development of political institutions, success and failure of democratization, political determinants of economic growth, and public policy challenges such as gender equity and environmental degradation.

**PLSC 444b/AFST 464b/ANTH 422b**, *Africa and the Disciplines.*
Kamari Clarke.
For description see under African Studies.

**PLSC 442a**, *Development in South Asia.*
Tariq Thachil.
For description see under South Asian Studies.

**PLSC 446b/INTS 354b/SOCY 369b**, *Welfare States across Nations.*
Sigrun Kahl.
Th 9.25-11.15 So (0)
How different societies counterbalance capitalism and deal with social risks. Welfare state regimes and their approaches to inequality, unemployment, poverty, illness, disability, child rearing, and old age. Why the United States has an exceptionally small welfare state.

**PLSC 447b/AFST 447b**, *The Rwandan Genocide in Comparative Context.*
David Simon.
T 1.30-3.20 So (0)
An examination of the 1994 Rwandan genocide: historical sources of the conflict, the motivations of the killers, 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.

**PLSC 448a/INTS 350a/MMES 182a**, *Contemporary Political Economy of Turkey and the Middle East.*
Mine Eder.
For description see under Modern Middle East Studies.

**PLSC 456a**, *Introduction to Political Economy.*
Alexandre Debs.
MW 9-10.15 So (32)
Institutions that affect economic growth; the role of government in the economy. Classic texts applied to current-day policy making.

**PLSC 457b/INTS 308b**, *Displacement, Refugees, and Ethnic Cleansing.*
Abbey Steele.
M 3.30-5.20 So (0)
Displacement, refugees, and ethnic cleansing in historical and analytical context. Causes and dynamics of displacement in contemporary civil wars; implications for violence, humanitarian intervention, and state building.

**PLSC 458b/INTS 394b**, *Conflict and Governance in Diverse Societies.*
Christian Leuprecht.
For description see under International Studies.

**Statistical and Mathematical Methods**

**PLSC 452a/EPE&E 101a/STAT 102a**, *Introduction to Statistics: Political Science.*
Jonathan Reuning-Scherer and staff.
For description see under Statistics.

ADVANCED COURSES

*plsc 471a and 472b, Individual Reading for Majors. Members of the department.

HTBA (o)

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.

*plsc 474b, Directed Reading and Research for Junior Intensive Majors. Members of the department.

HTBA (o)

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.

*plsc 480a or b, One-Term Senior Essay. Members of the department.

HTBA (o)

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.

*plsc 490a, The Senior Colloquium. David Cameron.

W 3:30-5:20 (o)

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, including intensive majors, writing a yearlong senior essay.

*plsc 491b, The Senior Essay. Members of the department.

HTBA (o)

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.

*plsc 493b, Senior Essay for Intensive Majors. Members of the department.

HTBA (o)

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. Enrollment limited to Political Science intensive majors.
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 comprehensive knowledge of the literatures and cultures of Portugal, Brazil, and African and Asian lands of Portuguese language or influence.

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 30, from 2 to 4 p.m. and from 4.30 to 6.30 p.m., and in the spring term on Sunday, January 10, 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 002A, CULTURAL ENCOUNTERS IN THE PORTUGUESE WORLD.
K. David Jackson.
MW 9-10.15 Hu (32) Fr sem
Cultural encounters in Africa, Asia, and Brazil after the voyage of Vasco da Gama (1497–99). Themes include voyages, the question of the other, modes of interrelationship, religion, trade, creole languages and hybrid cultures; music and oral
tradition; ecology, cuisines, and the arts. Readings include the epic, travel and discovery literature, memoirs, anthropological and ethnographic works, and the “Cannibal Manifesto.” Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

PORT 110A, ELEMENTARY PORTUGUESE I. Tania Martuscelli.
MTWThF 10.30-11.20 L 1 ⅓ 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.
L 1 ⅓ C Credits Meets RP (61)
112A–1: MTWThF 9.25-10.15 112A–2: MTWThF 11.35-12.25
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 L 2 ⅓ 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.
L 2 ⅓ C Credits Meets RP (61)
122B–1: MTWThF 9.25-10.15 122B–2: MTWThF 11.35-12.25
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 123B, 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 L 3 ⅓ 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 L 4 ⅓ 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.
MTWThF 1.30-2.20 L 5 Meets RP (36)
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 222b**, LANGUAGE AND SOCIO-ENVIRONMENTAL ISSUES.
Tania Martuscelli.
**TTh 4-5.15** L5 (O)
Review of the finer points of Portuguese grammar; analysis of structure and style. Texts and essays treat social and environmental issues in Portuguese-speaking countries. Prerequisite: *port 140b or permission of instructor.*

**PORT 356b**, BRAZILIAN CONCRETE POETRY. K. David Jackson.
**Th 9.25-11.15** Hu (22) Tr
Brazilian concrete poetry in international perspective; production and theory of concrete poetry, translation, and criticism during the second half of the twentieth century. Brazilian concrete poets in the context of visual and concrete poetics. Representative works include “Pilot Plan” and *Theory of Concrete Poetry*, graphic and spatial poems, and public expositions of works.

**PORT 370a/LITR 293a/SPAN 383a**, PSYCHOLOGY IN LITERATURE: CHARACTERS ON THE MARGINS OF REALITY. K. David Jackson.
**MW 11.35-12.50** WR, Hu (0) Tr
Study of characters from mainly Portuguese and Spanish literature who are on the margins of reality in their perceptions or actions. Topics include fantasy, alienation, perversion, deviance, delusion, and ecstasy. Conducted in English.

**PORT 393b/LITR 213b**, MODERN BRAZILIAN AND PORTUGUESE FICTION IN TRANSLATION. K. David Jackson.
**TTh 1-2.15** WR, Hu (26) Tr
An introduction to 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 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; senior thesis director: Julia Kim-Cohen, 317 K, 432-7581, julia.kim-cohen@yale.edu

**FACULTY OF THE DEPARTMENT OF PSYCHOLOGY**

Professors
Woo-kyoung Ahn, J. Truett Allison, Stephen Anderson, Amy Arnsten, John Bargh, Linda Bartoshuk, Sidney Blatt, Paul Bloom, Thomas Brown, Kelly Brownell,
Professors (cont.)
Joseph Chang, Marvin Chun, Margaret Clark, Ravi Dhar, John Dovidio, Carol Fowler (Adjunct), Donald Green, Laurence Horn, Marcia Johnson, Alan Kazdin, Frank Keil, Marianne LaFrance, James Leckman, Lawrence Marks, Gregory McCarthy, Susan Nolen-Hoeksema, Donald Quinlan, Peter Salovey, Fred Volkmar, Victor Vroom, Allan Wagner, Karen Wynn

Associate Professors
Larry Davidson, Karyn Frick, Jeremy Gray, Jeannette Ickovics, Robert Kerns, Jr., Ami Klin, Linda Mayes, Douglas Mennini, Nathan Novemsky, Maria Piñango, Laurie Santos, Glenn Schafe, Brian Scholl, Mary Schwab-Stone, Jane Taylor, Teresa Treat

Assistant Professors
Maria Babonyshchev, June Gruber, Gaja Jarosz, Julia Kim-Cohen, Jelena Krivokapić, Jaime Napier, Kristina Olson

Lecturers
Marc Brackett, Nancy Close, Nelson Donegan, Carla Horwitz, David Klemanski, Kristi Lockhart, Burton Saxon, Barbara Shiller, Benjamin Toll

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 299 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. No more than two term courses taken Credit/D/Fail may be applied toward the major. For the Class of 2012 and subsequent classes, no 200-level course taken Credit/D/Fail 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: 125a, 127a, 128b, 131b, 140a, 150b, 165b, 194a, 305b, 319b, 330b, 332b, 355a, 356b

List B: 120a, 130a, 137a, 147b, 149b, 160b, 163a, 170a, 230La, 240b, 270a, 301b, 302b, 318b, 337a, 338b, 350a or b, 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 in anthropology, biology, cognitive science, computer science, philosophy, political science, and sociology. Some students may find courses in other subjects related to their major. Students should consult with the director of undergraduate studies in Psychology about selecting outside courses. 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 PSYC 495a or b for one-half course credit per term with prior permission of the faculty adviser and the director of undergraduate studies. No more than a total of three credits from PSYC 490–495 combined may count toward the major.

Senior requirement. Every Psychology major is required to write a senior essay. The essay requirement can be fulfilled either by engaging in an empirical research project, by analyzing an existing data set, or by writing a conceptual paper. (See below for specific requirements for the B.A. and B.S. degrees.) In all cases, it is expected that the senior project represent a substantial body of work that includes significant original contributions. The senior essay should be at least twenty double-spaced pages in length, and it should conform to the specific guidelines provided by the senior essay 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 essay. First, a student may work with a senior essay adviser without registering for any specific course. Second, a student may earn directed research, directed reading, or research topics credit, taken as PSYC 490a, 491b, 492a, 493b, or 495a or b, 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, directed reading, or research topics projects, a student must register each term for PSYC 490a, 491b, 492a, 493b, or 495a or b 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 if a senior essay is written in conjunction with a seminar, that seminar must be taken during the senior year. 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 is appointed by the department to determine a final grade for the senior essay in consultation with the primary adviser. The second reader and the adviser also make a recommendation as to whether the student should be awarded the B.A. or the B.S. degree.

**B.S. requirement.** Students who conduct empirical research for their senior essay receive a B.S. degree. A project in empirical research typically includes designing an experiment and collecting and analyzing the data. At the end of the junior year (or, at the latest, by the end of registration period in the fall term of the senior year), a student must submit a one-page, single-spaced research proposal signed by the essay adviser that specifies a research hypothesis, a rationale for the hypothesis, and proposed methods for collecting and analyzing data. For the Class of 2011 and subsequent classes, the research methods and statistics requirements must be fulfilled by the time the senior thesis proposal is submitted. For the Class of 2010, the research methods and statistics requirements may be fulfilled during the senior year, but the research proposal should demonstrate that the student is sufficiently prepared to carry out an empirical research project.

**B.A. requirement.** Students who conduct nonempirical research for their senior essay receive a B.A. degree. Nonempirical research typically involves a literature review.

**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 may 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&B&B 122b. Some students with advanced preparation may place out of either or both of these courses (see the “Placement” paragraph under Biology for details) 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 350a and 421b; CPSC 475b and 477a; MB&B 300a, 301b, 420a, 421b, 423a, 433a, 443b, and 452b; MATH 222a or b, 225a or b, and 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, 492a, 493b, or 495a or b, regardless of whether the faculty adviser is in Psychology or another department. 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 prerequisite

**Specific course required:** PSYC 200b

**Distribution of courses:** 2 courses from List A, 2 courses from List B as specified; 1 Psychology course numbered 210–299

**Substitution permitted:** For PSYC 200b, exam arranged with instructor; up to 3 relevant courses in other departments, including seminars, with DUS permission

**Senior requirement:** B.A.—Nonempirical senior essay (in PSYC 490a, 491b, or 495a or b, or in sem 400–489, or without enrollment in a course); B.S.—Empirical senior essay (in PSYC 492a, 493b, or 495a or b, or without enrollment in a course)

**NEUROSCIENCE TRACK**

**Prerequisite:** PSYC 110a or b

**Number of courses:** 12 term courses beyond prerequisite

**Specific courses required:** PSYC 170a or 160b; PSYC 200b; PSYC 230La, 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 30a, 421b, CPSC 479b, 477a, MB&B 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:  B.A. — Nonempirical senior essay (in PSYC 490a, 491b, or
495a or b, or in sem 400–489, or without enrollment in a course);  B.S. — Empirical
senior essay (in PSYC 492a, 493b, or 495a or b, 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: Th 1–2.15 So (o) Kristina Olson
   110b: Mw 1–2.15 So (o) Marvin Chun
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]  

*PSYC 125a/CHLD 125a/TPRP 125a, Child Development.  Nancy Close
   and staff.
   For description see under Child Study Center.

[PSYC 126a, Attraction and Relationships]  

*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.

*PSYC 129a/STAT 129a, Statistics as a Way of Knowing.
   Nelson Donegan.
   Th 11.35–12.50 QR (o)
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.
Relationships among statistical reasoning, cognitive psychology, and philosophical
theories of knowledge.  Enrollment limited to freshmen and sophomores.

PSYC 130a/CGSC 110a, Introduction to Cognitive Science.
   Brian Scholl.
   For description see under Cognitive Science.
PSYC 131b, HUMAN EMOTION. June Gruber.

TH 1-2:15 So (26)
Introduction to major discoveries in human emotion. Evolutionary theories of anger, love, and disgust; emotion and morality; culture and gender differences; emotion and the brain; relation between emotion and thinking; development of emotion; and abnormal emotions in mental illness.

PSYC 137a/LING 117a, LANGUAGE AND MIND. Maria Piñango.
For description see under Linguistics.

PSYC 147b, ANIMAL MODELS OF CLINICAL DISORDERS. Nelson Donegan.

TH 1-2:15 Sc, So (26)
An interdisciplinary approach to understanding and treating psychiatric disorders, integrating clinical psychology, psychiatry, and advances in basic neuroscience. Focus on how research with animal models can advance our understanding of psychiatric disorders and generate more effective treatments for patients. Topics include drug addiction, depression, Parkinson’s disease, and schizophrenia.

PSYC 149b/LING 149b, ANIMAL COMMUNICATION AND HUMAN LANGUAGE. Stephen Anderson.
For description see under Linguistics.

PSYC 163a/LING 163a, LANGUAGE ACQUISITION. Rhea Paul.
For description see under Linguistics.

PSYC 165b, PERSONALITY PSYCHOLOGY. Marc Brackett.

MW 9-10:15 So (0)
A broad survey of perspectives, methods, and assessment techniques used to study personality psychology. Personality’s location, its parts (motivation, emotion, cognition, mental models), its structure and organization (dynamics), and its development (stability and change from childhood to adulthood). How personality is expressed in our everyday behavior and personal surroundings.

[PSYC 171b, SEX, EVOLUTION, AND HUMAN NATURE]

*PSYC 194a/*TPRP 194a, EDUCATIONAL PSYCHOLOGY. Burton Saxon.
For description see under Teacher Preparation & Education Studies.

SURVEY COURSES WITH PREREQUISITE

PSYC 110a or b is a prerequisite for the courses below.

PSYC 140a, DEVELOPMENTAL PSYCHOLOGY. Frank Keil.

TH 9-10:15 WR, So (22)
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.

PSYC 150b, SOCIAL PSYCHOLOGY. Marianne LaFrance.

MW 2:30-3:45 So (0)
Study of social cognition, attitudes and persuasion, group processes, intergroup processes, prosocial behavior, aggression, and conformity. Theories, methodology, and applications of social psychology.

PSYC 160b, HUMAN NEUROSCIENCE. Gregory McCarthy.

TH 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.

*Th 11.35-12.50 Sc, So (24)*

Examination of the way the nervous system controls behavior. Biological insights about neural cell function are applied to processes such as learning, emotion, and perception.

[psyc 180b, Abnormal Psychology]

**STATISTICS AND GENERAL METHODOLOGY**

**psyc 200b, Statistics.** Teresa Treat.

*MWF 9.25-10.15 QR (32)*

Measures of central tendency, variability, association, and the application of probability concepts in determining the significance of research findings.

*psyc 206b, Multivariate Data Analysis with Observable Variables.** Jaime Napier.

*M 3.30-4.20, H 1 HB (0)*

Multivariate techniques for discovering relationships among observable variables; multivariate analysis of variance, profile analysis, discriminant analysis, multiple and canonical regression. **Prerequisite:** psyc 200b or equivalent.

**DATA COLLECTION**

**psyc 230La, Research Methods in Human Neuroscience.**

Gregory McCarthy.

*F 12-4 Sc (0)*

Methods of human neuroscience research. Focus on functional magnetic resonance imaging, electroencephalography, and evoked potentials. 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.

**psyc 235a, Research Methods in Psychology.**

Margaret Clark.

*Th 1-2.15, H 1 HB So (0)*

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.

*Th 1-2.15 Sc (26)*

Laboratory examination of basic procedures used in the investigation of animal learning: 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 301b**, Thinking. Woo-kyoung Ahn.


**PSYC 318b/LING 120b**, General Phonetics. Matthew Wolf.

**PSYC 319b/HLTH 215b**, Health Psychology. Benjamin Toll.


**PSYC 331b/LING 231b**, Neurolinguistics. Maria Piñango.

**PSYC 332b/PLSC 201b**, Essentials of Political Psychology. John Bullock.

**[PSYC 337a]**, Mapping the Human Brain


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
[psyc 342a/wgss 315a, psychology of gender]

*psyc 350a or b/child 350a or b, autism and related disorders.
ami klin, fred volkmar.
for description see under child study center.

*psyc 355a and 356b, clinical psychology in the community.
kristi lockhart.
w 9.25-11.15 so (0)
mental disorders as they are treated in a community setting. students participate
in a fieldwork placement, working either one-on-one or in groups with the psy-
chiatrically disabled. 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. credit
only on completion of both terms.

[psyc 371a, laboratory in animal cognition]

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)

*psyc 395a and 396b, food and nutrition research and policy.
kelly brownell.
w 1.30-3.20 so (0)
Economic, legal, political, and scientific aspects of nutrition and food policy.
Design of innovative policy proposals.

senior seminars

the seminars below may be used to fulfill the senior requirement.

*psyc 402a, topics in infant studies. karen wynn.
w 2.30-4.20 so (0)
Selected advanced topics in infant cognitive, social, and emotional development.
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]

[psyc 407b/cgsc 407b, cognitive science of causality]

*psyc 408b/∗cgsc 408b, cognitive science of ignorance.
frank keil.
m 1.30-3.20 so (0)
Analysis of how adults and children make sense of the artificial and natural
world with incomplete knowledge and understanding. Awareness of the limits
of one’s knowledge, mistakes in understanding, gullibility and cynicism, def-
ference, the division of cognitive labor, knowledge management, and science
literacy.
[**psyc 410a**/**cgsc 410a**,**The Modern Unconscious**]

[**psyc 411b**,**What We Eat and Why**]

[**psyc 412a**/**cgsc 413a**, **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 414a**/**wgss 466a**, **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 428a**, **Social and Emotional Learning**]

[**psyc 434b**,**Sensory Information Processing**]

T 1.30-3.20 So (0)  
Overview of the theoretical and empirical literature in developmental psychopathology. Models of atypical development that can elucidate underlying mechanisms of stability and change. **Prerequisite:** psyc 180b.]

[**psyc 461b**/**tprp 195b**, **Issues in Special Education.** Barbara Shiller.  
For description see under Teacher Preparation & Education Studies.]

[**psyc 466b**, **Neurobiology of Emotion.** Glenn Schafe.  
F 9.25-11.15 So (0)  
A study of the brain circuitries involved in emotion and emotional learning and memory. Emotion research in a historical context; progress that has been made in understanding the neurobiology of emotion in both laboratory animals and humans.]

[**psyc 470b**, **Personality and Individual Differences**]

[**psyc 473a**, **Cellular Analysis of Learning and Memory: Model Systems**]

[**psyc 488a**, **Learning Theory.** Allan Wagner.  
T 1.30-3.20 So (0)  
The development of learning theory from its beginnings in associationism, behaviorism, and the Darwinian revolution to its present “connectionistic” neural-network expressions.]

[**psyc 489b**, **Principles of Cognitive Behavior Therapy.** Alan Kazdin.  
W 2.30-4.20 So (0)  
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.

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.

**PSYC 492a and 493b, Directed Research.** Woo-kyoung Ahn.

Empirical research projects for qualified students, primarily seniors. A student must be sponsored by a faculty member, who sets the requirements and supervises research. 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 written report of the completed research, but individual faculty members may set alternative equivalent requirements. May be elected for one or two terms.

**PSYC 495a or b, Research Topics.** Woo-kyoung Ahn.

\[1.30-3.20 \text{ S Credit (0)}\]
Discussion of current and advanced topics and/or ongoing research projects. Specific areas of research correspond to 700-level courses. Students sign up for sections at www.yale.edu/courseinfo, using the last two digits of the corresponding 700-level course number. Enrollment forms, which must be signed by the instructor of the section, are available at the office of undergraduate studies. May be repeated for credit.

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, 60 College Street, P.O. Box 208234, New Haven, CT 06520-8234, 785-6260, or on the Web at http://publichealth.yale.edu.

QUANTITATIVE REASONING

[quan 1993, Quantitative Methods across the Disciplines]

RELIGIOUS STUDIES

Director of undergraduate studies: Stephen Davis, 451 College St., 432-0828, stephen.davis@yale.edu

FACULTY OF THE DEPARTMENT OF RELIGIOUS STUDIES

Professors
Gerhard Böwering, Jon Butler, John Darnell, Stephen Davis, Carlos Eire, Steven Fraade, Bruce Gordon, Philip Gorski, Phyllis Granoff, Frank Griffeil, Christine Hayes, Paula Hyman, Bentley Layton, Ivan Marcus, Dale Martin, Gene Outka, Meira Poliack (Visiting), Harry Stout (Chair), Denys Turner, Miroslav Volf, Robert Wilson

Associate Professors
Shannon Craigo-Snell, Ludger Viefhues-Bailey

Assistant Professors
Kathryn Lofton, Andrew Quintman

Senior Lecturers
Osmund Bopearachchi (Visiting), Margaret Olin (Visiting), Koichi Shinohara

Lecturers
Hugh Flick, Jr., John Grim, Brian Noell, 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.

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, selected in consultation with the director of undergraduate studies, focuses on systematic thought (ethics, philosophy of religion, or theology). The final core course is RLST 490b, 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 toward the major 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 491a, 492b) 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 490b

**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 491a, 492b)

**FRESHMAN SEMINARS**

- **RLST 010b/AMST 010b/HIST 002b, The Rise of Religion in Modern America.** Jon Butler. For description see under History.

- **RLST 011b, Buddhist Saints and Sinners.** Phyllis Granoff. 
  
  MW 2.30-3.45 Hu (O) Fr sem
  Introduction to Buddhist doctrine and ethics through a reading of traditional biographies of very virtuous and very wicked Buddhists. Readings in translation. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.
GENERAL, COMPARATIVE, AND THEMATIC COURSES (GROUP A)

rlst 100b, Introduction to World Religions. Gerhard Böwering.
  Tth 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 101a, World Religions in New Haven.
  Ludger Viefhues-Bailey.
  Tth 11.35-12.50 Hu (0)
Introduction to the religions studied as “Buddhism,” “Judaism,” “Christianity,” and “Afro-Caribbean Religion,” with a focus on the interaction between the global representation of these traditions and local lived practice in New Haven. Thematic exploration of gender and sexuality in these traditions. Course work includes on-site visits, Internet research, and class presentations.

  W 9.25-11.15, 1 Htba (32)
American religious expansion from the Gilded Age to the late twentieth century. Religion’s response to urbanization, industrialization, and the “new immigra-
tions”; religion and science; the challenge of pluralism; religion in America’s wars (hot and cold); religion and politics from 1960s radicalism to neoconservative evangelicalism; women’s rise in leadership; New Age occultism.

rlst 111a/amst 111a/wgss 111a, Sexuality and Religion.
  Kathryn Lofton.
  Tth 11.35-12.25, 1 Htba Hu (0)
The sexuality of American religion. Case studies and theoretical expositions map the relationship between sexuality and the texts, rituals, regulations, and communities of American religious cultures. Topics include seductive ministers, pedophile priests, abstinent sects, and complex marriages.

SURVEYS OF RELIGIOUS TRADITIONS (GROUP B)

★rlst 128b/sast 359b, Buddhism and Trade in Sri Lanka.
  Osmund Bopearachchi.
  W 1.30-3.20 Hu (0)
Introduction to Buddhist archaeology, art history, and architecture in South India and Sri Lanka. Focus on the role that trade played in the development of Buddhism and its arts. Study of both texts and material remains.

★rlst 129a/sast 357a, Buddhism and Hinduism in Gandhara.
  Osmund Bopearachchi.
  Th 9.25-11.15 Hu (0)
The development of Buddhism and Hinduism explored through examination of the archaeological record. Study of well-known sculptures and structural remains, as well as newly discovered material that challenges current reconstruc-
tions of the history of Buddhism and Hinduism in the Gandhara region.

rlst 130a/hums 418a, Traditional Literature of India, China, and Japan. Phyllis Granoff, Koichi Shinohara.
  For description see under Humanities.
RLST 134b/G/EALL 200b, Buddhism in China and Japan.
Koichi Shinohara.
MW 11:35-12:50 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.

Received 2244b/G/JDST 124a/G, Female Characters in the Hebrew Bible.
Meira Polliack.
For description see under Judaic Studies.

*RLST 144b/G/JDST 126b/G, Genres of Biblical Literature and Their Interpretive History.
Meira Polliack.
For description see under Judaic Studies.

[RLST 145a/JDST 110a/G, Introduction to the Old Testament (Hebrew Bible)]

RLST 146b/JDST 202b, Judaism: Continuity and Change.
Christine Hayes.
MW 10:30-11:20, 1 HTBA Hu (23)
An examination of the enduring ideas, values, and cultural expressions of the Jewish people as found in the Bible, Talmud, and Midrash, and in medieval, mystical, and modern texts. How, since the time of the ancient Israelites, Jews and Judaism have not merely survived but responded creatively to the challenges of their history and encounters with pagan culture, Christian culture, Islamic culture, philosophy, modernity, and secularism—constructing a panoply of rich and variegated subcultures in various geographical locations over the millennia.

RLST 147b/JDST 235b/G, Introduction to Judaism in the Ancient World.
Steven Fraade.
TRH 11:35-12:50 Hu (24)
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.

RLST 148a/G/HIST 219a/G/JDST 200a/G, History of the Jews to the Reformation.
Ivan Marcus.
For description see under History.

[RLST 149a/G/HIST 220b/G/JDST 201b/G, History of Jewish Culture, 1300 to the Present]

RLST 152b, Introduction to New Testament History and Literature.
Dale Martin.
MW 2:30-3:20, 1 HTBA Hu (37)
A historical study of the origins of Christianity through analysis of the literature of the earliest Christian movements. Emphasis on the importance of the New Testament and other early Christian documents as ancient literature and as sources for historical study.

RLST 158a/G/HIST 422a/G/HUMS 422a, Jesus to Muhammad: Ancient Christianity to the Rise of Islam.
Stephen Davis.
MW 10:30-11:20, 1 HTBA Hu (33)
The rise of Christianity and the development of Western culture into the early Middle Ages, including the creation of Christian orthodoxy. Religious, political, social, gender, literary, and theological history of Christian religion in many forms.

[rlst 163a/hums 316a, Reason, Faith, and Feeling: Early Modern Christian Thought]

[rlst 164b/hums 317b, History, Hope, and the Self: Modern Christian Thought]

RLST 170a, Introduction to Islam. Gerhard Böwering.

Introduction to 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.

Topics in Religious Studies (Group C)

*Rlst 184b/sast 358b, The Ramayana. Hugh Flick, Jr.

W 1.30-3.20 Hu (0) Tr

Exploration of the religious and ideological interpretations of this epic of ancient India as manifested in performance and in written texts. Emphasis on the religious and historical contexts from which the texts emerged. All readings in translation.

[rlst 185b, The Mahabharata]

[rlst 186a/eall 205a, Mandalas and Mantras]

[rlst 191b, Ritual and Salvation in India]

*Rlst 202a/hist 232a/hums 392a/jdst 270a, Medieval Jews, Christians, and Muslims Imagining Each Other. Ivan Marcus.

For description see under Humanities.

RLST 215a/plsc 148a/jdst 280a, America and Its Jews, 1654 to the Present. Paula Hyman.

For description see under History.

*Rlst 224b/jhist 244a/jdst 385b/wgss 383b, Women in Modern Jewish History. Paula Hyman.

W 2.30-4.20 Hu (0)

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. distribitional credit, upon application to the director of undergraduate studies.

*Rlst 240a, The Historical Jesus. Dale Martin.

MW 2.30-3.45 Hu (0)

Introduction to the study of Jesus in canonical and noncanonical sources. History of the quest for the historical Jesus, methods for reconstructing a historical account of Jesus, and versions of Jesus as offered by the early Gospels. No background in New Testament assumed.
RLST 257a, Patristic Greek. Stephen Davis.

Th 1-2.15 Hu (26)
Readings of Greek works produced in late antiquity by early Christian writers. Genres include epistles, martyr narratives, biblical commentaries, hymns, theological treatises, sermons, and monastic sayings. Prerequisite: reading knowledge of ancient Greek.


T 3.30-5.30 Hu (0)
Exploration of how particular indigenous peoples relate to local bioregions and biodiversity. Differences between and within indigenous societies, especially in cultural relationships to place. Ways in which values associated with physical places are articulated in symbols, myths, rituals, and other embodied practices.

[RLST 264a, The German Reformation, 1517–1555]


M W 2.30-3.45 Hu (37)
An introductory survey of the mystical literature of the Christian West, focusing on the late medieval and early modern periods. Close reading of primary texts, analyzed in their historical context.

[RLST 275a, Self and Other: The Individual in Western Religious Thought]

[RLST 279b, Four Atheist Critiques of Christian Theism]


For description see under History.

RLST 287b, Islamic Theology and Philosophy. Frank Griffel.

M W 10.30-11.20, 1 HTBA Hu (33)
A historical survey of major themes in Muslim theology and doctrine from the Qur'an to contemporary Muslim thinkers. Topics include the systematic character of Muslim thought and of the arguments given by thinkers; reason vs. revelation; the emergence of Sunnism in the tenth through eleventh centuries; the reaction of Muslim theology (from 1800) to the challenges of the West; and contemporary Muslim thought.

[RLST 290b, Islam Today: Jihad and Fundamentalism]

**RLST 292b, Salafiyya Movement in Islam.** Frank Griffel.

W 2.30-4.20 Hu (0)
Close study of the development of the Salafiyya movement, a widely spread modernist reform movement of Muslim intellectuals during the eighteenth and nineteenth centuries. Further development of the movement during the twentieth century that led to the emergence of Islamic fundamentalism.
Religious dimensions of consumer culture. Popular arts and media that portray religion and religious ideas and that serve the “religious” purpose of conveying meaning in the values they represent. Intersections of faith and capital, image and representation. Meanings that can be ascribed to cartoon caricatures, religious accessory, or tabloid frenzy.

ADVANCED TOPICS IN RELIGIOUS STUDIES (GROUP D)

W 9.25-11.15 L4, Hu (O)
Study of one of the most important of the Dead Sea Scrolls. Attention to its place in the history of biblical interpretation and ancient Jewish law; the nature and rhetorical function of its textual practices, both narrative and legal; and its relation to the central sectarian writings of the Qumran community. Prerequisite: reading proficiency in ancient Hebrew.

W 9.25-11.15 L5, Hu (O)
Study of one of the most important of the Dead Sea Scrolls. Attention to its place in the history of biblical interpretation and ancient Jewish law; the nature and rhetorical function of its textual practices, both narrative and legal; and its relation to the central sectarian writings of the Qumran community. Prerequisite: reading proficiency in ancient Hebrew.

★RLST 404a/G★JDST 392a/G, Mishnah Seminar: Tractate Sanhedrin. Steven Fraade.
M 9.25-11.15 L4, Hu (O)
Study of an early rabbinic legal text treating religious courts and their jurisprudential practice. Dual attention to the historical significance of the institutions of law represented and to the cultural significance of the rhetoric of that representation. Prerequisite: reading fluency in ancient Hebrew.

W 9.25-11.15 L5, Hu (O)
The giving of the Torah to Israel as seen through rabbinic eyes. Close readings of midrashic texts. Views of revelation, tradition, interpretation, law, and commandment in their literary and historical contexts. Interpretations and interpretive strategies compared and contrasted with those of other ancient biblical exegetes (Jewish and non-Jewish). Prerequisite: reading fluency in ancient Hebrew.

★RLST 408a/G★JDST 400a, Midrash Seminar: Exodus 32 and Its Midrashic Development

T 3.30-5.20 Hu (O)
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 (O)
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 490b, Seminar on Approaches to the Study of Religion.**
Ludger Viefhues-Bailey.
T 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 491a and 492b, 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 COURSES RELEVANT TO THE MAJOR**

For description see under Near Eastern Languages & Civilizations.

**EGYP 127b G**, Elementary Biblical Coptic II. Kevin Wilkinson.
For description see under Near Eastern Languages & Civilizations.

**EGYP 137b G**, Introduction to Gnostic Texts in Coptic.
Bentley Layton.
For description see under Near Eastern Languages & Civilizations.

**RUSSIAN**
(See under Slavic Languages and Literatures.)

**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 Bushkovich (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).
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 in Russian or East European history, selected in consultation with the director of undergraduate studies. 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 in RSEE 490a, 491b. At the beginning of the senior year, students enroll in RSEE 490a 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. The student provides the adviser with a form that the adviser signs to notify the director of undergraduate studies that the first-term requirements for the senior essay have been met. Failure to meet these requirements results in loss of credit for RSEE 490a. 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 16, 2010, in triplicate, in the Slavic department 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 lang

**Number of courses:** 13 term courses (incl senior essay and specified lang courses)

**Distribution of courses:** 1 course in Russian or East European hist approved by DUS, and at least 1 course in social sciences

**Senior requirement:** Senior essay (RSEE 490a, 491b)

**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.**
Hilary Fink.
For description see under Slavic Languages & Literatures.
rsee 386a/*hist 225Ja, The Monarch and the State in Russia, 1500–1825. Paul Bushkovitch. For description see under History.

rsee 390a/russ 241a, Russian Culture: The Modern Age. John MacKay. 

TH 2.30–3.20, 1 HTBA Hu (27) An interdisciplinary exploration of Russian cultural history, focusing on literature, art, religion, social and political thought, and film. Topics include conceptions of Russian nationhood; the myths of St. Petersburg; dissent and persecution; the role of social and cultural elites; the intelligentsia; attitudes toward the common people; conflicting appeals of rationality, spirituality, and idealism; the politicization of personal life; and the impact of the Bolshevik Revolution and its aftermath.

rsee 490a and 491b, The Senior Essay. Consult the director of undergraduate studies. 

HTBA (0) 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.

*plsc 138b/G/EPEE 412b/INTS 328b, Nationalism and Identity. Keith Darden. For description see under Political Science.

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

Yale College offers two special interdepartmental courses for freshmen with strong preparation in the sciences. **SCIEN 030a and 031b, Current Topics in Science**, is a freshman seminar designed for incoming students who have strong preparation in mathematics and science but who do not intend to major in the sciences. **SCIEN 198a and 199b, Perspectives on Science and Engineering**, 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 may apply to one or the other of these programs during the summer before their freshman year. Application information is available on the Web at [www.yale.edu/yalecollege/freshmen/welcome/special/fs](http://www.yale.edu/yalecollege/freshmen/welcome/special/fs) (SCIEN 030a, 031b) and [www.yale.edu/yalecollege/freshmen/welcome/special/ps](http://www.yale.edu/yalecollege/freshmen/welcome/special/ps) (SCIEN 198a, 199b).

**SCIEN 030a and 031b, Current Topics in Science.** Charles Bailyn, Douglas Kankel.

*Lect. and disc. F 1:30-3 Sc 1/2 C Credit per term (0) Cr/Year only Fr sem*

A series of modules in lecture and discussion format addressing scientific issues arising in current affairs. Topics are selected for their scientific interest and contemporary relevance, and may include global warming, human cloning, and the existence of extrasolar planets. One course credit is awarded for successful completion of the year's work. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

**SCIEN 198a and 199b, Perspectives on Science and Engineering.**

Craig Crews, J. Michael McBride.

*Lect. and disc. F 1:30-3 Sc 1/2 C Credit per term (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 be enrolled in other science courses, usually with laboratory. One course credit is awarded for successful completion of the year’s work. Enrollment limited to freshmen.

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

**Assistant Professor**

Molly Brunson

**Lecturer**

Hilary Fink
Senior Lector II
Irina Dolgova

Senior Lectors
Krystyna 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 151b. 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 145b 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 30, 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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<td>Li 1 C Credits Meets RP   (61)</td>
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<td>110a–1: MTWHF 9.25–10.15</td>
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<td>110a–2: MTWHF 10.30–11.20</td>
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<td>110a–3: MTWHF 11.35–12.25</td>
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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.

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<td>120b–1: MTWHF 9.25–10.15</td>
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<td>120b–2: MTWHF 10.30–11.20</td>
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<td>120b–3: MTWHF 11.35–12.25</td>
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Continuation of RUSS 110a. After RUSS 110a or equivalent. (Formerly the second term of RUSS 115)

[RUSS 122a, Russian for Bilingual Students I]

RUSS 125a, Intensive Elementary Russian. Constantine Muravnik, Julia Titus.

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<td>MTWHF 10.30–11.20; MW 11.35–12.25 Li–L2 2 C Credits Meets RP   (33)</td>
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An intensive course that covers in one term the material taught in *rus* 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.*

**rus** 130a, Second-Year Russian I. Irina Dolgova and staff.

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<th>Semester</th>
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<td>130a–1</td>
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<tr>
<td>130a–2</td>
<td>1 1/2</td>
<td>61</td>
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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 rus** 120b or equivalent.* (Formerly the first term of rus** 122)

**rus** 140b, Second-Year Russian II. Irina Dolgova and staff.

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<th>Semester</th>
<th>Credits</th>
<th>Meets RP</th>
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<td>140b–1</td>
<td>1 1/2</td>
<td>61</td>
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<tr>
<td>140b–2</td>
<td>1 1/2</td>
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Continuation of **rus** 130a. *After rus** 130a or equivalent.* (Formerly the second term of rus** 122)

**rus** 142b, Russian for Bilingual Students II

**rus** 145b, Intensive Intermediate Russian. Constantine Muravnik, Julia Titus.

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<th>Semester</th>
<th>Credits</th>
<th>Meets RP</th>
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<td>145b</td>
<td>2</td>
<td>33</td>
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A continuation of **rus** 125a that covers in one term the material taught in **rus** 130a and 140b. For students of superior linguistic ability. *Prerequisite: rus** 125a.* (Formerly the second term of rus** 125)

**rus** 150a, Third-Year Russian I. Constantine Muravnik.

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<th>Semester</th>
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<td>150a</td>
<td>1 1/2</td>
<td>34</td>
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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 rus** 140b or 145b or equivalent.* (Formerly the first term of rus** 130)

**rus** 151b, Third-Year Russian II. Constantine Muravnik.

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<th>Semester</th>
<th>Credits</th>
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<td>151b</td>
<td>1 1/2</td>
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Continuation of **rus** 150a. *After rus** 150a or equivalent.* (Formerly the second term of rus** 130)

**rus** 154a, Russian for Literary and Cultural Interpretation. Constantine Muravnik.

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<td>154a</td>
<td>1 1/2</td>
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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, Tsveetaeva, Karamzin, Chaadaev, and Victor Erofeev. Conducted in Russian and English. Prerequisite: RUSS 140b or 145b or permission of instructor. (Formerly RUSS 134a)

[RUSS 156a, ADVANCED CONVERSATION IN CONTEMPORARY RUSSIA]

RUSS 160a, FOURTH-YEAR RUSSIAN I. Irina Dolgova.
MWF 11:35-12:25 L5 (34)
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 RUSS 151b or equivalent. (Formerly RUSS 140a)

RUSS 161b, FOURTH-YEAR RUSSIAN II. Irina Dolgova.
MWF 11:35-12:25 L5 (34)
Continuation of RUSS 160a. After RUSS 160a or equivalent. (Formerly RUSS 141b)

*RUSS 176a, CHEKHOV IN RUSSIAN AND WORLD CINEMA. Rita Lipson.
MW 1-2:15; screenings M 7 P.M. L5, Hu (0)
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.
MW 9-10:15 L5, Hu (0)
Symbolism, acmeism, futurism. After RUSS 151b. (Formerly RUSS 167b)

RUSS 191b, THE RUSSIAN TABLE IN LITERATURE, FILM, AND ART. Rita Lipson.
MW 1-2:15 L5, Hu (0)
The Russian custom of the food feast (zastol’e) as a social and cultural institution with respect to ritual, communication, and identity. Ways in which literature, film, and visual art portray this specifically Russian mode of celebration, bonding, and interpersonal enjoyment. Development of advanced Russian language proficiency with a focus on describing in detail, supporting opinions, stating hypotheses, and using extended discourse. Eight classes conducted around a traditional Russian table offering authentic cuisine. Prerequisite: RUSS 160a or equivalent.

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 021a, LITERATURE AND PAINTING IN THE AGE OF TOLSTOY. Molly Brunson.
TRH 1-2:15 Hu (0) Tr Fr sem
An interdisciplinary study of artistic culture during the age of classic Russian novels. Close readings of Dostoevsky’s The Idiot and Tolstoy’s Anna Karenina. Topics include the representation of daily life, the Russian landscape, spirituality, and dialogue between the arts. Attention to contemporaneous developments in
painting and visual culture. Readings and discussion in English. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

[russ 022a, The Divine and the Human in Russian Fiction]

*slav 206a*, The Slavic Peoples and Their Languages: From Unity to Diversity. Robert Greenberg.

M 7-8.50 p.m. Hu (o)

Examination of the linguistic and cultural history of the Slavs from their prehistoric period up to the formation of the diverse Slavic languages, the individual Slavic states, and their national literatures. Readings and discussion in English.

*slav 207b*/*plsc 365b, Languages and Politics. Robert Greenberg.

M 7-8.50 p.m. So (o)

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]

russ 241a/rsee 390a, Russian Culture: The Modern Age. John MacKay.

For description see under Russian & East European Studies.

russ 250a, Literature and Empire in Russia. Molly Brunson.

Mw 1-2.15 Hu (o) 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. Focus on Russian modernity and the range of aesthetic explorations that it engendered. 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.


Mw 2.30-3.20, 1 HTBA Hu (37) 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/itr 208a/rsee 256a, Studies in the Novel: Dostoevsky.  
Hilary Fink.  
MF 11.35-12.50, 1 HTBA Hu (34) 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 313b, The Irrational in Russian Literature.  
Hilary Fink.  
M 1.30-3.20 Hu (36) 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 anti-reason, 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 1.30-3.20 Hu (o) 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 323b/★litr 241b, City and Country in the Nineteenth-Century Novel. Molly Brunson.  
TH 1-2.15 Hu (o) Tr  
A study of the thematic, aesthetic, and historical significance of the city and the country in the nineteenth-century European novel. Topics include the idyll and urban development, social mobility, travel and transportation, landscape painting, and literary narrative and spatial organization. Analysis of novels by Dickens, Balzac, and Tolstoy, as well as historical documents, visual materials, and theoretical texts. *Readings and discussion in English.*

★russ 326a/G, Slavery and Serfdom in Russian and American Culture. John MacKay.  
T 3.30-5.20 Hu (o) Tr  
Examination of literary and other forms of cultural production associated with U.S. slavery and Russian serfdom. The relations between bondage and national, cultural, and personal identity; the role of bondage in definitions of aesthetic experience in the pre- and post-emancipation periods; the relationship between literacy and the literary; literature of protest; and connections between geographical and subjective space within cultures of enslavement.

★russ 379a, Nabokov. Vladimir Alexandrov.  
TH 1-2.15 (o) Tr  
A close examination of selected major works from Vladimir Nabokov’s Russian and English periods, with particular attention to the connections among his metaphysics, ethics, and aesthetics.
GROUP C COURSES

**RUSS 480a and 481b, 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 483a 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.

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[czec 101b, Czech for Reading]

**CZEC 110a, Elementary Czech I.** Karen von Kunes.

**M, T, W, Th, F** 10:30-11:20  L1  1¼ C Credits  Meets RP (61)
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 Capek’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.

**M, T, W, Th, F** 10:30-11:20  L2  1¼ C Credits  Meets RP (61)
Continuation of CZEC 110a. *After CZEC 110a or equivalent.* (Formerly the second term of CZEC 115)

**CZEC 130a, Intermediate Czech.** Karen von Kunes.

**M, T, W, Th, F** 11:35-12:25  L3  1¼ C Credits  Meets RP (61)
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.

**M, T, W, Th, F** 11:35-12:25  L4  1¼ C Credits  Meets RP (61)
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 364A/★RSEE 240A, Milos Forman and His Films.
Karen von Kunes.
TH 1:30-3:20; screenings HTRA 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]

PLSH 110A, Elementary Polish I. Krystyna Illakowicz.
MTWTFH 10:30-11:20 L1 1 1/2 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 Illakowicz.
MTWTFH 10:30-11:20 L2 1 1/2 C Credits Meets RP (61)
Continuation of PLSH 110A. (Formerly the second term of PLSH 115)

PLSH 130A, Intermediate Polish I. Krystyna Illakowicz.
MTWTFH 11:35-12:25 L3 1 1/2 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.
MTWTFH 11:35-12:25 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]

★PLSH 248B/★THST 370B, Polish Theater and Its Traditions.
Krystyna Illakowicz.
MW 2:30-3:45 Hu (0) Tr
Exploration of the rebellious, defiant, and explosive nature of Polish theater, including ways in which theater has challenged, ridiculed, dissected, and disabled oppressive political power. Polish experimental and absurdist traditions that resulted from a merger of the artistic and the political; environmental and community traditions of the Reduta Theatre; Polish-American theater connections. Includes attendance of live theater events as well as meetings with Polish theater groups and actors.

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.
SOCILOGY

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, †Douglas Rae, Ivan Szelenyi

ASSOCIATE PROFESSORS
Philip Smith, Peter Stamatov

ASSISTANT PROFESSORS
Rene Almeling, Averil Clarke, †Sigrun Kahl, Vida Maralani, †Alondra Nelson, Jonathan Wyrtzen

LECTURERS
Jasmina Besirević-Regan, Vani Kulkarni

†A joint appointment with primary affiliation in another department or school.

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. For the Class of 2012 and subsequent classes, a maximum of two courses taken Credit/D/Fail may be counted toward the requirements of the major.

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 160b, 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 493a, 494b. 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 160b, 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 (SO CY 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 (SO CY 493a, 494b). 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 SO CY 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 nonintensive major take one additional seminar in Sociology (SO CY 300–399) and write a one-credit senior essay during the senior year (SO CY 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 SO CY 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 SO CY 493a, 494b, 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 SO CY 493a, 494b.

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, 160b, 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 493a, 494b)

**FRESHMAN SEMINARS**

[**SOCY 025b, Reproduction in Global Contexts**]

  
  WF 2.30-3.45 So (37) Fr sem

  The criminal justice system from a sociological perspective. Transformations in social control arising with the onset of modernity. Topics include policing, courts, the law, and prisons; costs and benefits of contemporary solutions to the problem of social control; and the role of power and culture in shaping current policy and activity. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

[**SOCY 086a, Chinese Society since Mao**]

**INTRODUCTORY COURSES**

**SOCY 115b, Contemporary American Society.** Karl Ulrich Mayer, Ron Eyerman, Philip Gorski.

  ThFr 10.30-11.20, 1 HTBA So (23)

  The major demographics and central dynamics of contemporary U.S. society. Use of sociological theory to analyze social macrostructures and their historical change. Major fault lines in American society; how social structures shape social landscapes. Population and migration, social class, education and social mobility, gender, family and the life course, race, ethnicity and urban poverty, social movements and popular culture, and religion and community.

[**SOCY 118b, Numbers and Society**]

[**SOCY 121b, The Sociological Imagination**]

**SOCY 133a, Computers, Networks, and Society.** Scott Boorman.

  ThFr 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 134b/wgps 110b, Sex and Gender in Society.** Rene Almeling.  
WF 10.30-11.20, 1 HTBA So (0)  
Introduction to the social processes through which people are categorized in terms of sex and gender, and how these social processes shape individual experiences of the world. Sex and gender in relation to race/ethnicity, class, sexuality, nationality, education, work, family, reproduction, and health.

**socy 144b, Sociology of Crime and Deviance.** Philip Smith.  
Th 1.30-2.20, 1 HTBA So (26)  
An introduction to sociological approaches to crime and deviance. Review of the patterns of criminal and deviant activity within society; exploration of major theoretical accounts. Topics include drug use, violence, and white-collar crime.

**socy 144b, Introduction to Social Policy Analysis.** Scott Boorman.  
Th 1-2.15 So (26)  
Introduction to how policy is carried out—both nationwide and on a smaller scale—using the tools of markets, networks, bureaucracy, and legislation. Capabilities and limitations of those tools with respect to social structure, economics, and the law.

**socy 148a/plsc 348a, Varieties of Capitalism.** Ivan Szelenyi.  
Th 11.35-12.25, 1 HTBA So (24)  
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 151a/hums 302a/plsc 290a, Foundations of Modern Social Theory.** Ivan Szelenyi.  
Th 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.** Peter Stamatov.  
W 9.25-11.15 WR, So (0)  
Overview of developments in social theory since the 1950s. Theories considered include structural functionalism, hermeneutical approaches, interactionist and phenomenological perspectives, rational choice, network theory, the new institutionalism, and theories of globalization.
COURSES IN SOCIOLOGICAL METHODS

*soCy 160b, Methods of Inquiry. Julia Adams.
   TRH 1-2.15 So (26)
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 161a, Survey Methods. Hannah Brueckner.
   TRH 2.30-1.45 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 166b/afam 181b, 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 160b.

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 197b/ep&e 262b, Issues in Contemporary Social and Cultural Theory. Ron Eyerman.
   For description see under Ethics, Politics, & Economics.

soCy 206b/sast 276b, Public Health in India. Vani Kulkarni.
   For description see under South Asian Studies.

*soCy 211a/sast 376a, Health and Inequality in India.
   Vani Kulkarni.
   For description see under South Asian Studies.

soCy 212a, Social Science, Law, and Public Policy.
   Hannah Brueckner.
   MW 4.30-5.20, 1 HTBA So (0)
Critical assessment of social science research and its uses in public policy and law. Case studies illustrate interrelated themes: what social science research tells us about a problem; frameworks used in the legal/political discourse to address a question; and how social science is used in these frameworks to create law and policy.

*soCy 216a/wgss 314a, Social Movements. Ron Eyerman.
   W 1.30-3.20 So (36)
An introduction to sociological perspectives on social movements and collective action, exploring civil rights, student movements, global justice, nationalism, and radical fundamentalism.
socy 220a/INTS 302a, Population and Society in East Asia.
Yun Zhou.
HTBA SO (o)
Population and society in China, Japan, and South Korea. Emphasis on China, especially on social and demographic changes in the past. Offered in Beijing, China. See under Peking University–Yale University Joint Undergraduate Program.

[socy 221b/WGSS 221b, Sex and Romance in Adolescence]

[socy 224b/WGSS 345b, Marriage and Family]

*socy 228a, Norms and Deviance. Elijah Anderson.
M 1.30-3.20 SO (36)
A sociological analysis of the origins, development, and reactions surrounding deviance in contemporary society. Group labeling, stigma, power, and competing notions of propriety.

*socy 246b, Sociology of Religion. Philip Gorski.
MW 2.30-3.45 SO (o)
Introduction to the main theoretical traditions and research problems in the sociology of religion. Focus on the role of religion in political conflict.

socy 247a/AFST 356a/INTS 326a/PLSC 366a, Collective Action and Social Movements. Elisabeth Wood.
For description see under Political Science.

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.

W 9.25-11.15 WR, SO (o)
Empire as a territorial organization of political power. Comparison of empires in historical periods from antiquity to European overseas expansion in the fifteenth through twentieth centuries, and in different geographic contexts in Africa, Asia, and Europe. Economic, political, and cultural theories of imperialism, colonialism, and decolonization.

TH 1.30-3.20 SO (26)
Religious nationalism past and present, East and West; the normative issues the phenomenon raises. Religious roots of Western nationalism; nationalistic propensities of different religious traditions; conditions under which religious nationalism turns violent; and whether religion, nationalism, pluralism, and democracy are compatible.

T 3.30-5.20 SO (o)
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.
Civil Society in China

Jeffrey Alexander.
T 9.25-11.15 Hu, So (22)
Normative and sociological theories of civil society and its role in democracy, with special attention to cultural discourses. The 1960s civil rights movements, the 1980s gay and lesbian movement, and more recent controversies over immigration; the role of mass media; power and the 2008 presidential election; issues of global civil society.

Urban Poverty and Policy

Exploration of how and why modern and postmodern societies have continued to sustain material symbolism and iconic consciousness. Theoretical approaches to debates about icons and symbols in philosophy, sociology, linguistics, psychology, and semiotics. Iconography in advertisements and branding, food and bodies, nature, fashion, celebrities, popular culture, art, architecture, and politics.

Genocide and Ethnic Conflict

Jasmina Beširević-Regan.
W 1.30-3.20 So (0)
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. 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.

Citizenship and Civic Engagement

Peter Stamatov.
T 1.30-3.20 So (0)
Citizenship as a complex phenomenon: an instrument of social closure, a determinant of social policies, a normative ideal in political philosophy, and a model for political participation. Meaning and forms of citizenship and civic engagement in historical and theoretical perspective. Debates on the decline of civic participation and on the emergence of global civil society.

Welfare States across Nations

Sigrun Kahl.
For description see under Political Science.

Comparative Nationalism in North Africa and the Middle East

Jonathan Wyrtzen.
W 3.30-5.20 So (0)
The rise of nationalism in the Maghreb (or Arab West) and Mashriq (or Arab East). Introduction to major debates about nationalism; the influence of transnational (pan-Islamic and pan-Arab) ideologies, ethnicity, gender, and religion. Case studies from North Africa (Algeria, Morocco, and Tunisia) and the Middle East (Syria/Lebanon, Jordan, and Iraq).
**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 491a and 492b, Senior Essay and Colloquium for Nonintensive Majors.** Ivan Szelenyi.

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 8, in the fall term and Tuesday, January 12, in the spring term.

**socy 493a and 494b, Senior Essay and Colloquium for Intensive Majors.** Hannah Brueckner.

Alt. T 3:30-5:20 QR (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 15, in the fall term and Tuesday, January 19, in the spring term.

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**SOUTH ASIAN STUDIES**

Director of undergraduate studies: Harry Blair, 115 Prospect St., 432-3399, harry.blair@yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF SOUTH ASIAN STUDIES**

**Professors**

Akhil Amar (Law School), Tim Barringer (History of Art), Michael Dove (Forestry & Environmental Studies, Anthropology), Sara Suleri Goodweaer (English), Phyllis Granoff (Religious Studies), Stanley Insler (Linguistics), Gustav Ranis (Emeritus) (Economics), Kalyanakrishnan Sivaramakrishnan (Anthropology), T. N. Srinivasan (Economics), Shyam Sunder (School of Management)

**Associate Professors**

Bernard Bate (Anthropology), Nihal de Lanerolle (School of Medicine), Mridu Rai (History), Sarah Weiss (Music)

**Assistant Professors**

Shameem Black (English), Ashwini Deo (Linguistics), Mayur Desai (Public Health), Ravi Durvasula (School of Medicine), Zareena Grewal (Ethnicity, Race, & Migration), Karuna Mantena (Political Science), Kishwar Rizvi (History of Art), Tamara Sears (History of Art)

**Senior Lecturers**

Geetanjali Singh Chanda (Women's, Gender, & Sexuality Studies), Koichi Shinohara (Religious Studies)
Lecturers
Nandini Bhattacharya (History of Medicine), Harry Blair (Political Science), Carol Carpenter (Forestry & Environmental Studies, Anthropology), Ashish Chadha, Hugh Flick, Jr. (Religious Studies), Priya Kanungo, Vani Kulkarni, Marina Martin, Alessandro Monsutti, Shreeyash Palshikar, Tariq Thachil

Senior Lecturer
Seema Khurana

Lectors
David Brick, Swapna Sharma, Blake Wentworth

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 in South Asian Studies numbered 200 or above. At least two of the seven courses must address premodern South Asia, and at least two should be seminars. Students may petition the director of undergraduate studies to include one relevant course from another department or program; approval may require additional course work on South Asian topics. Students must also complete the senior requirement and meet the major’s language requirement. For the Class of 2012 and subsequent classes, a maximum of one course taken Credit/D/Fail may be counted toward the requirements of the major.

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 491a, 492b. The senior essay should be a substantial paper with a maximum length of 8,000 words for one term and 10,500 words for two terms. 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 term courses (not incl senior req or lang req)  
**Specific courses required:** None  
**Distribution of courses:** 7 term courses in South Asian Studies numbered 200 or above, 2 in premodern; at least 2 sems  
**Substitution permitted:** One relevant course in another dept, with DUS permission  
**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 491a, 492b

**LANGUAGE AND LITERATURE COURSES**

**HNDI 110a**, Elementary Hindi I. Seema Khurana, Swapna Sharma.  
L1  1 1/2 C Credits (0)  
110a-1: MTWFH 10.30-11.20  
110a-2: MTWFH 11.30-12.20  
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 120b**, Elementary Hindi II. Seema Khurana, Swapna Sharma.  
L2  1 1/2 C Credits (0)  
120b-1: MTWFH 10.30-11.20  
120b-2: MTWFH 11.30-12.20  
Continuation of HNDI 110a. (Formerly the second term of HNDI 115)

L3  1 1/2 C Credits (0)  
130a-1: MTWFH 11.35-12.25  
130a-2: MTWFH 2.30-3.20  
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 140b**, Intermediate Hindi II. Seema Khurana.  
L4  1 1/2 C Credits (0)  
140b-1: MTWFH 11.35-12.25  
140b-2: MTWFH 2.30-3.20  
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 (0)
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)

**HNDI 140B, HINDI IN THE DIASPORA.** Seema Khurana.  
TH 4-5.15, 1 HTBA  L5  (o)  
An advanced language course designed to develop overall language skills through selected readings in Hindi literature and the study of popular culture in the Indian diaspora. Works by Suhaim Bedi, Sunita Jain, and Umesh Agnihotri; theater, films, and other art forms; news articles and television programs related to political, social, and cultural debates. **Prerequisite:** HNDI 130A or permission of instructor.

**HNDI 198A or B, ADVANCED TUTORIAL.** Seema Khurana, Swapna Sharma.  
HTBA  (o)  
For students with advanced Hindi language skills who wish to engage in concentrated reading and research on material not otherwise offered by the department. 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. **Prerequisite:** HNDI 150A or permission of instructor.

**SKRT 110A/LING 115A, INTRODUCTORY SANSKRIT I.** David Brick.  
MTWTHF 9.25-10.15  L1  1 1/2 C Credits  (32)  
An introduction to Sanskrit language and grammar. Focus on learning to read and translate basic Sanskrit sentences in the Indian Devanagari script. No prior background in Sanskrit assumed. Credit only on completion of SKRT 120b.

**SKRT 120B/LING 123B, INTRODUCTORY SANSKRIT II.** David Brick.  
MTWTHF 9.25-10.15  L2  1 1/2 C Credits  (32)  
Continuation of SKRT 110A. Focus on the basics of Sanskrit grammar; readings from classical Sanskrit texts written in the Indian Devanagari script. **After SKRT 110A.**

**SKRT 130A, INTERMEDIATE SANSKRIT I.** David Brick.  
MTWTHF 10.30-11.20  L3  1 1/2 C Credits  (33)  
The first half of a two-term sequence aimed at helping students develop the skills necessary to read texts written in Sanskrit. Readings include selections from the Hitopadesa, Kathasaritsagara, Mahabharata, and Bhagavad Gita. **After SKRT 120B or equivalent.**

**SKRT 140B, INTERMEDIATE SANSKRIT II.** David Brick.  
MTWTHF 10.30-11.20  L4  1 1/2 C Credits  (33)  
Continuation of SKRT 130A, focusing on Sanskrit literature from the kavya genre. Readings include selections from the Jatakamala of Aryasura and the opening verses of Kalidasa’s Kumarasambhava. **After SKRT 130A or equivalent.**

**TAML 110A, INTRODUCTORY TAMIL I.** Blake Wentworth.  
MTWTHF 10.30-11.20  L1  1 1/2 C Credits  (33)  
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 120b\textsuperscript{G}, Introductory Tamil II. Blake Wentworth.
\textit{m} \textit{t} \textit{w} \textit{t} \textit{h} \textit{f} \textit{r} \textit{f} \text{10.30-11.20 L2} 1\frac{1}{2} \text{ C} \text{ Credits (33)}
Continuation of TAML 110a. \textit{A}fter TAML 110a. \textit{(Formerly TAML 116b)}

TAML 130a\textsuperscript{G}, Intermediate Tamil I. Blake Wentworth.
\textit{m} \textit{t} \textit{w} \textit{t} \textit{h} \textit{f} \textit{r} \textit{f} \text{11.35-12.25 L3} 1\frac{1}{2} \text{ C} \text{ Credits Meets RP (34)}
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. \textit{Prerequisite: TAML 120b or equivalent.}

TAML 140b\textsuperscript{G}, Intermediate Tamil II. Blake Wentworth.
\textit{m} \textit{t} \textit{w} \textit{t} \textit{h} \textit{f} \textit{r} \textit{f} \text{11.35-12.25 L4} 1\frac{1}{2} \text{ C} \text{ Credits Meets RP (34)}
Continuation of TAML 130a, focusing on further development of proficiency in the four language skill areas. Prepares students to conduct fieldwork in Tamil. \textit{Prerequisite: TAML 130a or equivalent.} \textit{(Formerly TAML 131b)}

\textbf{\textastarshape TAML 150b\textsuperscript{G}, Advanced Tamil. Staff.}
\textit{h} \textit{t} \textit{b} \textit{a} \text{ L5 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. \textit{Prerequisite: TAML 140b or equivalent.}

\textbf{\textastarshape TAML 198a\textsuperscript{G} or b\textsuperscript{G}, Advanced Tutorial. Blake Wentworth.}
\textit{f} \text{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.

\textbf{General Courses in South Asian Studies}

SAST 201b/ANTH 285b, South Asian Nationalisms. Bernard Bate.
For description see under Anthropology.

SAST 203a/ANTH 266a, State and Society in Afghanistan.
Alessandro Monsutti.
\textit{t} \textit{h} \text{9-10.15 So (0)}
Historical, political, and ethnographic examination of state and society in Afghanistan. Ecology and economy, social and political organization, and ethnicity and transnational networks explored as bases for understanding the causes and consequences of domestic political turmoil and foreign interventions over the last thirty years. Attention to contemporary reconstruction and the country's prospects for the future.

SAST 222b/HIST 392b, Indian Merchants in History. Marina Martin.
\textit{t} \textit{h} \text{2.30-3.20, 1 H} \textit{t} \textit{b} \textit{a} \text{ Hu (27)}
Antecedents to contemporary India's role as a global powerhouse for industry. Focus on Indian mercantile networks prior to 1900, their patterns of business organization and spheres of influence, and the political and economic conditions under which they operated.
Examination of democracy in India, with a focus on the postcolonial period. The development and functioning of contemporary Indian democracy analyzed through study of the 2009 Indian election.

Study of India’s social mobilization movements, from the anticolonial struggle for independence, to dynamic women’s movements, to organized religious violence. Collective action in India situated within a broader study of social mobilization in different parts of the world. Works by authors in the fields of economics, political science, sociology, and literature and film.

Introduction to the basic concepts of Indian classical music traditions from Vedic times to the present, with a focus on Hindustani music. Discussion of history and theory combined with practical instruction. Topics include improvisation, modern trends, gender, Bollywood, musical fusions, and interactions between Indian and Western music cultures. No previous experience in Indian classical music required.

The structure of public health in India examined from a sociomedical perspective. Theoretical, empirical, and critical research on topics such as the burden of disease and communicable, noncommunicable, and unintentional injuries; management, governance, and delivery of health services to populations across the country; and policies and future challenges for the Indian government to promote the goal of universal health.
Introduction to the field of migration studies, focusing on Afghan refugees as a case study. Anthropological perspectives on transnational networks and socio-economic strategies of Afghan refugees and migrants. Topics include the political stakes of global migration; debates on remittances in contexts of conflict, postconflict reconstruction, and development; the role of humanitarian and development organizations; and issues of illegal immigration to the West.

*SAST 310a/FILM 317a, UNDERSTANDING BOLLYWOOD.
Ashish Chadha.
For description see under Film Studies.

*SAST 322b/HIST 391Jb, THE CULTURE OF COLONIAL INDIA.
Mridu Rai.
For description see under History.

*SAST 323a/HIST 395Ja, INDIA AND GLOBALIZATION. Marina Martin.
T 2.30-4.30 Hu (o)
India's role in the world economy from the eighteenth century through the twentieth. Global factors that influenced economic change in India. The part India has played in international transactions of goods, people, and money. South Asia's contributions to economic change in the rest of the world.

*SAST 340a, VIOLENCE IN MODERN SOUTH ASIA. Shreeyash Palshikar.
T 9.25-11.15 WR, So (o)
The history of political violence in South Asia from the colonial period to the present. Topics include violence and nonviolence during the nationalist movement; the violence that accompanied the formation of India and Pakistan in 1947; and recent riots in Mumbai (Bombay), Maharashtra, and Gujarat.

*SAST 341a/PLSC 442a, DEVELOPMENT IN SOUTH ASIA. Tariq Thachil.
W 7-8.50 p.m. So (o)
Introduction to issues surrounding political and economic development in South Asia. Successes and failures of modernization, including the influence of intellectual trends and their derivative policy prescriptions. Foundational perspectives on development and the policies they yielded; empirical treatments of the experiences of South Asian countries in the postcolonial era.

*SAST 357a/RLST 129aG, BUDDHISM AND HINDUISM IN GANDHARA.
Osmund Bopearachchi.
For description see under Religious Studies.

*SAST 358b/RLST 184b, THE RAMAYANA. Hugh Flick, Jr.
For description see under Religious Studies.

*SAST 359b/RLST 128bG, BUDDHISM AND TRADE IN SRI LANKA.
Osmund Bopearachchi.
For description see under Religious Studies.

*SAST 360b, INTRODUCTION TO BHAKTI LITERATURE.
Swapna Sharma.
T 3.30-5.20 Hu (o)
Study of bhakti (devotional literature) in North India, beginning in the sixteenth century. Resistance to Brahmanical forms of social dominance; the role of linguistically based power; the development of vernacular languages and the national language of India.
**sast 361b, Law and Religion in Ancient India.** David Brick.

M 1:30-3:20 Hu (o)

The tradition of Hindu law and its place in the legal, religious, social, and political history of South Asia. The methodologies and theoretical presuppositions of comparative religious and legal studies. The relationship between religion and law, the nature of scriptural authority, jurisprudential commentary, and the role of customary law.

**sast 375b/hsar 427b, Gurus and Saints in Indian Art.**

Tamara Sears.

For description see under History of Art.

**sast 376a/socy 211a, Health and Inequality in India.**

Vani Kulkarni.

T 1:30-3:20 So (o)

The relationship between India’s inequalities in health and society. Inequalities in society and medicine, both natural and constructed, that influence health outcomes; health disparities that shape social and medical institutions and relationships; and research that evaluates and proposes health and social policy models.

**sast 457b, The Tamil Literary Tradition.** Blake Wentworth.

Th 3:30-5:20 (o) Tr

An introduction to the masterpieces of Tamil literature. Tamil’s literary heritage as independent of Sanskrit norms. Bardic poetry, epic, lyric verse, devotional hymns, autobiography, and modern fiction. *All texts provided in translation; no knowledge of Tamil required.*

**sast 476a/econ 478a, Economic Development of India and South Asia.** T. N. Srinivasan.

For description see under Economics.

**hist 310a, History of Modern South Asia.** Mridu Rai.

**hist 390Jb, Postcolonial South Asia, 1947 to the Present.** Mridu Rai.

**hums 418a/rlist 130a, Traditional Literature of India, China, and Japan.** Phyllis Granoff, Koichi Shinohara.

For description see under Humanities.

**SENIOR ESSAY COURSE**

**sast 491a and 492b, Senior Essay.** Consult the director of undergraduate studies.

HTBA ½ C Credit per term (o) 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 online 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, seas@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), William Kelly (Anthropology), Benedict Kiernan (History), James Scott (Political Science), Mimi Yiengpruksawan (History of Art)

Associate Professor
Sarah Weiss (Music)

Assistant Professor
Erik Harms (Anthropology)

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.

**INDN 110a**, Elementary Indonesian I. Indriyo Sukmono.
5 HTBA L1 1½ 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 120b**, Elementary Indonesian II. Indriyo Sukmono.
5 HTBA L2 1½ 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**)

**INDN 120a**, Intermediate Indonesian I. Indriyo Sukmono.
3 HTBA  L3  (61)
Continued practice in colloquial Indonesian conversation and reading and discussion of texts. *After INDN 120b or equivalent.*

**INDN 140b**, 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 110a**, Elementary Vietnamese I. Quang Phu Van.
MTWTHF 9.25-10.15  L1  1 1/2 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 120b**, Elementary Vietnamese II. Quang Phu Van.
MTWTHF 9.25-10.15  L2  1 1/2 C Credits Meets RP  (32)
Continuation of **VIET 110a**. (Formerly the second term of **VIET 115**)

**VIET 130a**, Intermediate Vietnamese I. Quang Phu Van.
MTWTHF 10.30-11.20  L3  1 1/2 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 1/2 C Credits Meets RP  (33)
Continuation of **VIET 130a**. (Formerly the second term of **VIET 130**)

[**VIET 220b**, Introduction to Vietnamese Culture, Values, and Literature]

**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.*
OTHER RELEVANT COURSES

ANTH 201b, Postwar Vietnam.  Erik Harms.

ANTH 244a, Modern Southeast Asia.  Erik Harms.

HIST 323b, Southeast Asia Since 1900.  Benedict Kiernan.

★HIST 382Jb, Vietnamese History from Earliest Times to 1920.  Benedict Kiernan.


PHIL 210a, Eastern Philosophy.  Quang Phu Van.

SPANISH

Director of undergraduate studies: Susan Byrne, Rm. 205, 82–90 Wall St., 432-1162, susan.byrne@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), Roberto González Echevarría, Aníbal González Pérez, K. David Jackson, María Rosa Menocal, Noël Valis

Assistant Professors
Susan Byrne, Ernesto Estrella, Paulo Moreira, Kevin Poole

Senior Lectors
Sybil Alexandrov, Marta Almeida, Teresa Carballal, Mercedes Carreras, Sebastián Díaz, Oscar González Barreto, María Jordán, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Terry Seymour, Margherita Tótora, Sonia Valle

Lectors
Pilar Asensio, Yovanna Cifuentes, Ame Cividanes, Maripaz García, Rosamaría León, Tania Martuscelli, Bárbbara 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 beginning 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 available 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, 266a, 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 16 in the spring term, or by 4 p.m. on December 4 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 L5 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 II of this bulletin.

Departmental placement examination. The placement examination will be given on Sunday, August 30, 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 1, from 9 to 11 a.m. 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, 266a, 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

Course for freshmen

*SPAN 060a, Freshman Colloquium: Literary Studies in Spanish.
Ernesto Estrella.

TH 1-2:15 L5, Hu (0) 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.
GROUP A COURSES

SPAN 110A, ELEMENTARY SPANISH I. Maripaz García.
  mtwthf 1 htra 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.
  mtwthf 1 htra 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.
  mtwthf 2 htra 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.
  mtwthf 1 htra For sections see www.yale.edu/courseinfo
  L3 1 1/2 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. Staff.
  3 htra L2–L3 (50)
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.
  mtwthf 1 htra For sections see www.yale.edu/courseinfo
  L4 1 1/2 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.

*MWF 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.

*MTWTHF 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 (0)*

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. 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 b or 140a or b or 145a or b.* May be taken for credit by students who have completed courses with higher numbers. *Admits to Group B and C courses. Does not count toward the major.* (Formerly span 138a and 139b)

**GROUP B COURSES**

Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Unless otherwise noted, all courses in Group B are conducted in Spanish.

**span 220a, Theater and Poetry Workshop.** Sonia Valle and staff.

*TTTH 1–2:15 L5 (0)*

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 (0) 222a–2: TTTH 9–10:15 L5 (0)*

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 235b, Spanish in Film: An Introduction to the New Latin American Cinema.** Margherita Tórtora.

*MWF 1–2:15 L5 (0)*
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 224a or b, SPANISH IN POLITICS, INTERNATIONAL RELATIONS, AND THE MEDIA. Teresa Carballal.

MW 1-2.15 L5 (0)

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 11.35-12.30 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 227b, 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]

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.

MW 3 HTBA 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 246b, INTRODUCTION TO THE CULTURES OF SPAIN.

Ernesto Estrella.

MW 1-2.15 L5, Hu (36)
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, INTRODUCTION TO THE CULTURES OF LATIN AMERICA.**
Roberto González Echevarría.

**TTh 2:30-3:45 L5, Hu (0)**
A chronological study of Latin American cultures through their expressions in literature and the arts, beginning in the pre-Columbian period and focusing on the period from the nineteenth century to the present. Emphasis on crucial historical moments and on distinctive rituals such as fiestas.

**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.**
Noël Valis.

**MW 11:35-12:50 L5, Hu (34)**
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 266a, STUDIES IN LATIN AMERICAN LITERATURE I.**
Aníbal González Pérez.

**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.**
Rolena Adorno.

**TTh 1-2:15 L5, Hu (26)**
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 300A/LITR 189A, 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 306b, Hispanic Poetry from Modernismo to the 1950s.
Ernesto Estrella.
MW 2:30-3:45  L4, Hu (0)
Poetry as a productive space in which questions emerge concerning literature’s boundaries and the impact of modernized life on the literary field. Readings from works in the Hispanic tradition. Topics include social commitment, art for art’s sake, the shaping of subjectivity, the constitution of the autonomous literary field, artistic and political resistance, and the encounter with otherness and heterogeneity.

MW 1-2:15  L5, Hu (0)
A reading of several Lorca plays and selected poetry and an examination of the Lorca legend. Topics include Lorca’s place in Spanish and world literature; myths and realities of Lorca as a cultural icon; sexuality and gender in the plays and poetry; and social issues and aesthetic practices.

*SPAN 325a, Poetry of the Spanish Civil War.
Ernesto Estrella.
TH 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 327b, Religion and Literature in the Spanish Middle Ages. Kevin Poole.
MW 9-10:15  Hu (0)
Survey of religious literature produced during the Spanish Middle Ages, with emphasis on the influence of monasticism. Poetry, short narrative, and epic by authors such as Berceo, Don Juan Manuel, and Jorge Manrique. Topics include legends and tales of the saints, religious theater in medieval Spain, scholasticism, and education.

TH 11:35-12:50  L5, Hu (0)
A study of the major texts of the Spanish picaresque novel, focusing on its development and constitution as a genre, the novelty of its narrative structures, and the social issues that the texts raise, uphold, parody, or criticize.

*SPAN 332a, Women in Medieval Spanish Literature.
Kevin Poole.
MW 2:30-3:45  Hu (0)
The role of women in medieval Spanish society as seen through fiction and political and religious writings. Topics include family and marriage, nobility and queenship, religious life, and education.

*SPAN 332a, Ethics and Politics in the Spanish American Short Story. Aníbal González Pérez.
MW 11:35-12:50  L5, Hu (0)
Survey of the twentieth-century Spanish American short story, focused on the links among ethics, politics, and writing. Representation of ethics in narrative fiction; metaphorical links between writing and violence; tension between artistic integrity and political commitment.
span 383a/litr 293a/port 370a, Psychology in Literature: Characters on the Margins of Reality. K. David Jackson. For description see under Portuguese.

*span 396b, Writing a Nation: Literature of Puerto Rico. Aníbal González Pérez. TTh 9-10.15 L5, Hu (o) Literature’s role in the development of a sense of nationhood in Puerto Rico; tension experienced by Puerto Rican writers balancing political commitment and artistic freedom. Short stories, poetry, essays, and novels by Puerto Rican authors of the nineteenth through twenty-first centuries.

[span 397b, Poets and Pagans]

*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.

htba (o) 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 online Graduate School bulletin. 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, 422-0722, 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). Students interested in pursuing a Special Divisional Major in Renaissance studies should visit www.yale.edu/renstudies/undergrad.html. 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. For the Class of 2012 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the major. 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.

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

Director of undergraduate studies: Andrew Barron, 24 Hillhouse Ave., 432-0634, andrew.barron@yale.edu

FACULTY OF THE DEPARTMENT OF STATISTICS

Professors
†Donald Andrews, Andrew Barron, Joseph Chang, †Donald Green, John Hartigan (Emeritus), †Peter Phillips, David Pollard, †Heping Zhang, †Hongyu Zhao

Associate Professors
†Sekhar Tatikonda, †Edmund Yeh

Assistant Professors
Lisha Chen, John Emerson, Mokshay Madiman, Harrison Zhou

Lecturer
Jonathan Reuning-Scherer

†A joint appointment with primary affiliation in another department or school.

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.

The curriculum for the Statistics major is a synthesis of theory, methods, and applications. The requirements are designed to achieve some balance and depth in each of the three directions of probability, statistics, and data analysis. Statistics 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 Statistics include programs in the social sciences, natural sciences, engineering, computer science, or mathematics. A Statistics concentration is also available within the Applied Mathematics major.

Prerequisites. 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 225a or b, or equivalents.

Requirements of the major for the B.A. degree program. The program requires ten term courses beyond the prerequisites, including the senior project. Majors take two courses in the theory and applications of probability (STAT 241a and 251b), two courses emphasizing the theory of statistical inference (STAT 242b and 312a), and two courses in the methods and practice of data analysis, chosen from STAT 230b, 361a, and 363b. STAT 238a may be substituted for STAT 241a with the permission of the director of undergraduate studies. All majors are also required to take a course in computing (ENAS 130b or CPSC 112a or b). The two remaining courses are electives chosen from Statistics courses numbered above 200. Appropriate courses in other departments or in the graduate school may count toward the major with permission of the director of undergraduate studies.

Requirements of the major for the B.S. degree program. In addition to the courses indicated for the B.A. major, the B.S. degree requires a course in mathematical analysis (MATH 260b, 300b, or 301a) and an additional Statistics elective numbered above 200.

Senior requirement. In the senior year, majors in both degree programs complete a research project in STAT 490b. Students enrolled in this course work on a research project under the supervision of a faculty member, present and share their progress with each other during the seminar meetings, and write a final report.

REQUIREMENTS OF THE MAJOR

Prerequisites: Both degrees—MATH 120a or b and MATH 222a or b or 225a or b, or equivalents

Number of courses: B.A.—10 term courses beyond prereqs (incl senior project); B.S.—12 term courses beyond prereqs (incl senior project)

Specific courses required: B.A.—STAT 241a, 242b, 251b, 312a; 2 from STAT 230b, 361a, 363b; ENAS 130b or CPSC 112a or b; B.S.—same, plus MATH 260b, 300b, or 301a

Distribution of courses: B.A.—2 Stat electives numbered above 200, as specified; B.S.—3 Stat electives numbered above 200, as specified

Senior requirement: Both degrees—Senior project (STAT 490b)

Substitution permitted: STAT 238a for STAT 241a, with DUS permission; courses in other depts or grad courses, with DUS permission

stat 100b, Introductory Statistics. Staff.

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.

**stat 101-106, INTRODUCTION TO STATISTICS.**
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 in **stat 101-106** 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 101G/E&EB 2102G/MCDB 215a, INTRODUCTION TO STATISTICS: LIFE SCIENCES.** Jonathan Reuning-Scherer and staff.

**stat 102G/E&PE 101a/PLSC 452a, INTRODUCTION TO STATISTICS: POLITICAL SCIENCE.** Jonathan Reuning-Scherer and staff.

**stat 103G/E&PE 102a/PLSC 453a, INTRODUCTION TO STATISTICS: SOCIAL SCIENCES.** Jonathan Reuning-Scherer.

**stat 105a, INTRODUCTION TO STATISTICS: MEDICINE.**

**stat 106aG, INTRODUCTION TO STATISTICS: DATA ANALYSIS.**

**stat 128b, REAL-WORLD STATISTICS.** John Emerson.

Quantitative exploration of real-world problems through analysis of data. Topics include nationalistic biases in Olympic judging of diving and gymnastics; property tax assessments in New Haven; the role of the random selection of judges
in international figure skating competitions; the 2006 stock option backdating scandal; and the study of bias in the jury selection process of Connecticut’s Federal Court.

★stat 129a ★psych 129a, Statistics as a Way of Knowing. Nelson Donegan.
For description see under Psychology.

★stat 150a, Rational Choices. John Hartigan.
WF 1-2.15 (0)
Introduction to the theory of rational choice, the idea that individuals choose, from an explicit list of possible actions, the action that maximizes expected 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 230b★/math 235b, Introductory Data Analysis. Staff.
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 R computing language and Web data sources are used.

stat 238a★, Probability and Statistics. Staff.
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 241a★/math 241a, Probability Theory. Staff.
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.

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 stat 241a and concurrently with or after math 222a or b or 223a or b, or equivalents.

stat 251b★/math 251b, Stochastic Processes. Staff.
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 312a★, Linear Models. Staff.
tth 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 312b, 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. Staff.

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/math 361a, Data Analysis. Staff.

MW 2.30-3.45 QR (0)

Through analysis of data sets using the R 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)

Introduction to the analysis of multivariate data as applied to examples from the social sciences. Topics include principal components analysis, factor analysis, cluster analysis (hierarchical clustering, k-means), discriminant analysis, multidimensional scaling, and structural equations modeling. Extensive computer work using either SAS or SPSS programming software. Prerequisites: knowledge of basic inferential procedures and experience with linear models.

stat 364b/math 364b/engineering 444b, Information Theory. Staff.

TTh 9-10.15 QR (22)


stat 369b, Data Mining and Machine Learning. Staff.

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.
**stat 490b, Senior Seminar and Project.** Consult the director of undergraduate studies.

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.

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](http://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:

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<th>Junior Year</th>
<th>Senior Year</th>
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<tr>
<td>TPRP 100a</td>
<td>TPRP 290a-296a</td>
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<td>TPRP 104a</td>
<td>TPRP 299a or b</td>
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The usual early childhood sequence is:

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<th>Junior Year</th>
<th>Senior Year</th>
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<td>TPRP 125a</td>
<td>TPRP 127a</td>
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<td>TPRP 128b</td>
<td>TPRP 299a or b</td>
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<td>TPRP 192a</td>
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<td>TPRP 195b</td>
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Electives in Psychology

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]

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.

  For description see under Child Study Center.

* TPRP 150a/b, Schools, Communities, and the Teacher. Jonathon Gillette.
  TH 1-2.15 So Meets RP (o)
  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 1/3 C Credit (o)
  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 1/3 C Credit per term Meets RP (o)
  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 (o)
  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 196b/PSYC 461b, Issues in Special Education. Barbara Shiller.
  W 2.30-4.20 So Meets RP (o)
  An examination of contemporary issues in the field of special education from systemic and developmental perspectives. Review of policy, assessment and classification, and instruction and intervention.

  T 1.30-3.20 So Meets RP (o)
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 299aG 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 471a 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: Toni Dorfman, 220 York St., 432-1310, theater@pantheon.yale.edu

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

**Professors**

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, 226b, 230a or b, 233b, 237a and 238b, 300a, 305a, 315b, 320a, 321a, 322b, 324b, 327b, 335a, 381b, 386a, 387b, 404b, 414a or b) and guided independent study projects (THST 471a, 472b, 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.
Paige McGinley.

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: WF 2.30-4.20 Meets RP (0) Joan MacIntosh
210a–2: MW 3.30-5.20 Meets RP (0) Deb Margolin
210a–3: TH 1.30-3.20 Meets RP (0) Connie Grappo
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 (0)
211b–1: M 2.30-6.30 Evan Yionoulis
211b–2: TH 1.30-3.20 Polina Klimovitskaya
Continued study of acting as an art, building on performance concepts introduced 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 224a/MUSI 228a, Musical Theater Performance I.**
Annette Jolles.
For description see under Music.

**THST 226b/MUSI 229b, Musical Theater Performance II.**
Annette Jolles.
For description see under Music.

**THST 230a or b, Advanced Acting and Scene Study.**
230a: TTH 3:30-5:20 Meets RP (o) Connie Grappo
230b: MW 1:30-3:20 Meets RP (o) Joan MacIntosh
Combination of exercises and scene study to deepen the understanding and playing of action.
†Admission by audition. Open to junior and senior Theater Studies majors only. Prerequisite: THST 211b.

**THST 235b, Dance Theater.**  Michael Tracy.
TTH 1:30-3:20 Hu (o)
A practical and theoretical survey of dance theater history. Introduction to movement vocabularies, physical techniques, and repertoire from post-1950 modern and postmodern dance theater. Open to students of all levels and majors.

**THST 237a and 238b, Design for the Theater.**
Kathryn Krier.
TTH 9:25-11:15 Meets RP (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.**  Toni Dorfman.
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. Prerequisite: THST 210a.

**THST 305a, Production Seminar: The Actor and the Text.**
Toni Dorfman.
TTH 1:30-3:20 Hu Meets RP (o)
Critical and theatrical exploration of Chekhov's work, culminating in a public performance of *The Cherry Orchard.*
†Admission by audition. Open to juniors and seniors only, with priority to Theater Studies majors seeking a senior project.

**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.
Analyzing, Directing, and Performing
Early Opera.  Staff.
For description see under Music.

**thst 320a/engl 432a, 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 3.30-5.20  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 333a/afst 435a, Contemporary Dance of African Expression.** Lacina Coulibaly.
TTTH 1.30-3.20  Hu  Meets RP  (o)
A practical and theoretical study of the traditional dances of Africa, focusing on those of Burkina Faso and their contemporary manifestations. Emphasis on rhythm, kinesthetic form, and gestural expression. The fusion of modern European dance and traditional African dance.
†Admission by audition during the first class meeting.

[thst 337b, Space, Character, and Design]
[thst 341b, Comedy in Performance]
[thst 358a, Introduction to Lighting Design]
[thst 373b, Acting for the Camera]

MW 1.30-3.20  Hu  Meets RP  (o)
Overview of the dramaturgical landscape and literary achievements of downtown theater artists in the 1980s and 1990s. The hybridization of performance art and theater in the late twentieth century. Attention both to the history of performance and to the analysis and performance of texts from the period.

**thst 386a, Advanced Dance Repertory.** Emily Coates.  
**MW 2:30-4:20 Hu Meets RP (0)**  
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 during the first class meeting.

**thst 387b, Advanced Dance Composition.** Emily Coates.  
**MW 2:30-4:20 Hu Meets RP (0)**  
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.

**thst 404b, Elements of Composition for the Stage.**  
Robert Woodruff.  
**TH 2:30-4:30 Hu (0)**  
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 with permission of instructor.

**thst 414a or b, Writing for Musical Theater and Opera.**  
Rachel Sheinkin [F], Michael Korie [Sp].  
**F 1:30-3:20 Meets RP (0)**  
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. Possible collaboration with student composers.

[thst 418a, Actors and the Art of Acting]

**DRAMATIC LITERATURE AND THEATER HISTORY**

**thst 218b/CLCV 218b/HUMS 238b/LITR 161b, Drama and Demos.**  
Timothy Robinson.  
For description see under Classics.

**thst 219a/AFAM 233a/AMST 219a, Performing American Identities.** Paige McGinley.  
For description see under American Studies.

[thst 223b/ENGL 360b/HUMS 243b/LITR 223b, The Foundations of Modern Drama]

**thst 236a/MUSI 246a, American Musical Theater History.** Daniel Egan.  
For description see under Music.
**THST 240b, Melodrama.** Paul McKinley.
* F 1:30-2:20; screenings in class Hu (o)

**THST 245a/FREN 245a, Twentieth-Century French Theater.**
Jean-Jacques Poucel.
For description see under French.

**THST 290b/ENGL 388b, Poetics of Performance.**
Joseph Roach.
* MW 2:30-3:45 Hu (o)
Introduction to the oral interpretation of poetry. The expressive principles of social communication and cultural practice as implemented by performance. Experiences of empathy, pathos, and mood; techniques of embodying, projecting, and breathing; modes of analysis, figuration, and interpretation.

**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**

**THST 345b, Dramatic Theory and Criticism**

**THST 348b/ENGL 383b/LITR 275b, The Common Wealth of Drama.**
Murray Biggs.
* MW 4-5:15 Hu (o)
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.

**THST 364a/WGSS 349a, Gay and Lesbian Theater.**
Robert Vorlicky.
* F 1:30-2:20 Hu (o)
A reading-intensive survey of U.S. gay, lesbian, and transgender drama and performance across genre, periods, and casting variables. Plays examined both as texts and as material meant for production. Emphasis on historicizing the interplay between text and performance when critiquing the gay, lesbian, and transgender subject in theatrical representation.

**THST 365b/AMST 372b/ENGL 439b, Contemporary American Drama.**
Marc Robinson.
* Th 1:30-3:20 WR, Hu (o)
A study of selected plays by Maria Irene Fornes, Adrienne Kennedy, Sam Shepard, David Mamet, Wallace Shawn, Suzan-Lori Parks, and others.

**THST 369a/AFAM 369a/AMST 370a/ENGL 364a/LITR 271a, African American Theater**

**THST 370b/PLSH 248b, Polish Theater and Its Traditions.**
Krystyna Illakowicz.
For description see under Slavic Languages & Literatures.
*THST 380b, The History of Dance. Emily Coates.
T 2:30-4:20 Meets RP (o)
An examination of the major movements in the history of concert and social dance, including ballet, tap, jazz, modern, musical theater, and different cultural forms. Exercises are used to illuminate analysis of the body in motion.

For description see under East Asian Languages & Literatures.

*THST 394b/HIST 141Jb/HSHM 462b, Science and Drama. Bettyann Kevles.
For description see under History.

*THST 398a/AMST 371a, American Experimental Theater. Marc Robinson.
T 1:30-3:20 WR, Hu (o)
Topics include the Living Theater, Happenings, Cunningham/Cage, Open Theater, Judson Dance Theater, Grand Union, Bread and Puppet Theater, Ontological-Hysteric Theater, Meredith Monk, Mabou Mines, Robert Wilson, and the Wooster Group.

*THST 406a/AFAM 428a/AMST 335a, Dance and Black Popular Culture. Thomas DeFrantz.
T 3:30-5:20 Hu (o)
Approaches to theorizing performance, in particular dance performance of a black diaspora. Uncovering methodologies pertinent to the discovery and analysis of dance performance, intersections of black popular culture, and concepts of the corporeal.

[THST 411b/AFAM 417b, Black Performance Theory]

*THST 419a/ENGL 323a, Modern and Contemporary British Drama. Joseph Roach.
MW 11:35-12:50 Hu (o)
A survey of major dramatists from George Bernard Shaw to Sarah Kane, including recent works of contextualized performance practice.

[THST 427b/JAPN 300b, Gesture in Japanese and African American Performance]

*THST 430a/EALL 240a, Theory and Performance in East Asian Traditions. Reginald Jackson.
For description see under East Asian Languages & Literatures.

Other Courses Pertinent to the Theater Studies Major

ENGL 200b, Shakespeare: Comedies and Romances. Lawrence Manley.

ENGL 201a, Shakespeare: Histories and Tragedies. David Scott Kastan.

FILM 150a, Introduction to Film Studies. Ron Gregg.
**Film 350a or b, Screenwriting.** Marc Lapadula.

**Film 410b/Gman 406b/Litr 350b, Theatricality in Film.** Brigitte Peucker.
For description see under Film Studies.

**Hums 228a, Shakespeare and the Canon: Histories, Comedies, and Poems.** Harold Bloom.

**Hums 229b, Shakespeare and the Canon: Tragedies and Romances.** Harold Bloom.

**Hums 312b/HSAR 448b, The Historical Imagination in Early Modern England.** Mia Genoni.
For description see under Humanities.

**Litr 122b, World Poetry and Performance.** Alexander Beecroft, David Gabriel, Richard Maxwell, David Quint.

**Musı 214a, Introduction to Musical Theater Songwriting.** Andrew Gerle.

**Musı 314b, Composition of Musical Theater.** Joshua Rosenblum.

**Musı 484a, The Operas of Verdi.** Gundula Kreuzer.

**Rlst 184b/Sast 38b, The Ramayana.** Hugh Flick, Jr.
For description see under Religious Studies.

**Span 220a, Theater and Poetry Workshop.** Sonia Valle and staff.

**Span 324a, Lorca: Poetry and Plays.** Noël Valis.

**SPECIAL PROJECTS**

**Thst 471a and 472b, Directed Independent Study.** Toni Dorfman.

**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 last day of reading 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.

Murray Biggs and staff.
HTBA (O)
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. Toni Dorfman, Kathryn Krier.
W 9:25-10:15 (O)
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 237A, 238B 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 Siru (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: Melanie Boyd, 316 WLH, 432-0847, melanie.boyd@yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF WOMEN'S, GENDER, AND SEXUALITY STUDIES

Professors
Julia Adams (Sociology), Elizabeth Alexander (African American Studies), Hannah Bruecker (Sociology), Jill Campbell (English), Hazel Carby (African American Studies, American Studies), Kang-i Sun Chang (East Asian Languages & Literatures), George Chauncy (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), Sally Promey (Chair) (Divinity School, American Studies), Frances Rosenbluth (Political Science), Cynthia Russell (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)
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 110b, 120a, 200a, or 201b, 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. All majors take the Senior Colloquium (WGSS 490a or b) in the senior year, typically in the fall term, 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 or b, 491a or b)
GATEWAY COURSES

wgss 110b/socy 134b, SEX AND GENDER IN SOCIETY. Rene Almeling.
For description see under Sociology.

wgss 120a, WOMEN, FOOD, AND CULTURE. Maria Trumpler.
TH 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 134a/hist 127a, U.S. LESBIAN AND GAY HISTORY.
George Chauncey.
For description see under History.

wgss 201b/amst 271b/hist 171b, WOMEN IN AMERICA: THE TWENTIETH CENTURY. Joanne Meyerowitz.
For description see under History.

INTERMEDIATE COURSES

*wgss 295b, GLOBALIZING GENDER. Geetanjali Singh Chanda.
TH 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, Timothy Stewart-Winter.
TH 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/#amst 482a, HISTORY OF FEMINIST THOUGHT. Laura Wexler.
W 1:30-3:20  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.

*wgss 398b, JUNIOR SEMINAR: THEORY AND METHOD. Melanie Boyd.
T 7-8:50 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 or b, The Senior Colloquium. Maria Trumpler.

T 3:30-5:20 (0)
A research seminar taken during 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. Melanie Boyd.

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 045a, Cross-Cultural Narratives of Desire.

William Summers.

TH 4-5:15 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 111a/AMST 111a/RlST 111a, Sexuality and Religion.

Kathryn Lofton.

For description see under Religious Studies.

WGSS 270a/AMST 270a/HIST 170a, Women in America: The Colonial Period to 1900. Rebecca Tannenbaum.

For description see under History.

WGSS 290b/AFST 290b/ANTH 290b, Gender and Sexuality in Africa.

Emily Wentzell.

For description see under Anthropology.

*WGSS 298a/*ANTH 298a/*ER&M 298a, The Anthropology of Oratory and Rhetoric. Bernard Bate.

For description see under Anthropology.

*WGSS 304a, Men, Manhood, and Masculinity. Graeme Reid.

W 1:30-3:20 So (0)
Cultural and historic constructions of masculinity explored through an investigation of male bodies, sexualities, and social interactions. Multiple masculinities; the relationship between hegemonic, non-hegemonic, and subordinate masculinities.
Women's, Gender, and Sexuality Studies 629

*WGSS 309b/*AFAM 304b/*AMST 309b, Toni Morrison. Naomi Pabst. For description see under African American Studies.

*WGSS 314a/*SOCY 216a, Social Movements. Ron Eyerman. For description see under Sociology.

WGSS 323b/AFST 333b/ANTH 239b, HIV and AIDS in Africa. Graeme Reid. 
TR 1.30-2.20, 1 HTBA 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 reveal about oneself and one’s place in society; how it can be considered a horizontal community formation.

*WGSS 328b/ER&M 328b, Popular Culture and Postcolonial India. Geetanjali Singh Chanda. 
T 1.30-3.20 WR, Hu (0)
A study of films and literature of South Asians living, working, and directing in Canada, the United Kingdom, and the United States. Questions of commercial populism, authenticity, and postcolonial identity.

*WGSS 337b/CLCV 214b/HUMS 278b/LITR 233b/MGRK 202b, The Poetry of C. P. Cavafy. George Syrimis. For description see under Hellenic Studies.

*WGSS 339a/ENGL 385a, Feminist Fictions. Margaret Homans. For description see under English Language & Literature.

*WGSS 342a/AFAM 279a/AMST 273a, Black Women’s Literature. Naomi Pabst. For description see under African American Studies.

*WGSS 343a/AFAM 312a/AMST 438a/ER&M 291a/LITR 295a, Caribbean Diasporic Literature. Hazel Carby. For description see under African American Studies.

*WGSS 346b, War, Gender, and Sexuality in the Twentieth-Century United States. Timothy Stewart-Winter. 
W 3.30-5.20 Hu (0)
Study of how the symbolic and lived experience of combat has framed American ideas about gender and sexuality from the early twentieth century to the present. Attention to noncombat arenas where warfare intersects with everyday life, including conscription, industrial production, marriage and child rearing, sexual
subcultures, intimate and racial violence, illness and disability, veteran status, and struggles for citizenship and equality.

*wgss 347a, Race and Sexual Politics in the Modern United States.* Timothy Stewart-Winter.

**Hu 3.30-5.20**

Race and sexuality as major categories organizing life and politics in the twentieth-century United States. Focus on the development of racial and sexual classification and on ways in which Americans have adopted, resisted, and transformed the normative meanings of these categories. Topics include the politics of respectability in communities of color; definitions of sexual health; reproductive and marital norms; the changing status of sex and marriage across the color line; sexual harassment and violence; HIV/AIDS; and the sexual politics of social movements both left and right.

*wgss 348b/amst 353b/hist 160Jb, Selected Topics in Lesbian and Gay History.* George Chauncey.

**Hu 3.30-5.20**

For description see under History.

*wgss 349a/thst 356a, Gay and Lesbian Theater.* Robert Vorlicky.

**Hu 3.30-5.20**

For description see under Theater Studies.

*wgss 352b/engl 359b, Feminist Perspectives on Literature.*

Jill Campbell.

**WR 2.30-3.45, Hu, So 3.30-5.20**

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, and the politics of representation; and the contributions of literature to feminist and queer theory and political movements. *Fulfills the methods requirement.*

*wgss 363b/afst 363b/anth 358b, Beauty, Fashion, and Self-Styling.* Graeme Reid.

**So 1.30-3.20**

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 369b/engl 369b/er&m 367b, Adoption Narratives.*

Margaret Homans.

For description see under English Language & Literature.

*wgss 370a, Cultural Narratives of Violence against Women.*

Melanie Boyd.

**WR 1-2.15**

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.

**WR 1-2.15, Hu 3.30-5.20**
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 383b/*hist 244Jb/*jdst 383b/*rlst 223b62, Women in Modern Jewish History. Paula Hyman.
For description see under Religious Studies.

For description see under East Asian Languages & Literatures.

*wgss 408b/*engl 342b/*hums 288b, Mythology and Community in Twentieth-Century Queer Literature. Sam See.
For description see under English Language & Literature.

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

*wgss 411b/*afam 411b/*amst 426b/*erm 413b, The Fiction of Imaginary or Imminent Futures. Hazel Carby.
For description see under African American Studies.

*wgss 427b/*hist 127Jb, Witchcraft in Colonial America. Rebecca Tannenbaum.
For description see under History.

wgss 436a/afam 231a/anth 211a, Sex and Gender in the Black Diaspora. Jafari Allen.
For description see under African American Studies.

For description see under African American Studies.

*wgss 448a/*hist 151Ja/*hshm 448a62, American Medicine and the Cold War. Naomi Rogers.
For description see under History of Science, History of Medicine.

For description see under American Studies.

*wgss 466a/*psyc 414a, Gender Images: A Psychological Perspective. Marianne LaFrance.
For description see under Psychology.

*wgss 471a or b, Independent Directed Study. Consult the director of undergraduate studies.

HTBA (c)
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.

\*WGSS 493b/\*MMES 493b/\*NELC 491b, Introduction to Modern Middle Eastern Studies. Hala Khamis Nassar. For description see under Near Eastern Languages & Civilizations.

YORŪBA

*(See under African Studies.)*

ZULU

*(See under African Studies.)*
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