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# KEY TO COURSE LISTINGS

**ACCT**  
Course subjects are listed by three- or four-letter abbreviations in capitals. See the complete list of Subject Abbreviations.

**MATH 112a or b**  
Fall-term courses are indicated by the letter “a,” spring-term courses by the letter “b.” A course designated “a or b” is the same course given in both terms.

Prerequisite: MATH 112  
Prerequisites and recommendations are listed at the end of the course description.

**L5, HU**  
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 “Distributional Requirements” under Requirements for the B.A. or B.S. Degree.

½ Course cr  
Most courses earn one course credit per term; variations are noted.

**RP**  
A course designated “RP” meets during the reading period. See Reading Period and Final Examination Period.

[**ASTR 320**]  
Courses in brackets are not offered during the current year but are expected to be given in the succeeding academic year.

[*HIST 012*]  
A student must obtain the instructor’s permission before taking a course marked by a star. All seminars are starred.

**CHEM 418a**

A superscript G following the course number indicates that a course is 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. See “Courses in the Yale Graduate and Professional Schools” under Special Arrangements.

**ITAL 310/LITR 183**  
A course with multiple titles, i.e., with two or more departments in the title line, counts toward the major in each department where it appears.

**Tom Hopkins [F] and Michael Cunningham [Sp]**  
Instructors for fall and spring terms are indicated by the abbreviations “F” and “Sp.”

**After CHEM <221>**  
A course number in angle brackets denotes a course that is not currently listed or bracketed but that has been offered within the past three years.

**Tr**  
The abbreviation “Tr” denotes a literature course with readings in translation.

**English: Pre-1900 Lit**  
Courses with department-specific designations are applied toward the requirements of certain majors. Descriptions of these requirements are included in program descriptions of the relevant majors.

**HIST 130Jb, MCDB 201Lb**  
A capital J or L following the course number denotes a History departmental seminar or a science laboratory, respectively.

**Cognitive Science Courses: ECON 159**  
Related courses appear in departments other than their own (e.g., ECON 159 is listed under Cognitive Science). Such courses may count toward the major of the relating department.
## BUILDING ABBREVIATIONS

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<tr>
<th>Abbreviation</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
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<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>
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<tr>
<td>EVANS</td>
<td>Edward P. Evans Hall</td>
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<tr>
<td>F</td>
<td>Farnam Hall</td>
</tr>
<tr>
<td>GML</td>
<td>Greeley Memorial Laboratory</td>
</tr>
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<td>GRN</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>
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<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>
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<tr>
<td>KCL</td>
<td>Kline Chemistry Laboratory</td>
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<tr>
<td>KGL</td>
<td>Kline Geology Laboratory</td>
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<td>KRN</td>
<td>Kroon Hall</td>
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<tr>
<td>L</td>
<td>Lawrance Hall</td>
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<tr>
<td>LC</td>
<td>Linsly-Chittenden Hall</td>
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<tr>
<td>LEPH</td>
<td>Laboratory of Epidemiology and Public Health</td>
</tr>
<tr>
<td>LFOP</td>
<td>Leitner Observatory and Planetarium</td>
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<tr>
<td>LGH</td>
<td>Abby and Mitch Leigh Hall</td>
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<tr>
<td>LOM</td>
<td>Leet Oliver Memorial Hall</td>
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<td>LORIA</td>
<td>Jeffrey H. Loria Center</td>
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<td>LUCE</td>
<td>Henry R. Luce Hall</td>
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<td>LWR</td>
<td>Lanman-Wright Memorial Hall</td>
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<td>MC</td>
<td>Morse College</td>
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<tr>
<td>MEC</td>
<td>Malone Engineering Center</td>
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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>Pierson College</td>
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<tr>
<td>PH</td>
<td>Phelps Hall</td>
</tr>
<tr>
<td>PM</td>
<td>Peabody Museum of Natural History</td>
</tr>
<tr>
<td>PWG</td>
<td>Payne Whitney Gymnasium</td>
</tr>
<tr>
<td>RDH</td>
<td>Rudolph Hall</td>
</tr>
<tr>
<td>RKZ</td>
<td>Rosenkranz Hall</td>
</tr>
<tr>
<td>SB</td>
<td>Sage Hall</td>
</tr>
<tr>
<td>SCL</td>
<td>Sterling Chemistry Laboratory</td>
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<tr>
<td>SDQ</td>
<td>Sterling Divinity Quadrangle</td>
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<tr>
<td>SHM</td>
<td>Sterling Hall of Medicine</td>
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<td>SLB</td>
<td>Sterling Law Building</td>
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<tr>
<td>SM</td>
<td>Silliman College</td>
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<td>SMH</td>
<td>Sprague Memorial Hall</td>
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<tr>
<td>SML</td>
<td>Sterling Memorial Library</td>
</tr>
<tr>
<td>SPL</td>
<td>Sloane Physics Laboratory</td>
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<tr>
<td>SSS</td>
<td>Sheffield-Sterling-Strathcona Hall</td>
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<td>ST</td>
<td>Street Hall</td>
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<tr>
<td>STOEC</td>
<td>Stockel Hall</td>
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<td>SY</td>
<td>Saybrook College</td>
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<td>TAC</td>
<td>The Anlyan Center</td>
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<td>TC</td>
<td>Trumbull College</td>
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<td>TD</td>
<td>Timothy Dwight College</td>
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<td>UT</td>
<td>University Theatre</td>
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<td>V</td>
<td>Vanderbilt Hall</td>
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<td>W</td>
<td>Welch Hall</td>
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<td>WLH</td>
<td>William L. Harkness Hall</td>
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<td>WNSL</td>
<td>Wright Laboratory</td>
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<td>WNSL-W</td>
<td>Wright Laboratory West</td>
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<tr>
<td>YCBA</td>
<td>Yale Center for British Art</td>
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<tr>
<td>YUAG</td>
<td>Yale University Art Gallery</td>
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# Yale College Calendar with Pertinent Deadlines

This calendar includes a partial summary of deadlines given in the Academic Regulations (p. 30) and in the Yale College online publication *Undergraduate Regulations*. Unless otherwise specified, references are to sections in the Academic Regulations, and deadlines fall at 5 p.m.

## Fall Term 2013

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<th>Day</th>
<th>Event</th>
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<td>Aug. 21</td>
<td>W</td>
<td>Residences open to upperclassmen, 9 a.m.</td>
</tr>
<tr>
<td>Aug. 23</td>
<td>F</td>
<td>Residences open to freshmen, 9 a.m.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required registration meetings for freshmen.</td>
</tr>
<tr>
<td>Aug. 27</td>
<td>T</td>
<td>Required registration meetings for upperclassmen.</td>
</tr>
<tr>
<td>Aug. 28</td>
<td>W</td>
<td>Fall-term classes begin, 8:20 a.m.</td>
</tr>
<tr>
<td>Aug. 30</td>
<td>F</td>
<td>Friday classes do not meet; Monday classes meet instead.</td>
</tr>
<tr>
<td>Sept. 2</td>
<td>M</td>
<td>Labor Day; classes do not meet.</td>
</tr>
<tr>
<td>Sept. 6</td>
<td>F</td>
<td>Final deadline to apply for a fall-term Leave of Absence. See Leave of Absence, Withdrawal, and Readmission (p. 55). Withdrawal from Yale College on or before this date entitles a student to a full rebate of fall-term tuition. See <em>Undergraduate Regulations</em> (<a href="http://yalecollege.yale.edu/content/financial-services">http://yalecollege.yale.edu/content/financial-services</a>).</td>
</tr>
<tr>
<td>Sept. 9</td>
<td>M</td>
<td>Course schedules due for the Class of 2017.*</td>
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<tr>
<td>Sept. 10</td>
<td>T</td>
<td>Course schedules due for the Classes of 2016 and 2015.*</td>
</tr>
<tr>
<td>Sept. 11</td>
<td>W</td>
<td>Course schedules due for the Class of 2014.*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All students planning to complete degree requirements at the end of the fall term must file a petition by this date. See Special Arrangements (p. 63).</td>
</tr>
<tr>
<td>Sept. 21</td>
<td>S</td>
<td>Withdrawal from Yale College on or before this date entitles a student to a rebate of one-half of fall-term tuition. See <em>Undergraduate Regulations</em> (<a href="http://yalecollege.yale.edu/content/financial-services">http://yalecollege.yale.edu/content/financial-services</a>).</td>
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<tr>
<td>Oct. 15</td>
<td>T</td>
<td>Deadline to apply for a spring-term 2014 Term Abroad. See Special Arrangements (p. 60). Deadline to complete applications for financial aid for the 2014 spring term, for students not enrolled in the 2013 fall term. See <em>Undergraduate Regulations</em> (<a href="http://yalecollege.yale.edu/content/financial-aid-regulations">http://yalecollege.yale.edu/content/financial-aid-regulations</a>).</td>
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<tr>
<td>Oct. 18</td>
<td>F</td>
<td>Midterm. Last day to withdraw from a fall-term course without the course appearing on the transcript. See Withdrawal from Courses (p. 47) and Grades (p. 37). Deadline to apply for double credit in a single-credit course. See Special Arrangements (p. 65). Withdrawal from Yale College on or before this date entitles a student to a rebate of one-quarter of the term’s tuition. See <em>Undergraduate Regulations</em> (<a href="http://yalecollege.yale.edu/content/financial-services">http://yalecollege.yale.edu/content/financial-services</a>).</td>
</tr>
</tbody>
</table>
Oct. 22 T October recess begins, 11 p.m.
Oct. 28 M Classes resume, 8:20 a.m.
Nov. 8   F Last day to convert from the Credit/D/Fail option in a fall-term course to a letter grade. See Grades (p. 37).
Nov. 23 S November recess begins, 9 p.m.
Nov. 30 S Last day to relinquish on-campus housing for the spring term without charge. See Undergraduate Regulations (http://yalecollege.yale.edu/content/financial-services).
Dec. 2   M Classes resume, 8:20 a.m.
Dec. 6   F Classes end, 5:30 p.m.; reading period begins. Last day to withdraw from a fall-term course. See Withdrawal from Courses (p. 47) and Grades (p. 37).
Dec. 11  W 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.
Dec. 12  TH Final examinations begin, 9 a.m.†
Dec. 17  T Examinations end, 5:30 p.m.; winter recess begins.
Dec. 18  W Residences close, 12 noon.

SPRING TERM 2014
Jan. 8   W Residences open, 9 a.m.
Jan. 12  S Required freshman registration meetings, 9 p.m.
Jan. 13  M Spring-term classes begin, 8:20 a.m.
            Upperclassmen pick up registration materials by 5 p.m. in their residential college dean’s office.
Jan. 17  F Friday classes do not meet; Monday classes meet instead.
Jan. 20  M Martin Luther King Jr. Day; classes do not meet.
Jan. 22  W Course schedules due for the Class of 2017.* Final deadline to apply for a spring-term Leave of Absence. See Leave of Absence, Withdrawal, and Readmission (p. 55).
            Withdrawal from Yale College on or before this date entitles a student to a full rebate of spring-term tuition. See Undergraduate Regulations (http://yalecollege.yale.edu/content/financial-services).
Jan. 23  TH Course schedules due for the Classes of 2016 and 2015.*
Jan. 24  F Course schedules due for the Class of 2014.* Last day for students in the Class of 2014 to petition for permission to compete the requirements of two majors.
Feb. 6   TH Withdrawal from Yale College on or before this date entitles a student to a rebate of one-half of spring-term tuition. See Undergraduate Regulations (http://yalecollege.yale.edu/content/financial-services).
Mar. 5   W Deadline to apply for a fall-term 2014 Term Abroad or a 2014–2015 Year Abroad. See Special Arrangements (p. 60).
Mar. 7  F  Midterm.
Spring recess begins, 5:30 p.m.
Last day to withdraw from a spring-term course without the course
appearing on the transcript. See Withdrawal from Courses (p. 47)
and Grades (p. 37).
Deadline to apply for double credit in a single-credit course. See Special
Arrangements (p. 65).
Withdrawal from Yale College on or before this date entitles a student to a
rebate of one-quarter of the term’s tuition. See Undergraduate Regulations
(http://yalecollege.yale.edu/content/financial-services).

Mar. 24  M  Classes resume, 8:20 a.m.

Apr. 4  F  Last day to convert from the Credit/D/Fail option in a spring-term course
to a letter grade. See Grades (p. 37).

Apr. 25  F  Classes end, 5:30 p.m; reading period begins.
Last day to withdraw from a spring-term course. See Withdrawal from
Courses (p. 47) and Grades (http://catalog.yale.edu/academic-
regulations/grades).

Apr. 30  W  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.

May 1  TH  Final examinations begin, 9 a.m.†
Applications for fall-term Leaves of Absence due. See Leave of Absence,
Withdrawal, and Readmission (p. 55).

May 6  T  Examinations end, 5:30 p.m.

May 7  W  Residences close for underclassmen, 12 noon.

May 15  TH  Deadline to complete applications for financial aid for the fall and
spring terms, 2014–2015. See Undergraduate Regulations (http://
yalecollege.yale.edu/content/financial-aid-regulations).

May 19  M  University Commencement.

May 20  T  Residences close for seniors, 12 noon.

* Late schedules from all classes are fined and may not include the Credit/D/Fail option. See
Grades and Registration and Enrollment in Courses (p. 43).
† Please note that examinations will be held on Saturdays and Sundays, December 14 and 15
and May 3 and 4.
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Kerry Worsencroft, B.S., Director of Student Financial Services Operations
FINAL EXAMINATION SCHEDULES

Rules governing the conduct of final examinations are given under Reading Period and Final Examination Period (p. 48).

An examination group number is assigned to every course. 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 2013–2014 are:

<table>
<thead>
<tr>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>12 Dec. Th</td>
<td>1 May Th</td>
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<tr>
<td>13 Dec. F</td>
<td>2 May F</td>
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<tr>
<td>14 Dec. Sa</td>
<td>3 May Sa</td>
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<tr>
<td>15 Dec. Su</td>
<td>4 May Su</td>
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<tr>
<td>16 Dec. M</td>
<td>5 May M</td>
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<tr>
<td>17 Dec. Tu</td>
<td>6 May Tu</td>
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</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 “Postponement of Final Examinations” under Completion of Course Work.)
<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>Subject Name</th>
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<tbody>
<tr>
<td>ACCT</td>
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<tr>
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<td>African American Studies</td>
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<td>African Studies</td>
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<td>AKKD</td>
<td>Akkadian</td>
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<td>AMST</td>
<td>American Studies</td>
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<td>AMTH</td>
<td>Applied Mathematics</td>
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<td>Anthropology</td>
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<td>Applied Physics</td>
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<td>ARBC</td>
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<td>Yoruba</td>
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A MESSAGE FROM THE DEAN OF YALE COLLEGE

We officially call this book 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 2013–2014, 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 listing of individual courses does not constitute an education. To help shape that education, we offer you the counsel of faculty and deans and the guiding principles of our distributional requirements, but in the end we are counting on you to explore your old passions and new interests in ways that will lead 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
I. YALE COLLEGE

The Undergraduate Curriculum

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.

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 fixed 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 and Professional 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.

**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 demagogy 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. One 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 section A of the Academic Regulations.
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 Architecture; Astronomy; Chemistry; Economics; Engineering; Environmental Studies; Geology and Geophysics; Global Affairs; Linguistics; Molecular, Cellular, and Developmental Biology; Operations Research; Philosophy; Physics; Political Science; Psychology; and Sociology.

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 130 courses, spanning approximately 40 different academic programs, give special attention to writing. Such courses, designated WR in the course listings, 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. Note that credit toward the writing requirement cannot be earned in courses in creative writing (specifically poetry, fiction, and playwriting) nor in courses conducted in a language other than English.

Major Programs

All candidates for a bachelor’s degree in Yale College must elect a major program. The requirements for a major are described in general terms in the sections below, and in more detail under Subjects of Instruction. 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. Yale College offers more than seventy possible majors. The department or program concerned sets the requirements for each major, which are detailed under Subjects of Instruction.

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 under Subjects of Instruction. 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 and Professional Experience, cipe.yalecollege.yale.edu. Summer courses abroad are offered by Yale Summer Session, summer.yale.edu, and by eligible outside programs through Summer Abroad, www.yale.edu/studyabroad. Advice about internships abroad is available from Undergraduate Career Services, ucs.yalecollege.yale.edu. Students may search
for all grants and fellowships at Yale that support international activities at 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 under Special Arrangements in the Academic Regulations. Additional information is available from the Center for International and Professional Experience, www.yale.edu/studyabroad.

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 britishart.yale.edu/education/yale-college-students/yale-in-london, 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 are open to undergraduates and carry full Yale course credit, although enrollment in Yale-in-London summer session does not count as a term of enrollment in Yale College. Overnight field trips may be included. Accommodations are provided. Course descriptions and further information are available at britishart.yale.edu/education/yale-college-students/yale-in-london, or from the Yale-in-London office at the Yale Center for British Art, or by e-mail to yaleinlondon@yale.edu.

THE MACMILLAN CENTER
The Whitney and Betty MacMillan Center for International and Area Studies at Yale is the University’s focal point for encouraging and coordinating teaching and research on international affairs and on societies and cultures around the world. It brings together scholars from relevant schools and departments to provide comparative and problem-oriented teaching and research on regional, international, and global issues. The MacMillan Center provides seven undergraduate majors, including six focused on world regions: African Studies, East Asian Studies, Latin American Studies, Modern Middle East Studies, Russian and East European Studies, and South Asian Studies. The
seventh major, Global Affairs, concerns regions around the world. Language training is integral to each of the majors.

The MacMillan Center brings visiting scholars to Yale each year from a range of disciplines and countries; awards financial support to Yale students studying languages or traveling abroad; and sponsors lectures, conferences, workshops, symposia, films, and art events. The Center also produces The MacMillan Report, an Internet show that features Yale faculty in international and area studies, on the Web at www.yale.edu/macmillanreport. Further information about the MacMillan Center is available at www.yale.edu/macmillan.

JACKSON INSTITUTE FOR GLOBAL AFFAIRS

The Jackson Institute’s mission is to institutionalize the teaching of global affairs throughout the University and to inspire and prepare Yale students for global citizenship and leadership. The Institute administers the undergraduate major in Global Affairs, a stand-alone major with tracks in international development and international security. In addition, the Institute offers a number of courses that are open to students in Yale College, including GLBL 101 Gateway to Global Affairs.

Each year the Jackson Institute hosts a group of Senior Fellows, outstanding practitioners and experts in global affairs who teach courses and are available to consult with students on their career plans. The Jackson Institute’s career services office specializes in helping students locate internships and career placement in areas of international affairs. For further information, consult jackson.yale.edu.

Yale Summer Session

Yale Summer Session offers courses in the humanities, social sciences, and sciences. Several summer courses, including language courses, are taught abroad, and some courses are taught on line. 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 summer.yale.edu.

Special Programs

DIRECTED STUDIES

Directed Studies is a selective freshman interdisciplinary program in Western civilization. One hundred twenty-five freshmen are admitted to the program each fall.

The Literature, Philosophy, and History and Politics tracks of Directed Studies together comprise one coherent program of study, and students must enroll in all three tracks simultaneously. Successful completion of the fall-term Directed Studies courses is a prerequisite to enrolling in the spring-term courses.

The Freshman Web site (yalecollege.yale.edu/content/directed-studies-ds) describes the program and explains the application procedure. Additional 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 Web site (yalecollege.yale.edu/content/perspectives-science-and-engineering-pse) provides further information and explains the application procedure.

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 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.

A description of the program and application procedures can be viewed at yalecollege.yale.edu/content/freshman-seminar-program-2.

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 from the University community and from the region, including individuals outside academic life such as writers, artists, participants in government and the public sector, and experts from the arts and the media. The college seminar program encourages innovation and experimentation, but all courses in the program must satisfy standard requirements for academic credit in Yale College and must be approved by the relevant faculty committees that oversee the curriculum.

Each residential college sponsors at least one seminar each term. Additional seminars are occasionally sponsored directly by the program and are equally open to students from all residential colleges. Descriptions of the seminars are found at yalecollege.yale.edu/content/residential-college-seminar-program.

THE DEVANE LECTURES

The DeVane Lectures are 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 is scheduled to be offered in 2014-2015.
RESERVE OFFICERS TRAINING CORPS (ROTC)
Yale hosts both Naval and Air Force ROTC units, which offer qualified Yale College students an opportunity to pursue their regular Yale degrees while also preparing for leadership positions in the United States Air Force, Navy, or Marine Corps. Regardless of financial need, participating students may receive significant help in meeting the costs of a Yale education. Further information about the Air Force ROTC program can be found on the Web at afrotc.yalecollege.yale.edu or under Aerospace Studies in the Subjects of Instruction. Further information about the Naval ROTC program (including the Marine Corps program) can be found on the Web at nrotc.yalecollege.yale.edu or under Naval Science in the Subjects of Instruction.

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, meetings with students, and other activities. The Francis Writer-in-Residence for 2013–2014 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 2013–2014 is Louise Glück.

YALE JOURNALISM INITIATIVE
The Yale Journalism Initiative brings a distinguished writer to campus each term to teach an advanced journalism seminar, ENGL 467. 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 2013–2014 are Steven Brill (fall 2013) and Mark Schoofs (spring 2014). For more information on the initiative or on becoming a Journalism Scholar, see writing.yalecollege.yale.edu/yale-journalism-initiative.

EDUCATION STUDIES UNDERGRADUATE SCHOLARS PROGRAM
The Education Studies Undergraduate Scholars program establishes an interdisciplinary cohort of scholars drawn from Yale College freshmen, sophomores, juniors, and seniors. Each Undergraduate Scholar develops a course plan within the Education Studies curriculum that advances their interests in one of the various aspects of education studies, culminating in a capstone seminar. Undergraduate Scholars gain practical experience through an appropriate academic-year or summer educational opportunity, and they explore educational topics through collaboration, colloquia, and advising relationships with mentors. Students may apply to the Education Studies Undergraduate Scholars program in their freshman or sophomore year after they have
successfully completed the foundation course, EDST 110. For more information, see yalecollege.yale.edu/content/education-studies.

ENERGY STUDIES UNDERGRADUATE SCHOLARS PROGRAM
Yale Climate & Energy Institute (YCEI) sponsors the Energy Studies Undergraduate Scholars program. The program promotes a multidisciplinary approach to the linked challenges of energy and climate, and provides students with training in the science and technology of energy, the environmental and social impacts of energy production and use, and the economics, planning, and regulation of energy systems and markets. Energy Studies Scholars acquire the broad knowledge and skills needed for advanced studies and for leadership in energy-related fields. Further information is available at climate.yale.edu/prog-init/undergraduate-scholars-energy-studies.

CENTER FOR LANGUAGE STUDY
The Center for Language Study (CLS), located at 370 Temple St., provides resources for students of foreign languages, as well as courses and support for nonnative speakers of English through its Office of English Language Programs. For undergraduates enrolled in a foreign language course, the CLS offers peer tutoring in the target language. For students in Yale College and in the graduate and professional schools, the CLS offers specialized language programs such as Directed Independent Language Study (DILS) for the study of languages not taught at Yale, and the Fields program for discipline-specific and advanced language study. For professional school students, the CLS offers courses in language for special purposes, such as Spanish or Chinese for medical professionals. All language learners at Yale have access to CLS facilities, including its study rooms and multimedia labs. For more information, including hours, a list of resources, and information about Yale’s foreign language requirement and placement testing, see cls.yale.edu.

EXPOSITORY WRITING
The Yale College Writing Center supports a range of courses and tutoring services to help undergraduates improve their writing. The English department offers several courses specifically designed to prepare students for writing throughout the University, and other departments in the humanities, social sciences, and sciences complement this offering with courses (designated WR in the course listings) that give special attention to the conventions and expectations of writing in particular disciplines.

Beyond the regular departmental offerings, the 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 meet with students on a one-to-one basis to discuss rough drafts of work in progress, research techniques, revision strategies, or other matters relevant to effective writing. Tutors can 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 Web site offers information on using sources effectively and avoiding plagiarism.

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 writing.yalecollege.yale.edu.

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 science.yalecollege.yale.edu/residential-college-math-science.

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 science.yalecollege.yale.edu/science-quantitative-reasoning-1.

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 35 Broadway (rear entrance), room 222, or by mail to 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. Further information is available on the Web at yalecollege.yale.edu/content/resource-office-disabilities.

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 under Special Arrangements in the Academic Regulations.

**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 the respective program descriptions.

**ELI WHITNEY STUDENTS PROGRAM**

The Eli Whitney Students program is designed for individuals with high academic potential who seek to obtain a bachelor of arts or bachelor of science degree from Yale College and who may need to study on a part-time basis. 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 under Eli Whitney Students Program in the Academic Regulations. Additional information is available at admissions.yale.edu/eli-whitney.

**YALE VISITING INTERNATIONAL STUDENT PROGRAM**

The Yale Visiting International Student Program (YVISP) invites select undergraduate students from YVISP partner institutions to pursue full-time study in Yale College for one academic year. YVISP students maintain a full course load, live in the residential colleges alongside Yale College students, and are fully integrated members of Yale College’s academic, residential, and extracurricular communities. YVISP oversight and governance is managed by the program’s director and the YVISP Steering Committee. For more information, visit www.yale.edu/yvisp.

**Honors**

**GENERAL HONORS**

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.00</td>
</tr>
<tr>
<td>A−</td>
<td>3.67</td>
</tr>
<tr>
<td>B+</td>
<td>3.33</td>
</tr>
<tr>
<td>B</td>
<td>3.00</td>
</tr>
<tr>
<td>B−</td>
<td>2.67</td>
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<tr>
<td>C</td>
<td>2.33</td>
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<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>
</tbody>
</table>

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

DISTINCTION IN THE MAJOR

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

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

PHI BETA KAPPA

Election to Phi Beta Kappa is based on the percentage of grades of A earned at Yale. The grade point average (GPA) is not a factor. Marks of CR in courses taken Credit/D/Fail are counted as non-A grades. Marks of W, for Withdrawal, carry no course credit, and do not figure in the calculation for Phi Beta Kappa. Grades earned outside Yale, including those earned during study abroad other than at Yale-in-London, 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 on the Web at yalecollege.yale.edu/content/undergraduate-regulations. The Undergraduate Regulations also provides details of student coverage in the Yale Health medical 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 admissions.yale.edu/financial-aid.
II. ACADEMIC REGULATIONS

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.

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 the Yale Curriculum section.

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

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

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

Note that credit from outside Yale may not be applied toward the distributional requirements for the freshman year; accordingly, students who are permitted by the Committee on Honors and Academic Standing to repair a deficiency in these requirements over the summer following freshman year must do so by means of enrollment in Yale Summer Session.

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 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 University 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 accompanying chart.

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. Students who have taken the Advanced Placement examination in French, German, or Spanish and who present scores of 5, or who have taken the Advanced Placement examination in Latin and who present scores of 4 or 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. Alternatively, they may successfully complete one or more courses in a different foreign language at least 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, or Spanish, or a score of 4 or 5 on the Advanced Placement test in Latin, must take a placement test offered by the appropriate language department or, for languages in which no departmental placement test is offered, consult the appropriate director of undergraduate studies. Dates and times of placement tests are given in the *Calendar for the Opening Days of College* and on the Web at *cls.yale.edu*. 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), 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 successfully complete three courses in that language, designated L1, L2, and L3.
Students who matriculate at Yale able to place into the second term of a foreign language must successfully complete three courses in that language, designated L2, L3, and L4. Alternatively, they may successfully complete three courses in a different foreign language at least 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 courses in that language, designated L3 and L4. Alternatively, they may successfully complete two or more courses in a different foreign language at least 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 course in that language, designated L4. Alternatively, they may successfully complete one or more courses in a different foreign language at least 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 course in that language, designated L5. Alternatively, they may successfully complete one or more courses in a different foreign language at least through the level designated L2.

Students whose secondary school transcript shows that the language of instruction was other than English may fulfill the foreign language requirement by successfully completing ENGL 114, 120, or 450. Alternatively, students in this category may fulfill the requirement by successfully completing one or more courses in a third language, neither English nor the language of their secondary school instruction, at least through the level designated L2.

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. Students seeking to undertake study at another institution or program for this purpose must consult the relevant director of undergraduate studies in advance of their proposed study for advice about appropriate programs and courses, and for information about the approval process. (See section O, “Credit from Other Universities.”) Study abroad may be used in place of L1 and L2 courses only if it is part of a Yale College program, such as Yale Summer Session. Study abroad opportunities are described in the Yale Curriculum section under the heading “International Experience.”

Intensive language courses provide the equivalent of a full year of instruction in a single term. A course designated L1–L2 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, Bengali, Chinese, Czech, Dutch, 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, Sinhalese, Spanish, Tamil, Tibetan, Turkish, Ukrainian, Vietnamese, and Yorùbá. Students wishing to fulfill the foreign language requirement in a less commonly taught
language should consult the director of undergraduate studies in the relevant
department to verify that the appropriate level of study will be offered. Students who
have intermediate- or higher-level proficiency in a language other than those listed
here (including American Sign Language) should consult the appropriate director of
undergraduate studies or the director of the Center for Language Study to arrange
for a placement examination.

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

4. **Courses taken on the Credit/D/Fail basis** A student may not apply any course
credit earned on the Credit/D/Fail basis toward satisfaction of the distributional
requirements for the 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. **Courses in the graduate and professional schools** It is the expectation that Yale
College students, including candidates for the simultaneous award of the bachelor’s
and master’s degrees, will fulfill their distributional requirements in courses taken
in Yale College. Credit earned in a course offered in the Graduate School of Arts
and Sciences or in one of the professional schools of the University may be applied
toward the distributional requirements only if the course instructor has secured, in
advance of the term in which the course will be given, approval from Yale College.
Instructors interested in making such an advance arrangement can contact the Dean
of Academic Affairs to be directed to the appropriate authority for such approval.

9. **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.
10. **Major programs** Courses taken in fulfillment of a student’s major requirements maybe applied toward satisfaction of the distributional requirements for the freshman, sophomore, and junior years and toward the distributional requirements for the bachelor’s degree.

11. **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).

12. **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.

13. **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.
COMMON PATHS TOWARD FULFILLMENT OF THE LANGUAGE REQUIREMENT

This chart illustrates the most common paths for fulfilling the language requirement. Refer to the Academic Regulations for complete information.
MAJOR REQUIREMENTS
The requirements of the various major programs are given under the heading for each department or program. 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, 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 “Financial Aid Regulations” in the Yale College online publication Undergraduate Regulations).

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

**LETTER GRADES**
The letter grades in Yale College are as follows:

<table>
<thead>
<tr>
<th>A</th>
<th>Excellent</th>
<th>B+</th>
<th>C+</th>
<th>D+</th>
<th>F</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>A−</td>
<td>Good</td>
<td>C</td>
<td></td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B−</td>
<td>Satisfactory</td>
<td>C−</td>
<td></td>
<td>D−</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

3. **Total number of courses** A student may offer as many as four course credits earned on the Credit/D/Fail basis toward the bachelor’s degree.

4. **Number of courses in a term** As many as two credits may be elected under the Credit/D/Fail option in a term; thus in an academic year a student may earn as many as four credits on the Credit/D/Fail option. In each term, a student must elect at least two courses, representing at least two course credits, for letter grades.

5. **Distributional requirements** A student may not apply any course credit earned on the Credit/D/Fail basis toward satisfaction of the distributional requirements for the junior year nor toward satisfaction of the distributional requirements for the bachelor’s degree.

6. **Requirements of the major** The program description of each major specifies whether or not courses taken on the Credit/D/Fail basis count toward the requirements of that major.

7. **Credit/year only course sequences** A Cr/year only course sequence may be taken under the Credit/D/Fail option for one term while the other term of the yearlong sequence is taken for a letter grade. For Cr/year only course sequences in which a student receives a separate letter grade for each of the two terms, each term will be governed by the enrollment option the student elected for that term. For Cr/year only course sequences 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 course sequence; that is, students will receive either the mark of CR for both terms or a letter grade for both terms, depending on the option elected for the second term.
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 with Pertinent Deadlines) 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 with Pertinent Deadlines.

11. **Conversion to a letter grade** Until November 8, 2013, in the fall term, and until April 4, 2014, in the spring term, 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 yalecollege.yale.edu/content/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 the Yale Curriculum section).

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 the Yale Curriculum section).

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. With the support of the course instructor and the director of undergraduate studies of the department in which the course is offered, a student may petition the Committee on Honors and Academic Standing to enroll in such a course on the Credit/D/Fail basis; such a petition should be filed no later than the date on which the student’s schedule is due in the term in which the student is enrolling in the course and should provide sound academic reasons for the exception.

**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 (GPA). These include passing grades earned in the first term of a Cr/year only course sequence 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 Withdraw) 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 18, 2013, in the fall term; March 7, 2014, 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. In Cr/ year only course sequences in which a student receives the mark of SAT or NSAT for the first term and a letter grade for the second, a student who completes the first term but does not subsequently enroll in the second term, or who subsequently withdraws from the second term before midterm, will have the designation W (Withdrew) recorded for the first term of the sequence.

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 6, 2013, in the fall term, and April 25, 2014, 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 “Withdraw” 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 under “ Majors in Yale College.”

9. **Distribution of grade reports** 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 each term of that year the University Registrar’s Office will send a grade report to them. 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 University 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 report 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 Student Financial Services, 246 Church Street, or on the Web at www.yale.edu/sfas/registrar/index.html#transcripts. The charge is $7 per transcript. 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 course sequences There are a few yearlong course sequences in which two course credits are awarded upon the satisfactory completion of both terms of the sequence; other course sequences, 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 yearlong course sequence may be permitted to continue the sequence 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 yearlong course sequence may receive course credit routinely for that term’s work, except in those sequences marked Cr/ year only. (See “Key to Course Listings.”)

Note that completion of a modern foreign language course numbered 110 does not award credit unless and until the subsequent term, numbered 120, 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 three grades of F in a term or over two or three successive terms. “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 23, 2013. Upperclassmen must attend the registration meeting conducted by the office of the residential college dean on Tuesday, August 27, 2013. 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 12, 2014. 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 13, 2014. 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 with Pertinent Deadlines. 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 18, 2013, in the fall term; March 7, 2014, in the spring term), unless such election is made to correct a clerical error on the course schedule. A change of level in courses in which the subject is taught in an ordered progression, as for example in languages or in mathematics, is not considered the addition of a new course. Such a change may be made with the approval of the instructors involved (and, if necessary, with the added permission of the director of undergraduate studies in the subject). Similarly, a change of section in the same course is not considered the addition of a new course.

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

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

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

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

7. **Courses requiring permission** Some courses require permission of the instructor to enroll; others require permission of the director of undergraduate studies. It is the responsibility of the student to secure the appropriate permission before enrolling in a course. If a student enters a course on the course schedule without the appropriate permission, the instructor may direct the registrar to drop the student from the class.

8. **Courses that do not require permission** Courses that do not require permission for enrollment may nevertheless be limited in their enrollment (i.e., “capped”) at the beginning of the term, depending upon, for example, the number of teaching assistants available, the size of the appropriate meeting space, or other instructional needs.

9. **Prerequisites** Students are expected to have met the prerequisites published in course descriptions. 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.

10. **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.

11. **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.

12. **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.” In such cases, the repeated course earns no additional distributional 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 of a student’s grade point average (GPA) and in the calculation for General Honors.

13. **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.

14. **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.
15. **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 yalecollege.yale.edu/content/academic-field-trip-policies.

**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 enrolled 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 18, 2013, in the fall term; March 7, 2014, 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 (Withdraw) for the course. The deadlines for such withdrawals are December 6, 2013, in the fall term, and April 25, 2014, 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 Yale Health 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 (Withdrawn). 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 with Pertinent Deadlines.) 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 the course listings by the abbreviation “RP” at the end of the course description or by a phrase such as “Meets RP” or “Meets during reading period.”

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 University 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. If the meeting time of a course is changed from that originally published, the time of the examination is defined by the new meeting time. If a course is published with no scheduled examination but the instructor subsequently decides to offer a final examination, it must be administered at the time defined by the meeting time of the course. A schedule of final examinations may be found on the page “Final Examination Schedules.”

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 assigned. 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 at a regular examination starting time 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 date, a take-home examination for that course is due on the scheduled examination day. If a course has not been assigned a final examination date, 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 the page “Final Examination Schedules.”) 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, 2014; 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 University 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.”
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.”

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” and paragraph 4 in section G, “Reading Period and Final Examination Period.”

* 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 examinations; 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 assigned to it. See “Final Examination Schedules.” 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.

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 Yale Health 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 University 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 University Registrar’s Office in advance of the dates on which makeup final examinations are administered by that office. The registrar automatically records a grade of F in a course for a student who fails to take an officially scheduled makeup examination in that course at the appointed time. If an examination is not administered by the registrar, it is the student’s responsibility to make arrangements with the instructor to take the makeup examination. In such cases, if a grade is not received by the midterm following the original examination date, the registrar automatically records a grade of F in the course.

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

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

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.”

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.
DISMISAL 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.” 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.”

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.

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.

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 the section “Financial Regulations” in the Yale College online 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 the section “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 Yale Health before the student’s return from the leave of absence. Such clearance may also be required for a student who had sought and had been granted, on medical grounds, a waiver of the fee for the late relinquishment of housing at the time the leave of absence was requested.

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 the section “Financial Regulations” in the Undergraduate Regulations.

9. **Health coverage** A student on a leave of absence is eligible to retain coverage by Yale Health during the time of the leave, but the student must take the initiative to apply for continued membership in Yale Health by completing an application form and paying the fee for membership. See “Leave of Absence” in the section “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 Yale Health.

**MEDICAL WITHDRAWAL**

A withdrawal for medical reasons must be authorized by the director of Yale Health or the chief of the Mental Health and Counseling department, or by their official designees within the Health Center. If a student under the care of a non–Yale Health physician wishes to withdraw for medical reasons, that physician should submit sufficient medical history to the director of Yale Health 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 Yale Health 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 Yale Health to determine if the student is such a danger. An appeal of such a withdrawal must be made in writing to the dean of Yale College no later than seven days from the date of withdrawal.

**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 the section “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 Yale Health 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. Courses conducted on line, whether taken at Yale Summer Session or elsewhere, do not fulfill this readmission requirement. 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. Courses completed in fulfillment of readmission that are eligible for graduation credit must be applied to the student’s Yale College transcript.

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 Yale Health 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 Yale Health. Such a recommendation must come from either the director of Yale Health or the chief of the Mental Health and Counseling department, or from their official designees within the Health Center; no such recommendation can be made in the absence of documentation provided to Yale Health 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 defer his or her return until a time later than the one originally proposed.

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

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

**U.S. MILITARY SERVICE READMISSION POLICY**

Students who interrupt their studies to perform U.S. military service are subject to a separate U.S. military leave readmission policy.

In the event a student withdraws or takes a leave of absence from Yale College on or after August 14, 2008, in order to serve in the U.S. military, the student will be entitled to guaranteed readmission under the following conditions:

1. The student must have served in the U.S. Armed Forces for a period of more than thirty consecutive days.

2. The student must give advance written or verbal notice of such service to his or her residential college dean. In providing the advance notice the student does not need to indicate whether he or she intends to return. This advance notice need not come directly from the student, but rather, can be made by an appropriate officer of the U.S. Armed Forces or official of the U.S. Department of Defense. Notice is not required if precluded by military necessity. In all cases, this requirement of giving notice can be fulfilled at the time the student seeks readmission, by submitting an attestation that the student performed the service.

3. The student must not be away from the University to perform U.S. military service for a period exceeding five years (this includes all previous absences to perform U.S. military service but does not include any initial period of obligated service). If a student’s time away from the University to perform U.S. military service exceeds five years because the student is unable to obtain release orders through no fault of the student or the student was ordered to or retained on active duty, the student should contact his or her residential college dean to determine if the student remains eligible for guaranteed readmission.
4. The student must notify Yale within three years of the end of the U.S. military service of his or her intention to return. However, a student who is hospitalized or recovering from an illness or injury incurred in or aggravated during the U.S. military service has up until two years after recovering from the illness or injury to notify Yale of his or her intent to return.

5. The student cannot have received a dishonorable or bad conduct discharge or have been sentenced in a court-martial.

A student who meets all of these conditions will be readmitted for the following term unless the student requests, in writing, a later date of readmission. Any student who fails to meet one of these requirements may still be eligible for readmission under Yale’s general readmission policy but is not guaranteed readmission. Upon returning to Yale, the student will resume his or her education without repeating completed course work for courses interrupted by U.S. military service. The student will have the same enrolled status last held and will be in the same academic standing. For the first academic year in which the student returns, the student will be charged the tuition and fees that would have been assessed for the academic year in which the student left the institution. Yale may charge up to the amount of tuition and fees other students are assessed, however, if veterans’ education benefits will cover the difference between the amounts currently charged other students and the amount charged for the academic year in which the student left. In the case of a student who is not prepared to resume his or her studies with the same enrollment status and academic standing as when he or she left or who will not be able to complete the program of study, Yale will undertake reasonable efforts to help the student become prepared. If, after reasonable efforts, Yale determines that the student remains unprepared or will be unable to complete the program, or Yale determines that there are no reasonable efforts it can take, Yale may deny the student readmission.

K. Special Arrangements

YEAR OR TERM ABROAD

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

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

Applications for permission to study abroad in the spring term of the academic year 2013–2014 are due on October 15, 2013. Applications for study in the fall term of the academic year 2013–2014 or for the full academic year 2014–2015 are due on March 5, 2014. Early applications that meet all requirements 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 and Professional 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 and Professional 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 and Professional 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 and Professional 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 and Professional 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 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.

* 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 the British Studies program description.

**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 Yale Health 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.

DOUBLE CREDIT FOR A SINGLE-CREDIT COURSE

Two course credits for a course in Yale College 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 18, 2013, in the fall term, and March 7, 2014, 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 494, PLSC 471 and 471), 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 immediately preceding the term during which 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. A student may not apply credit earned in a Special Term Course toward satisfaction of any of the distributional requirements.

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, and no more than two in a single term. Permission to exceed these limits must be secured in advance from the Yale College Committee on Honors and Academic Standing; such permission will be given only if the student can demonstrate that the integrity or coherence of the student’s academic objectives would suffer without it.

COURSES IN THE YALE GRADUATE AND PROFESSIONAL SCHOOLS

When a course is open to undergraduate as well as either graduate or professional school students, a Yale College student must enroll under the undergraduate number, unless already accepted into the program for the simultaneous award of the bachelor’s and master’s degrees.

A student may request to elect a graduate or professional school course, other than those designated independent study, by entering the course on the Course Schedule Selection Form and completing an additional form downloaded from www.yale.edu/sfas/registrar. This latter form must be completed by the student, signed by the course instructor, and attached to a copy of the syllabus. 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.

Requests should be made as early as possible in the term in which enrollment is sought and not later than three weeks after the first day of Yale College classes of the term. In recognition of the need to have a student’s schedule of courses finalized promptly, forms that are submitted after this date or that are incomplete will normally not be approved. Exceptions require action of the Committee on Honors and Academic Standing, in response to a petition from the student, and will be subject to a fine of at least $50, with increases of $5 daily according to lateness.

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. Once all materials for a request to elect a professional school course are received by the Office of the University Registrar, a review will be made and the student will be informed as to whether the course will earn Yale College course credit and, if so, how much. Courses that earn no Yale College credit will normally not be entered on the Yale College transcript.

Note also that Yale College students are not permitted to enroll in independent study courses in the Graduate School of Arts and Sciences or in any of the professional schools of the University.
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.

Courses in performance in the School of Music may be taken only after completion of MUSI 360, 361, 460, and 461, 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. Nonperformance courses in the School of Music may be taken for credit without previous completion of MUSI 360, 361, 460, and 461; 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, and work incomplete at the end of term. 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

Students of distinguished ability in a limited number of departments 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. The simultaneous degree can be conferred only in a single department or program and only in departments or programs that confer both degrees. A student cannot qualify for the simultaneous award of a bachelor’s degree in one department or program and a master’s in another. Currently, the following departments offer the simultaneous degree option: Chemistry; Classics; Computer Science; East Asian Studies; Ecology and Evolutionary Biology; History; Linguistics; Mathematics; Molecular Biophysics and Biochemistry; Molecular, Cellular, and Developmental Biology; and Political Science. The director of the Program for the Simultaneous Award of the Bachelor’s and Master’s Degrees is Dean George Levesque.

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. Some participating departments have additional eligibility requirements, and students should consult the relevant director of undergraduate studies for this information.

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 request the permission of the instructor to complete the graduate-level requirements of the course and petition 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 approved the student’s proposal to complete the course at its graduate level.

2. **Application** Students must apply to their department for admission to the program through their director of undergraduate studies no later than the last day of classes in their fifth term of enrollment in Yale College. The proposal should provide evidence of eligibility, reasons for pursuing the simultaneous degree, and plans for completing the program requirements. 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.

3. **Program requirements** 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 department 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.

4. **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.

5. **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 University 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 summer.yale.edu.

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 admissions.yale.edu/yale-alumni-auditing-program.

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 University 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 visit the Yale College Special Programs Office, 55 Whitney Avenue, Suite 420.
L. Transfer Students

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

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

2. **Terms of enrollment at Yale** Transfer students are expected to enroll in Yale College for the number of terms designated at the time of the final credit evaluation made of their work at previous institutions. Under no circumstances may a transfer student complete fewer than four terms of enrollment in Yale College. Under no circumstances may a transfer student earn fewer than eighteen course credits at Yale or accelerate by the use of acceleration credits.

3. **Transfer of credits** A preliminary evaluation of transferable credits is made at the time of the student’s admission. Final evaluation of transfer credits is completed when all official transcripts from a student’s previous institutions have been received.

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

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

6. **Course credit from outside Yale** Transfer students may receive course credit for work completed outside Yale only for studies completed before matriculation at Yale; transfer students may not receive course credit for any outside courses taken after they have enrolled in Yale College. An exception is made for transfer students who earn credit on a Year or Term Abroad. Transfer students may attend a Year or Term Abroad provided that they enroll in Yale College proper for at least four terms, earning by attendance at Yale a minimum of eighteen course credits.
7. **Distributional requirements** Transfer students are not bound by the distributional requirements for the freshman, sophomore, or junior years, but they must fulfill the distributional requirements for the bachelor’s degree. See paragraph 1 above. Transfer students are not eligible for the award of acceleration credit or for acceleration by use of acceleration credits.

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

### M. Eli Whitney Students Program

The Eli Whitney Students program is designed to meet the needs of students who may not be able to attend college full time by allowing nonresident students to enroll in Yale College courses for credit. The Eli Whitney Students program is for enrollment for the degree of Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) only; students in the program are therefore ineligible for the simultaneous award of the bachelor’s and master’s degrees. 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. Students admitted prior to 2009 fulfill distributional requirements according to regulations for the Class of 2008, as listed in the academic regulations of that year.

Candidates for a bachelor’s degree must fulfill the requirements of one of the major programs. See the “Majors in Yale College” page and also “Major Programs” in the Yale Curriculum section.

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. Eli Whitney students are not eligible to enroll in freshman seminars, even during their first year in the program.

3. **Tuition and financial aid** Tuition for the 2013–2014 academic year for Eli Whitney students admitted before the fall term 2007 is $3,370 per course credit; these students are not eligible for financial aid. Tuition for the 2013–2014 academic year for Eli Whitney students admitted since the fall term 2007 is $4,900 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 and Professional Experience. Eli Whitney students are entitled to purchase gymnasium membership and Yale Health 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 admissions.yale.edu/eli-whitney.

**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 420, 432–4340. 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
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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. **Credit/D/Fail option** Nondegree students who wish to elect a course under the Credit/D/Fail option must make a compelling case for that election in a petition to Dean William Whobrey no later than September 13 for the fall term and January 24 for the spring term. Nondegree students may take no more than one course in a term using the Credit/D/Fail option, and must be enrolled in at least one other course worth a minimum of one course credit during the same term. A maximum of two courses may be taken Credit/D/Fail during a student’s time in the Nondegree Students program.

4. **Tuition** The tuition for nondegree students during 2013–2014 is $4,900 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 18, for fall 2013, and Friday, March 7, for spring 2014) 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, “Registration and Enrollment in Courses.” 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 20, 2013, for fall 2013, and February 7, 2014, for spring 2014. Any student who has not completed payment in full for courses by these dates will not be permitted to enroll for that term.

5. **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 coverage. Nondegree students are not eligible for undergraduate housing and they may not serve as freshman counselors.

6. **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.

7. **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.
8. **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.

9. **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.

10. **Application deadlines** Applications are due on October 1, 2013, for spring term 2014, and on June 1, 2014, for fall term 2014. 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 admissions.yale.edu/non-degree-students-program.

### 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. 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 are Yale courses and do not count as outside credit. Students who wish to receive credit for summer study abroad with outside programs must apply for approval through the Summer Abroad program (see point 9 below).

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 in a program that is not sponsored by an American university should
supply an official transcript if the sponsoring institution 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
institute, 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, either in the United States or through a program abroad, and who wish to offer that course toward fulfillment of the foreign language distributional requirement must secure the approval of the relevant director of undergraduate studies. While the approval process varies across departments, in no case can it be completed until an official transcript of the work has been received and reviewed by the department. Typically, an additional assessment of the student’s work will be necessary, especially with respect to the level (e.g., L3 through L5) that has been achieved by the outside study. Such assessment might include a written or oral examination or both, a review of the course syllabus and written assignments, or other methods of evaluation. Some departments maintain a list of programs that have been previously evaluated, in which case the approval process is often simplified. Students are therefore strongly encouraged to consult the relevant department before undertaking language study elsewhere.

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. **Summer Abroad** Students who wish to receive credit for summer study abroad with outside programs must apply for approval through the Summer Abroad program. The deadline to apply for 2014 Summer Abroad credit is March 1, 2014. Information about the application process, including a list of eligible programs, is available at the Center for International and Professional Experience, 55 Whitney Avenue, 3rd floor, and on the Web at [www.yale.edu/studyabroad](http://www.yale.edu/studyabroad). Students receiving credit for foreign study on a Summer 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).
10. **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.

11. **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.

12. **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, or as a consequence of readmission, 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 is, in fact, a term of enrollment in Yale College, and credits earned in that 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 point 4 under “Acceleration by Use of Acceleration Credits”), 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 yalecollege.yale.edu/content/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, University Registrar’s Office, 246 Church Street, 432-2331.

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

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

<table>
<thead>
<tr>
<th>Acceleration by Two Terms</th>
<th>Minimum Total Credits</th>
<th>Minimum Yale Course Credits</th>
<th>Activated Acceleration Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the third term</td>
<td>17</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>In the fourth term</td>
<td>21</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>In the fifth term</td>
<td>26</td>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>
2. **Application deadline**  Application to accelerate is made by submission of the required form to the office of the residential college dean. The deadline for applying for acceleration is the last day of classes in the respective term of enrollment given in the eligibility charts above. As a special exception, a student accelerating by one or two terms who wishes to complete a term of study abroad as early as during the third term of enrollment would have to petition to accelerate before the third term of enrollment. Such a student should consult with the residential college dean. The absolute and final deadline for applying for acceleration by one term is the last day of classes in the sixth term of enrollment. The absolute and final deadline for applying for acceleration by two terms is the last day of classes in the fifth term of enrollment.

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

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

A student intending to accelerate by one term must complete seven terms of full-time enrollment in Yale College. Those seven terms may be in any pattern of enrollment as long as the student’s seventh and final term of enrollment is a spring term.

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

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

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

1. **Notification** The chief responsibility for ascertaining eligibility and for meeting the deadline to apply for acceleration rests with the students themselves. However, the University 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 University 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 Yale Health 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. 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 and Professional 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:

<table>
<thead>
<tr>
<th>Terms of Acceleration</th>
<th>Total Terms at Yale</th>
<th>Total 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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>1</td>
<td>9</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
<td>9</td>
<td>18</td>
<td>9</td>
</tr>
</tbody>
</table>

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

9. **Major requirements** With the permission of the director of undergraduate studies, an accelerating student may apply credit earned at another university toward the requirements of the student’s major program.
10. **Makeup of course credit deficiency** If an accelerating student’s record at the end of a term of enrollment shows a deficiency for promotion, academic good standing, or graduation, the student will be allowed to repair the deficiency without forfeiting the use of acceleration credits only through enrollment in Yale Summer Session if the credit earned is to be applied toward the 36-course-credit requirement for the bachelor’s degree. See section D, “Promotion and Good Standing.”

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

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

**Q. Amendments**

The University reserves the right to amend or supplement these regulations at any time upon such notice to students as it deems appropriate.
III. SUBJECTS OF INSTRUCTION

Majors in Yale College

African American Studies (B.A.)
African Studies (B.A.)
American Studies (B.A.)
Anthropology (B.A.)
Applied Mathematics (B.A. or B.S.)
Applied Physics (B.S.)
Archaeological Studies (B.A.)
Architecture (B.A.)
Art (B.A.)
Astronomy (B.A.)
Astronomy and Physics (B.S.)
Chemistry (B.A. or B.S.)
Chinese (B.A.)
Classical Civilization (B.A.)
Classics (Greek) (B.A.)
Classics (Greek and Latin) (B.A.)
Classics (Latin) (B.A.)
Cognitive Science (B.A.)
Computer Science (B.A. or B.S.)
Computer Science and Mathematics (B.A. or B.S.)
Computer Science and Psychology (B.A.)
Computing and the Arts (B.A.)
East Asian Languages and Literatures (B.A.)
East Asian Studies (B.A.)
Ecology and Evolutionary Biology (B.A. or B.S.)
Economics (B.A.)
Economics and Mathematics (B.A.)
Electrical Engineering and Computer Science (B.S.)

Engineering

Biomedical Engineering (B.S.)
Chemical Engineering (B.S.)
Electrical Engineering (B.S.)
Energy Studies
Engineering Sciences (Chemical) (B.S.)
Engineering Sciences (Electrical, Environmental, or Mechanical) (B.A. or B.S.)
Environmental Engineering (B.S.)
Mechanical Engineering (B.S.)

English (B.A.)
Environmental Studies (B.A.)
Ethics, Politics, and Economics (B.A.)
Ethnicity, Race, and Migration (B.A.)
Film Studies (B.A.)

French (B.A.)
Geology and Geophysics (B.A. or B.S.)
German (B.A.)
German Studies (B.A.)
Global Affairs (B.A.)
Greek, Ancient and Modern (B.A.)
History (B.A.)
History of Art (B.A.)
History of Science, History of Medicine (B.A.)
History of Science, Medicine, and Public Health (B.A.)
Humanities (B.A.)
Italian (B.A.)
Japanese (B.A.)
Judaic Studies (B.A.)
Latin American Studies (B.A.)
Linguistics (B.A.)
Literature (B.A.)
Mathematics (B.A. or B.S.)
Mathematics and Philosophy (B.A.)
Mathematics and Physics (B.S.)
Modern Middle East Studies (B.A.)
Molecular Biophysics and Biochemistry (B.A. or B.S.)
Molecular, Cellular, and Developmental Biology (B.A. or B.S.)
Music (B.A.)
Near Eastern Languages and Civilizations (B.A.)

Philosophy (B.A.)
Physics (B.S.)
Physics and Geosciences (B.S.)
Physics and Philosophy (B.A.)
Political Science (B.A.)
Portuguese (B.A.)
Psychology (B.A. or B.S.)
Religious Studies (B.A.)
Russian (B.A.)
Russian and East European Studies (B.A.)
Sociology (B.A.)
South Asian Studies (second major only)
Spanish (B.A.)
Special Divisional Major (B.A. or B.S.)
Statistics (B.A. or B.S.)
Theater Studies (B.A.)
Women’s, Gender, and Sexuality Studies (B.A.)
Accounting

Courses

**ACCT 170a or b, Financial Accounting**  Laurance Schiffres
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. Enrollment limited to 50.

Aerospace Studies

Program chair: Colonel Scott Manning, USAF; program adviser: Captain Timothy Secor, USAF, timothy.secor@yale.edu; Rm. 450, 55 Whitney Ave., 432-9431; afrotc.yalecollege.yale.edu

The mission of Air Force Reserve Officers Training Corps (AFROTC) Detachment 009 at Yale is to develop quality leaders for the U.S. Air Force. Cadets have gone on to serve in a range of career fields, from medicine to aviation. The program offers students an ideal training environment that instills values such as integrity, service before self, and excellence. Cadets are also involved in a variety of activities and organizations that reach out to the local community while strengthening the skills necessary for a military career. After completing all Air Force ROTC and academic degree requirements, cadets on scholarship and those in the Professional Officer Course accept a commission as a second lieutenant in the Air Force, with a minimum active-duty service commitment of four years.

**Academic requirements**  The Aerospace Studies curriculum is organized into four major areas, including profession of arms, communication skills, leadership studies, and military and international security studies. Courses emphasize development of professional knowledge and leadership skills in the context of military service. Classes are conducted as seminars and call for active student discussion. All uniforms, textbooks, and supplies for cadets are provided by the Air Force. Enrollment in Aerospace Studies courses is not limited to cadets; courses are open to any Yale student. Aerospace Studies courses count for enrollment credit only; they do not count toward the thirty-six course credits required for the Yale bachelor’s degree. In some cases, courses in other departments and programs may count toward both the bachelor’s degree and AFROTC requirements. For example, HIST 221, Military History of the West since 1500, fulfills the first term of the 200-level AFROTC requirement and also counts toward the bachelor’s degree. No course taken Credit/D/Fail may be counted toward the program in Aerospace Studies.

Cadets become involved in the management of their own cadet wing through a mandatory two-hour leadership laboratory each week. They are assigned corps positions, with increasing responsibility over their four years. In addition, students in the program participate in physical training, leadership projects, visits to Air Force bases, orientation flights, and normal college extracurricular activities. In all, cadets can expect to dedicate six to eight hours per week to the program.

Students in the Class of 2015 and subsequent classes are eligible for enrollment in the AFROTC program. Full and partial scholarships that may cover tuition, fees, books,
and/or a subsistence allowance are available, with levels dependent on qualifications and other factors. Scholarships are open to both freshmen and sophomores who excel in academics and display leadership potential.

For additional information about Yale’s Air Force Reserve Officers Training Corps program, visit the program’s Web site (http://afrotc.yalecollege.yale.edu) or send questions to Captain Timothy Secor at timothy.secor@yale.edu.

*USAF 101a and USAF 102b, Foundation of the U.S. Air Force  Bai Zhu
Introduction to the U.S. Air Force and how it works as a military institution, including an overview of its basic characteristics, missions, and organizations. Students attend one 50-minute lecture and one 110-minute laboratory each week. For enrollment credit only; cannot be applied toward the 36-course-credit requirement for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or eligibility for General Honors.

*USAF 202b, The Evolution of U.S. Air and Space Power  Scott Manning and Timothy Secor
The development and employment of American air and space power from the Korean Conflict to the present. The distinctive capabilities and functions of air and space power; Air Force heritage and leaders; continued application of communication skills. Prerequisites: USAF 101, 102, and HIST 221. For enrollment credit only; cannot be applied toward the 36-course-credit requirement for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or eligibility for General Honors.

*USAF 301a and USAF 302b, Air Force Leadership Studies  Timothy Secor
Advanced study of leadership concepts and ethics, management and communication skills, and Air Force personnel and evaluation systems. Emphasis on the enhancement of leadership skills. Case studies and exercise of leadership and management techniques in a supervised environment. Prerequisite: USAF 202. For enrollment credit only; cannot be applied toward the 36-course-credit requirement for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or eligibility for General Honors.

*USAF 401a and USAF 402b, National Security Affairs and Preparation for Active Duty  Scott Manning and Timothy Secor
Overview of the complex social and political issues facing the military profession. Designed to provide seniors with a foundation for understanding their role as military officers in American society. Prerequisites: USAF 301, 302 and field training. For enrollment credit only; cannot be applied toward the 36-course-credit requirement for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or eligibility for General Honors. 0 Course cr per term

COURSE IN ANOTHER DEPARTMENT THAT COUNTS TOWARD AFROTC REQUIREMENTS

HIST 221a / GLBI 281a, Military History of the West since 1500  Paul Kennedy
A study of the military history of the West since 1500, with emphasis on the relationship between armies and navies on the one hand, and technology, economics, geography, and the rise of the modern nation-state on the other. The coming of
airpower in its varied manifestations. Also meets requirements for the Air Force and Naval ROTC programs.  

African American Studies

Director of undergraduate studies: Erica James, Rm. 302, 81 Wall St., 432-9718, erica.james@yale.edu; afamstudies.yale.edu

FACULTY OF THE DEPARTMENT OF AFRICAN AMERICAN STUDIES


Associate Professor  Edward Rugemer

Assistant Professors  Jafari Allen, Crystal Feimster, Marcus Hunter, Erica James, Anthony Reed, Vesla Weaver

Senior Lecturer  Kathleen Cleaver

Lecturer  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, public health, 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 stand-alone major or as one of two majors in consultation with the director of undergraduate studies. Pertinent regulations can be found under "Two Majors" in the Academic Regulations.

Requirements of the major  The major in African American Studies requires twelve term courses including a yearlong history sequence (AFAM 160, 162), one course in the humanities relevant to African American studies, one course in the social sciences relevant to African American studies, the junior seminar (AFAM 410), the senior colloquium (AFAM 480), and the senior essay (AFAM 491). AFAM 160 will not be offered in 2013–2014; students who need to fulfill the history requirement in this academic year should enroll in AFST 471, Independent Study, in consultation with the director of undergraduate studies.
The courses in the major 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 early in their course of study.

**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, economics, 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 410, 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 480) 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 twenty pages of the senior essay. After completing the colloquium, each student carries out the remaining research and writing of a senior essay (AFAM 491) 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 160, 162, AFAM 410

**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** AFST 471 for AFST 160
Senior requirement  Senior colloq (AFAM 480) and senior essay (AFAM 491)

Courses

*AFAM 006a / HSAR 006a, Identities in Contemporary Art  Kobena Mercer
Introduction to changing conceptions of selfhood in art since 1960. Portraiture and images of the body in painting, sculpture, performance, and film; relations between the formal qualities of art and social contexts in which distinctions of race, gender, and nationality have undergone global transformation over the past fifty years; contributions made by art to changing perceptions of both individual and collective identity. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU

*AFAM 023a / AMST 008a, Slavery in American Memory  Edward Ball
The conflict over the story of American slavery as it has been told since the Civil War. Film, family history, fiction, and the competing tales of historians that make up the collective memory of the slave past.  WR, HU

AFAM 112a / HSAR 379a, New York Mambo: Microcosm of Black Creativity  
Robert Thompson
The rise, development, and philosophic achievement of the world of New York mambo and salsa. Emphasis on Palmieri, Cortijo, Roena, Harlow, and Colón. Examination of parallel traditions, e.g., New York Haitian art, Dominican merengue, reggae and rastas of Jamaican Brooklyn, and the New York school of Brazilian capoeira.  HU

AFAM 162b / AMST 162b / HIST 187b, African American History from Emancipation to the Present  Jonathan Holloway
An examination of the African American experience since 1861. Meanings of freedom and citizenship are distilled through appraisal of race and class formations, the processes and effects of cultural consumption, and the grand narrative of the civil rights movement.  HU

AFAM 178b / AFST 188b / ER&M 278b / HSAR 378b, From West Africa to the Black Americas: The Black Atlantic Visual Tradition  Robert Thompson
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.  HU

*AFAM 191a / AFST 330a / FREN 230a / LITR 266a, Introduction to Francophone African and Caribbean Literature  Christopher L. Miller
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; the rise of Negritude and nationalism; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bà, Belaya, Condé, and Lopes.  L5, HU
*AFAM 210b / AMST 445b / HIST 148Jb, Politics and Culture of the U.S. Color Line  
Matthew Jacobson  
The significance of race in U.S. political culture, from the "separate but equal" doctrine of Plessy v. Ferguson to the election of an African American president. Race as a central organizer of American political and social life. HU RP  
AFAM 215b / HSAR 373b, African American Art, 1963 to the Present  
Erica James  
Modern African American artistic production explored in the context of American art and social history. Critical race theory and artistic discourse from the Spiral group in 1963, to the Black Arts Movement and the culture wars, to current readings in American and postblack art. The complicated relations between African American art and politics. Use of art objects from the Yale University Art Gallery. HU  
*AFAM 219a / HSAR 473a, Historicizing Caribbean Art: Haiti  
Erica James  
Analysis of art and visual culture in the Republic of Haiti. The transatlantic formation and global relations of Haitian artistic practices and philosophies. Use of archival resources and art collections in the Yale University Art Gallery, the Peabody Museum, and other institutions in the region. HU  
AFAM 221a / HSAR 372a, Art of the Harlem Renaissance  
Erica James  
The emergence of the modern movement known as the Harlem Renaissance and its impact on American and global black culture. Key ideas and concepts explored through visual and performance art of the period. The development of black subjectivity; black visual and racial aesthetics; the rise of Pan-Africanism; the representation of race, gender, and sexualities. Use of art and archival resources from the collections of the Beinecke Library and the Yale University Art Gallery. HU  
*AFAM 226b, Race and Imperialism in the Early Twentieth Century  
Adom Getachew  
The global expansion of racial imperialism from the turn of the twentieth century to the Second World War. Focus on ideologies of race that justified imperial rule and on crises that resulted from imperial expansion. Readings include works by Woodrow Wilson, Jan Smuts, W. E. B. Du Bois, and George Padmore. SO  
Michael Veal  
Stylistic currents in jazz that evolved during the 1960s and 1970s as jazz was influenced by various popular, experimental, and world musics. Focus on the work of Miles Davis, John Coltrane, Ornette Coleman, and Sun Ra. HU  
*AFAM 324a / AMST 337a / ER&M 314a, Urban Latina/o Literature  
Dixa Ramirez  
Latina/o literature and the urban experience. Focus on works from the twentieth and twenty-first centuries, with background on the roots of Latina/o experience in the late nineteenth century. Some attention to film and the visual arts. HU  
*AFAM 336b / AMST 336b / ER&M 315b, Literature and Culture of Hispaniola and Its Diaspora  
Dixa Ramirez  
The literature and culture of Haiti, the Dominican Republic, and their diasporas in the United States and Canada since 1804. Focus on texts that explore relations between the two nations, with some attention to each country’s individual literary and cultural traditions. Conventional literary texts such as novels and poetry, as well as political documents, orally transmitted texts, and imagery. HU
*AFAM 350a / AMST 361a / ER&M 405a, Exile and Migration in Caribbean Literature and Culture  Dixa Ramirez
Forms of geographic displacement in Caribbean literature and culture from the early nineteenth century to the present. National independence movements, the negritude and Pan-Africanist movements, and recent emigration to the United States and Canada. Connections between gender, class, race, and specific national ideals, and their effects on the displacement experience.  HU

*AFAM 352b / AMST 438b / ER&M 291b / LITR 295b / WGSS 343b, 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.  HU

*AFAM 369a / AMST 378a / ENGL 364a / LITR 271a / THST 369a, African American Theater  Staff
African American dramatic literature and theater history from the nineteenth century to the present. Key events in black theater history, including the emergence of black musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson, Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU

*AFAM 375b / AMST 362b / ER&M 406b / WGSS 406b, Gender in Caribbean Women’s and Latina Literature  Dixa Ramirez
Gender in the Caribbean and its diaspora explored through women’s literature and other cultural production. Ways in which gender has overlapped with other categories such as race and class; its effects on narratives of colonialism, imperialism, travel, and migration. The marginalization of Caribbean women’s cultural labor.  HU

*AFAM 406bG / AMST 405bG / ENGL 405bG, Autobiography in America  Robert Stepto
A study of autobiographical writings from Mary Rowlandson’s Indian captivity narrative (1682) to the present. Classic forms such as immigrant, education, and cause narratives; prevailing autobiographical strategies involving place, work, and photographs. Authors include Franklin, Douglass, Jacobs, Antin, Kingston, Uchida, Balakian, Rodriguez, and Bechdel.  WR, HU

*AFAM 408a / AMST 460a / ENGL 443a, African American Poets of the Modern Era  Robert Stepto
The African American practice of poetry between 1900 and 1960, especially of sonnets, ballads, sermonic, and blues poems. Poets include Paul Laurence Dunbar, Langston Hughes, Sterling Brown, Gwendolyn Brooks, Margaret Walker, and Robert Hayden. Class sessions at the Beinecke Library for inspection and discussion of original editions, manuscripts, letters, and other archival material.  HU
*AFAM 411a / AMST 426a / ER&M 413a / WGSS 411a, The Fiction of Imaginary or Imminent Futures  Hazel Carby
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.  HU

*AFAM 414b / WGSS 438b, Women, Law, and the Black Freedom Movement  Kathleen Cleaver
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.  SO

*AFAM 423bG / AMST 384bG / ENGL 306bG, American Artists and the African American Book  Robert Stepto
Visual art in African American books since 1900. Artists include Winold Reiss, Aaron Douglas, E. S. Campbell, Tom Feelings, and the FSA photographers of the 1940s. Topics include Harlem Renaissance book art, photography and literature, and children’s books. Research in collections of the Beinecke Library and the Yale Art Gallery is encouraged.  HU

*AFAM 471a and AFAM 472b, Independent Study: African American Studies  Erica James
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  Laurie Woodard
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  Erica James
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.
African Studies

Director of undergraduate studies: Cheryl Doss, 309 LUCE, 432-9395, cheryl.doss@yale.edu; director of the Program in African Languages: Kiarie Wa’Njogu, 309B LUCE, 432-0110, john.wanjogu@yale.edu; www.yale.edu/macmillan/african

FACULTY ASSOCIATED WITH THE PROGRAM OF AFRICAN STUDIES

Professors  Lea Brilmayer (Law School), Kamari Clarke (Anthropology), John Darnell (Near Eastern Languages & Civilizations), Owen Fiss (Law School), Robert Harms (History), Andrew Hill (Anthropology), Roderick McIntosh (Anthropology), Christopher L. Miller (African American Studies, French), Nicoli Nattrass (Ethics, Politics, & Economics) (Visiting), Catherine Panter-Brick (Anthropology), Lamin Sanneh (History, Divinity School), Jeremy Seekings (Global Affairs) (Visiting), Ian Shapiro (Political Science), Robert Thompson (History of Art), Christopher Udry (Economics), Michael Veal (Music), David Watts (Anthropology), Elisabeth Wood (Political Science)

Assistant Professors  Daniel Magaziner (History), Jonathan Wyrtzen (Sociology)

Senior Lecturer  Cheryl Doss (Economics)

Lecturers  Lacina Coulibaly (Theater Studies), Anne-Marie Foltz (Public Health), Kristin McKie (Political Science), David Simon (Political Science)

Senior Lectors II  Sandra Sanneh, Kiarie Wa’Njogu

Senior Lectors  Oluwecye Adesola, Matuku Ngame

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) one African Studies course in the humanities and one in the social sciences; (2) two years of an African language (Arabic, Kiswahili, Yoruba, isiZulu, or others with permission of the director of undergraduate studies), unless waived by examination; (3) the junior seminar on research methods, APST 401; and (4) a concentration of four term courses in a discipline such as anthropology, art history, history, languages and literatures, political science, or sociology, or in an interdisciplinary program such as African American Studies; Ethnicity, Race, and Migration; or Women’s, Gender, and Sexuality Studies. Other areas of concentration
(e.g., diaspora studies, development studies) may be chosen in consultation with the director of undergraduate studies.

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**  Senior majors enroll in AFST 490, a colloquium that gives them an opportunity to exchange ideas with each other and to give presentations on their research. In the course, students also prepare a prospectus, compile a bibliography, and write a draft chapter of the senior essay. After completing the colloquium, each student carries out the remaining research and writing of the senior essay in AFST 491 under the guidance of a faculty adviser.

A preliminary statement indicating the topic to be addressed and the name of the faculty adviser must be submitted to the director of undergraduate studies by the end of the second week of the fall term in the senior year. Students should also inform the director of undergraduate studies of their preferred second reader by this time.

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

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

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

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

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

REQUIREMENTS OF THE MAJOR

Prerequisites  None
Number of courses  13 term courses (incl senior req)
Distribution of courses  1 African Studies course in humanities and 1 in social sciences;
2 years of an African lang; 4 courses in area of concentration
Specific course required  AFST 401
Senior requirement  Senior colloquium (AFST 490) and senior essay (AFST 491)

African Studies Courses

*AFST 110aG, Introduction to an African Language I  Kiariie Wa’Njogu and staff
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 120. Students may also study an African language through the noncredit Directed Independent Language Study program. L1 1½ Course cr

*AFST 120bG, Introduction to an African Language II  Kiariie Wa’Njogu
Continuation of AFST 110. After AFST 110. L2 1½ Course cr

AFST 180bG / ER&M 313b, Nigeria and Its Diaspora  Oluseye Adesola
Nigerians in the modern diaspora, both those who endured forced migration and those who migrated voluntarily. Specific reference to the Igbo and the Yorùbá. 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. SO

AFST 188b / AFAM 178b / ER&M 278b / HSAR 378b, From West Africa to the Black Americas: The Black Atlantic Visual Tradition  Robert Thompson
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. HU

AFST 272a / ANTH 272a / ARCG 272a, African Prehistory  Roderick McIntosh
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. SO

AFST 280a / MMES 196a / SOCY 135a, Islamic Society, Culture, and Politics  Jonathan Wyrtzen
The historical development of the global Muslim community, from its origins in seventh-century Arabia through its spread over subsequent centuries into the Middle East, Africa, Central, South, and Southeast Asia, and the West. The tremendous variation and complexity expressed in society, culture, and politics across the Islamic
world; Islam as a unifying factor on critical issues such as religious practice, political structure and activism, gender, and cultural expression.  

*AFST 330a / AFAM 191a / FREN 230a / LITR 266a, Introduction to Francophone African and Caribbean Literature  Christopher L. Miller
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; the rise of Negritude and nationalism; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bâ, Belaya, Condé, and Lopes.

AFST 340b / HIST 340b, Africa in the Era of the Slave Trade  Robert Harms
Examination of the tumultuous changes experienced by African societies during the era of the Atlantic slave trade, approximately 1450–1850. Focus on the complex interaction between the internal dynamics of African societies and the impact of outside forces.

AFST 347a / GLBL 243a / LAST 348a / PLSC 347a, Post-Conflict Politics  David Simon
Consideration of a range of issues and challenges faced by countries emerging from domestic conflict. Focus on elements of peace-building – demilitarization, post-conflict elections, institution-building, and reconstruction – as well as modes of transitional justice and mechanisms for truth and reconciliation.

AFST 361aG, Human Rights in the African Context  Soo-Ryun Kwon

AFST 365bG, Language and Identity in South Africa  Sandra Sanneh
The role of language in the construction of identity in South Africa. Focus on shifting identities during the apartheid period and since independence.

*AFST 372a / MMES 105a / SOCY 372aG, Comparative Nationalism in North Africa and the Middle East  Jonathan Wyrtzen
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).

*AFST 389a / MMES 181a / PLSC 389a, Middle East Exceptionalism  Adria Lawrence
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.

*AFST 401aG, Research Methods in African Studies  Cheryl Doss
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 406a<sup>G</sup> / GLBL 363a / PLSC 406a<sup>G</sup>, **Sexual Violence and War**  
Elisabeth Wood  
Analysis of patterns of sexual violence in war. Assessment of how well scholars in various disciplines and policy analysts account for these patterns.  
**SO**

*AFST 420a / EP&E 246a / LAST 406a / PLSC 430a, **The Politics of Development Assistance**  
David Simon  
Study of development assistance, a dominant feature of the political economies of some of the world’s poorest countries. The motivations and politics of aid from donors’ perspectives; the political and economic impact of aid on developing countries. Proposals to make aid a more effective instrument of development.  
**SO**

*AFST 430b<sup>G</sup>, **Language Planning in Sub-Saharan Africa**  
Kiarie Wa’Njogu  
Examination of language policies in selected sub-Saharan African countries. Analysis of language use in different contexts; assessment of the impact of globalization on African languages.  
**HU**

*AFST 435a / THST 335a, **West African Dance: Traditional to Contemporary**  
Lacina Coulibaly  
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.  
**HU  RP**

*AFST 440a<sup>G</sup>, **Africa’s Economic Transformation: Challenges and Prospects**  
Hiroyuki Hino  
The challenges of economic transformation in Africa. Topics include the economic potential of African countries, policy-making challenges in Africa, and possibilities for transforming African nations into middle-income countries.  
**SO**

*AFST 447b<sup>G</sup> / EP&E 271b / ER&M 271b / PLSC 447b<sup>G</sup>, **The Rwandan Genocide in Comparative Context**  
David Simon  
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.  
**SO**

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

*AFST 486a / HIST 388Ja, **Slavery and the Slave Trade in Africa**  
Robert Harms  
The slave trade from the African perspective. Analysis of why slavery developed in Africa and how it operated. The long-term social, political, and economic effects of the Atlantic slave trade.  
**WR, HU**
*AFST 487a / HIST 387Ja, West African Islam: Jihad Tradition and Its Pacifist Opponents  Lamin Sanneh
The influence 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.  WR, HU

*AFST 490a, African Studies Colloquium  Staff
Students conduct research for the senior essay, give presentations on their research, and prepare a bibliography, a prospectus, and a draft chapter of the senior essay. Discussion of model essays and other examples of writing.  HU, SO

*AFST 491a or b, The Senior Essay  Staff
Independent research on the senior essay. By the end of the sixth week of classes, a rough draft of the entire essay should be completed. By the end of the last week of classes (fall term) or three weeks before the end of classes (spring term), two copies of the final essay must be submitted.

Kiswahili Courses

SWAH 110a, Beginning Kiswahili I  Kiarie Wa’Njogu
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 120.  1.1  1½ Course cr

SWAH 120b, Beginning Kiswahili II  Kiarie Wa’Njogu
Continuation of SWAH 110. Texts provide an introduction to the basic structure of Kiswahili and to the culture of the speakers of the language. Prerequisite: SWAH 110.  1.2  1½ Course cr

SWAH 130a, Intermediate Kiswahili I  Kiarie Wa’Njogu
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 120.  1.3  1½ Course cr

SWAH 140b, Intermediate Kiswahili II  Kiarie Wa’Njogu
Continuation of SWAH 130. After SWAH 130.  1.4  1½ Course cr

SWAH 150a, Advanced Kiswahili I  Kiarie Wa’Njogu
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 140.  1.5

SWAH 160b, Advanced Kiswahili II  Kiarie Wa’Njogu
Continuation of SWAH 150. After SWAH 150.  1.5
SWAH 170a\textsuperscript{G} and b\textsuperscript{G}, Topics in Kiswahili Literature  
Kiari Wa’Njogu and staff  
Advanced readings and discussion with emphasis on literary and historical texts.  
Reading assignments include materials on Kiswahili poetry, Kiswahili dialects, and the  
history of the language. After SWAH 160.  L5, HU

Yorùbá Courses

YORU 110a\textsuperscript{G}, Beginning Yorùbá I  
Oluseye Adesola  
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 120.  L1  1½ Course cr

YORU 120b\textsuperscript{G}, Beginning Yorùbá II  
Oluseye Adesola  
Continuing practice in using and recognizing tone through dialogues. More emphasis  
is placed on simple cultural texts and role playing. Prerequisite: YORU 110.  L2  
1½ Course cr

YORU 130a\textsuperscript{G}, Intermediate Yorùbá I  
Oluseye Adesola  
Refinement of students’ speaking, listening, reading, and writing skills. More natural  
texts are provided to prepare students for work in literary, language, and cultural  
study as well as for a functional use of Yorùbá. After YORU 120.  L3  1½ Course cr

YORU 140b\textsuperscript{G}, Intermediate Yorùbá II  
Oluseye Adesola  
Students are exposed to more idiomatic use of the language in a variety of interactions,  
including occupational, social, religious, and educational. Cultural documents include  
literary and nonliterary texts. After YORU 130.  L4  1½ Course cr

YORU 150a\textsuperscript{G}, Advanced Yorùbá I  
Oluseye Adesola  
An advanced course intended to improve students’ aural and reading comprehension  
as well as speaking and writing skills. Emphasis 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{e\v w\i});  
and music. After YORU 140.  L5

YORU 160b\textsuperscript{G}, Advanced Yorùbá II  
Oluseye Adesola  
Continuing development of students’ aural and reading comprehension and speaking  
and writing skills, with emphasis on idiomatic usage and stylistic nuance. Study  
materials are selected to reflect research interests of the students. After YORU 150.  L5

YORU 170a\textsuperscript{G} and YORU 171b\textsuperscript{G}, Topics in Yorùbá Literature and Culture  
Oluseye Adesola  
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. Prerequisite: YORU 160.  L5,  
HU
**YORU 180a**, Advanced Topics in Yorùbá Literature and Culture

Oluséye Adesola

Designed for students with superior proficiency in Yorùbá who have an interest in topics not otherwise covered by existing courses. Development of language proficiency to the level of an educated native speaker. Discussion of advanced readings on Yorùbá philosophy, history, literature, and culture. L5

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**isiZulu Courses**

**ZULU 110a**, Beginning isiZulu I

Sandra Sanneh

A beginning course in conversational isiZulu, using Web-based materials filmed in South Africa. Emphasis on the sounds of the language, including clicks and tonal variation, and on the words and structures needed for initial social interaction. Brief dialogues concern everyday activities; aspects of contemporary Zulu culture are introduced through readings and documentaries in English. Credit only on completion of ZULU 120. L1 1½ Course cr

**ZULU 120b**, Beginning isiZulu II

Sandra Sanneh

Development of communication skills through dialogues and role play. Texts and songs are drawn from traditional and popular literature. Students research daily life in selected areas of South Africa. Prerequisite: ZULU 110. L2 1½ Course cr

**ZULU 130a**, Intermediate isiZulu I

Sandra Sanneh

Development of fluency in speaking, listening, reading, and writing, using Web-based materials filmed in South Africa. Students describe and narrate spoken and written paragraphs. Review of morphology; concentration on tense and aspect. Materials are drawn from contemporary popular culture, folklore, and mass media. After ZULU 120. L3 1½ Course cr

**ZULU 140b**, Intermediate isiZulu II

Sandra Sanneh

Students read longer texts from popular media as well as myths and folktales. Prepares students for initial research involving interaction with speakers of isiZulu in South Africa and for the study of oral and literary genres. After ZULU 130. L4 1½ Course cr

**ZULU 150a**, Advanced isiZulu I

Sandra Sanneh

Development of fluency in using idioms, speaking about abstract concepts, and voicing preferences and opinions. Excerpts from oral genres, short stories, and television dramas. Introduction to other South African languages and to issues of standardization, dialect, and language attitude. After ZULU 140. Course includes students from Cornell University via videoconference. L5

**ZULU 160b**, Advanced isiZulu II

Sandra Sanneh

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 150. Course includes students from Cornell University via videoconference. L5
American Studies

Director of undergraduate studies: Ned Blackhawk, 233 HGS, 432-1188, ned.blackhawk@yale.edu; americanstudies.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), Hazel Carby (African American Studies), George Chauncey (History), Edward Cooke, Jr. (History of Art), Michael Denning (English), Wai Chee Dimock (English), Kathryn Dudley (Anthropology), John Mack Faragher (History), Joanne Freeman (History), Glenda Gilmore (History, African American Studies), Inderpal Grewal (Women’s, Gender, & Sexuality Studies), Dolores Hayden (Architecture), Jonathan Holloway (African American Studies, History), Amy Hungerford (English), Matthew Jacobson (African American Studies, History), Daniel Kevles (History), Mary Lui (History), Joanne Meyerowitz (History), Charles Musser (Film Studies), Stephen Pitti (History), Sally Promey (Divinity School), Joseph Roach (English, Theater Studies), Marc Robinson (Theater Studies, English), Michael Roemer (Adjunct) (Film Studies, Art), Alicia Schmidt Camacho (Ethnicity, Race, & Migration), Caleb Smith (English), 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  Kathryn Lofton (Religious Studies), Paul Sabin (History, Environmental Studies)

Assistant Professors  Jafari Allen (Anthropology, African American Studies), Laura Barraclough, Crystal Feimster (African American Studies), Zareena Grewal (Ethnicity, Race, & Migration), Greta LaFleur, Albert Laguna (Ethnicity, Race, & Migration), Dixa Ramirez (Ethnicity, Race, & Migration), Birgit Brander Rasmussen (Ethnicity, Race, & Migration), Sam See (English), Jenifer Van Vleck (History), Tisa Wenger (Divinity School)

Senior Lecturers  James Berger, Ron Gregg (Film Studies)

Lecturer  Ryan Brasseaux

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 courses in American Studies with courses 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 nontraditional 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 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 four gateway courses (AMST 111–299), including two in cultural history/cultural studies, 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 junior seminars (AMST 300–399) during their junior year. At least one of the seminars must fall within the student’s area of concentration, described below. In each of the seminars, students are expected to demonstrate proficiency in interdisciplinary research and analysis through the production of critical essays on primary source materials or a paper of fifteen to twenty pages. Sophomores contemplating a junior term abroad are urged to take one of the junior seminars 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. The 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 human-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 a senior seminar within the area of concentration (AMST 400–490). 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 491). 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 491, a student should submit a prospectus, signed by the
faculty adviser, to the director of undergraduate studies.

Third, the student may enroll in the intensive major (AMST 493 and 494) and work
independently for two terms. The intensive major offers an opportunity for significant
original research leading to a substantial senior project. AMST 493, 494 carries
two terms of credit; its final product should be a sixty-page essay or its equivalent
in another medium. All students in the intensive major participate in a yearlong
proseminar on theory and method. One term of the two-term project may count as a
course in the area of concentration. To apply for admission to AMST 493 and 494, 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** 4 gateway courses, as specified; 2 junior sems, 1 in area of
concentration; 5 courses in area of concentration for letter grades, 1 on a related
non-U.S. topic (one may be one term of two-term senior project); 2 electives

**Substitution permitted** 1 freshman sem for 1 gateway course; others with DUS
permission

**Senior requirement** Senior sem (AMST 400–490) or one-term senior project
(AMST 491) related to area of concentration

**Intensive major** Same, except a two-term senior project (AMST 493 and 494) replaces
AMST 491

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**Freshman Seminars**

*AMST 007a / HSAR 002a, Furniture and American Life*  Edward Cooke, Jr.
In-depth study and interpretation of American furniture from the past four centuries.
Hands-on experience with furniture in the collection of the Yale University Art Gallery
to explore such topics as materials, techniques, styles, use, and meaning. Enrollment
limited to freshmen. Preregistration required; see under Freshman Seminar Program.
WR, HU RP

*AMST 008a / AFAM 023a, Slavery in American Memory*  Edward Ball
The conflict over the story of American slavery as it has been told since the Civil War.
Film, family history, fiction, and the competing tales of historians that make up the
collective memory of the slave past.  WR, HU
*AMST 011b / HIST 023b, War and Rebellion in Early America*  
Alejandra Dubcovsky  
The role of war and rebellion in early American history, from precontact to the War of 1812. Changing roles and meanings of war and rebellion; the impact of these violent events on European, Indian, and African populations; implications of using war and rebellion as historical categories.  
WR, HU

*AMST 012b / HIST 012b, Politics and Society in the United States after World War II*  
Jennifer Klein  
Introduction to American political and social issues from the 1940s to the present, including political economy, civil rights, class politics, and gender roles. Legacies of the New Deal as they played out after World War II; the origins, agenda, and ramifications of the Cold War; postwar suburbanization and its racial dimensions; migration and immigration; cultural changes; social movements of the Right and Left; Reaganism and its legacies; the United States and the global economy.  
HU

**Gateway Courses**

**AMST 115b / ANTH 115b / WGSS 115b, Gender in a Transnational World**  
Inderpal Grewal  
Gender and sex as constituted in modern nation-states through the divisions between domestic and foreign spheres. Ways in which the interactions between international and national issues shape gender and sexuality in everyday life. Topics include science, race, and empire; nation and identity formation; media, representation, and art practices; and migration, displacement, and globalization.  
SO

**AMST 133b / ER&M 187b / HIST 107b, Introduction to American Indian History**  
Ned Blackhawk  
Survey of American Indian history, beginning with creation traditions and migration theories and continuing to the present day. Focus on American Indian nations whose homelands are located within the contemporary United States. Complexity and change within American Indian societies, with emphasis on creative adaptations to changing historical circumstances.  
HU

**AMST 135a / HIST 127a / WGSS 200a, U.S. Lesbian and Gay History**  
George Chauncey  
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.  
HU

**AMST 150a6 / HIST 145a / RLST 108a, Religion in Modern America, 1865–2000**  
Kathryn Lofton  
An examination of U.S. religious history from the close of the Civil War to the present day, a period of climactic change in the histories of capitalism, pluralism, secularization, and globalization. Locations discussed include Indian reservations and world fairs, auto plants and soap factories, storefront churches and stadiums; individuals include
female evangelists and talk show hosts, presidents and pariahs, traveling monks and pop rabbis. Focus on how subjects are selected for historical inquiry.  

**AMST 162b / AFAM 162b / HIST 187b, African American History from Emancipation to the Present  ** Jonathan Holloway  
An examination of the African American experience since 1861. Meanings of freedom and citizenship are distilled through appraisal of race and class formations, the processes and effects of cultural consumption, and the grand narrative of the civil rights movement.  

**AMST 176b / EVST 206b / HIST 144b / HSHM 206b / HUMS 323b, Science and Technology in the United States  ** Daniel Kevles  
The development of science and technology in American society from the colonial period through the late twentieth century. The rise of the United States to a world-class scientific and technological power; the American scientific community and the tensions it has faced in a democratic society; the role of science and technology in exploration, agriculture, industry, national defense, religion, culture, and social change.  

**AMST 190a / HIST 112a, The Formation of Modern American Culture, 1876–1919  ** Jean-Christophe Agnew  
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 207a / ARCH 340aG, American Cultural Landscapes: An Introduction to the History of the Built Environment  ** Dolores Hayden  
Introduction to land use, transportation, urban planning, and vernacular architecture in the United States. After a brief review of Native American and colonial settlement patterns, the first half of the course deals with the development of cities from 1800 to 1920. The second half emphasizes suburban growth that transformed traditional downtowns and created diffuse metropolitan regions between 1920 and the present.  

WR, HU, SO  

**AMST 211b / ENGL 293b / ER&M 210b / WGSS 211b, Race and Gender in American Literature  ** Birgit Brander Rasmussen  
The role of literature in constructing representations of America as an idea, a nation, a colonial settlement, and a participant in world affairs. What kind of place America is and who belongs there; the consequences of America’s history for its national literature. Emphasis on the ways texts represent and contest social concepts of race and gender difference.  

HU  

**AMST 212a / FILM 272a / HSAR 319a, John F. Kennedy’s Assassination and Its Aftermath  ** J. D. Connor  
Introduction to the materials and methods of cultural studies, with a focus on the Kennedy assassination. Written and visual narratives of the events in official accounts, scholarly and pseudoscholarly reconstructions, and artistic re appropriations. The assassination in literature, film, and other arts. Attention to the moral responsibility of documentary and of fiction, ideas of mourning and trauma, and aestheticization and catharsis.  

HU
*AMST 225a / FILM 325a, American Film Comedy  Michael Roemer
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. 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.  HU  RP

*AMST 246a / ENGL 289a, Hemingway, Fitzgerald, Faulkner  Wai Chee Dimock
Novels and short stories by Hemingway, Fitzgerald, and Faulkner, supplemented with works by Gertrude Stein, Langston Hughes, Nella Larsen, and others. Exploration of interconnections among these works using three analytic scales: the macro history of the United States and the world; the formal and stylistic innovations of modernism; and the small details of sensory input and psychic life.  WR, HU

AMST 247a / HIST 147a / HLTH 170a / HSHM 202a, Media and Medicine in Modern America  John Warner and Gretchen Berland
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.  HU

*AMST 258b, Wilderness in the North American Imagination  Staff
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.  HU

AMST 260b / PHIL 260b, American Philosophy  Kenneth Winkler
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 George 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.  HU

AMST 261a / ENGL 291a, The American Novel since 1945  Amy Hungerford
American fiction; works by Richard Wright, Flannery O'Connor, Jack Kerouac, Vladimir Nabokov, Philip Roth, Thomas Pynchon, John Barth, Maxine Hong Kingston, Toni Morrison, Cormac McCarthy, Lev Grossman, Alison Bechdel, and Junot Diaz.  HU

AMST 271b / HIST 171b / WGSS 201b, Women in Modern America  Joanne Meyerowitz
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.  HU
AMST 272b / ER&M 282b / HIST 183b / WGSS 272b, Asian American History, 1800 to the Present  Mary Lui
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.  HU

*AMST 274a / ER&M 260a, American Captivity Narratives  
Birgit Brander Rasmussen
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.  HU

AMST 284b, Introduction to Latino/a Studies  Albert Laguna
Themes and issues that have shaped the experiences of Latino/a populations in the United States explored within an interdisciplinary and hemispheric framework. Relations between the United States and Latin America; the history of ethnic labels; the formation of transnational communities and identities; the politics of language and bilingualism; race, class, and ethnicity; and gender and sexuality.  HU

Junior Seminars

*AMST 301a / ENGL 299a / FILM 311a, East Asia in U.S. Literature and Film  
R. John Williams
An introductory course on American images of Asia and Asian America in twentieth-century literature and cinema.  WR, HU

*AMST 302a, Islam and Early America  Greta LaFleur
Cultural representations of Islam in colonial North America. Reasons for the widespread interest among religious, political, and cultural leaders in the history, culture, and practices of Islam. Early North American orientalism and its relation to ways in which American popular culture represents Islam today. Readings include literature, theological writing, legal documents, and ethnographic writing.  HU

*AMST 306a / FILM 469a, The Films of Martin Scorsese  Michael Kerbel and staff
Close analysis of Scorsese’s films, with attention to his themes and styles and to ways in which his works have assimilated literary and cinematic influences, reflected their eras, and influenced other directors. Scorsese’s work examined in the context of film history, and of U.S. culture and history, from the 1960s to the present.  HU RP

*AMST 311b / ER&M 311b, Latina/o New Haven  Alicia Schmidt Camacho
Introduction to the field of Latina/o studies, with a focus on community-based research in New Haven. Training in interdisciplinary methods of social research, including oral history, interviews, archival research, cultural analysis, and social documentation. Students design collaborative research projects.  SO

*AMST 320b / ER&M 422b, Latino New York  Albert Laguna
The historical presence of Latinas and Latinos in New York City from the late nineteenth century to the present. Differences and similarities among Puerto Rican,
Mexican, Cuban, and Dominican communities in the context of New York City history. Complex cultural dynamics as illustrated in novels, poetry, music, and film.  

*AMST 322b / ER&M 323b / WGSS 371b, Gender, Family, and Cultural Identity in Asia and the United States  
Geetanjali Singh Chanda  
A cross-cultural dialogue focusing on family, gender, and identity. 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.  

*AMST 330b / ENGL 236b, Dystopic and Utopian Fictions  
James Berger  
Attempts since the late nineteenth century to imagine, in literature, cinema, and social theory, a world different from the existing world. The merging of political critique with desire and anxiety; the nature and effects of social power; forms of authority, submission, and resistance.  

*AMST 331b / FILM 428b / MUSI 330b / THST 330b, Alternate Realities and Musical Multimedia  
Lynda Paul  
The role of music and other kinds of sound in the creation and experience of alternate realities, from video games to theme parks and theatrical multimedia. Perspectives from recent work in film and media studies, theater and performance studies, anthropology, cognitive science, and a variety of musicological and ethnomusicological subdisciplines, such as popular music studies, opera studies, and ritual studies.  

*AMST 333a, Sex before Sexuality  
Greta LaFleur  
The history of sexuality in North America prior to the emergence of modern definitions of sexuality and sexual identity. What counted as "sex" in early North America; forms of sexual behavior that were discussed, defined, disciplined, and prohibited; comparison with contemporary understandings of sex and sexuality. Literary, historical, and scientific texts from the seventeenth through early nineteenth centuries; historical, critical, and theoretical writings on the history of sexuality and on the challenges of sexual historiography more generally.  

*AMST 334b / ER&M 334b / FILM 337b, Documentary Film in a Global Age  
Zareena Grewal  
Introduction to the genres and political uses of documentary film, from the first documentary to activist films on YouTube. The cultural observation, witnessing, and critique that documentary 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 336b / AFAM 336b / ER&M 315b, Literature and Culture of Hispaniola and Its Diaspora  
Dixa Ramirez  
The literature and culture of Haiti, the Dominican Republic, and their diasporas in the United States and Canada since 1804. Focus on texts that explore relations between the two nations, with some attention to each country's individual literary and cultural traditions. Conventional literary texts such as novels and poetry, as well as political documents, orally transmitted texts, and imagery.  

*AMST 337a / AFAM 324a / ER&M 314a, Urban Latina/o Literature  
Dixa Ramirez  
Latina/o literature and the urban experience. Focus on works from the twentieth and twenty-first centuries, with background on the roots of Latina/o experience in the late nineteenth century. Some attention to film and the visual arts.  

HU
*AMST 338b / ENGL 414b / THST 410b / WGSS 333b, Gertrude Stein  Sam SEE
An exploration of Gertrude Stein’s major works, including her nonfiction prose, narrative prose fiction, verse, and drama. Special attention to Stein’s modernist legacy and its divergence from the "Men of 1914" strain of modernism. Several class sessions at the Beinecke Library for inspection and discussion of archival materials.  HU

*AMST 342b / ER&M 316b, Los Angeles, City of Migrants  Laura Barraclough
The city of Los Angeles examined from the perspective of its migrant communities, from the era of Spanish and American colonialism to the present. Emphasis on the relationships between migrants and their cultural expressions as they shape, and are shaped by, the city’s race, gender, and economic structures and its physical and cultural geographies.  SO

*AMST 346a / ENGL 447a, American Literature in the World  Wai Chee Dimock
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, Mark Twain, Henry James, Ernest Hemingway, Gertrude Stein, Monique Truong, Amy Tan, Ruth Ozeki, Jhumpa Lahiri, Cristina Garcia, Edwidge Danticat, and Dave Eggers. Pre-1900 with permission of the instructor.  WR, HU

*AMST 348a, Space, Place, and Landscape  Laura Barraclough
Survey of core concepts in cultural geography and spatial theory. Ways in which the organization, use, and representation of physical spaces produce power dynamics related to colonialism, race, gender, class, and migrant status. Multiple meanings of home; the politics of place names; effects of tourism; the aesthetics and politics of map making; spatial strategies of conquest. Includes field projects in New Haven.  SO

AMST 351b / FILM 321b, Hollywood in the Twenty-First Century  Ron Gregg
Examination of how globalization and the global success of American films have affected Hollywood film production, stardom, distribution, and exhibition, as well as the aesthetics of film image, sound, and narration. Topics also include the effects of new digital technologies on film aesthetics, spectator, spectatorship, and exhibition, and the responses of independent and other national cinemas to Hollywood’s hegemony.  HU

*AMST 352a / FILM 377a / WGSS 454a, Postwar Queer Avant-Garde Film
Ron Gregg
Production, exhibition, and aesthetic practices in postwar queer underground cinema in the United States as it developed from the 1930s to the early 1970s. The films of gay or bisexual filmmakers such as Willard Maas, Andy Warhol, Jack Smith, Kenneth Anger, and José Rodríguez-Soltero; the work of antiheteronormative female filmmakers such as Barbara Rubin and Marie Menken; the links between avant-garde cinema, theater, and other arts, as well as the political context.  HU

*AMST 358b / ENGL 281b, Animals in Modern American Fiction  James Berger
Literary portrayals of animals are used to examine the relations between literature, science, and social and political thought since the late nineteenth century. Topics include Darwinist thought, socialism, fascism, gender and race relations, new thinking about ecology, and issues in neuroscience.  HU RP

*AMST 361a / AFAM 350a / ER&M 405a, Exile and Migration in Caribbean Literature and Culture  Dixa Ramirez
Forms of geographic displacement in Caribbean literature and culture from the early nineteenth century to the present. National independence movements, the negritude
and Pan-Africanist movements, and recent emigration to the United States and Canada. Connections between gender, class, race, and specific national ideals, and their effects on the displacement experience.  HU

*AMST 362b / AFAM 375b / ER&M 406b / WGSS 406b, Gender in Caribbean Women's and Latina Literature  Dixa Ramirez
Gender in the Caribbean and its diaspora explored through women’s literature and other cultural production. Ways in which gender has overlapped with other categories such as race and class; its effects on narratives of colonialism, imperialism, travel, and migration. The marginalization of Caribbean women’s cultural labor.  HU

*AMST 368a / ER&M 224a, Marxism and Social Movements in the Nineteenth Century  Michael Denning
The history and theory of the socialist and Marxist traditions from their beginnings in the early nineteenth century to the world upheavals of 1917–19. Relations to labor, feminist, abolitionist, and anticolonial movements.  RP

*AMST 369b / ER&M 229b, Marxism and Social Movements in the Twentieth Century  Michael Denning
The history of Marxism and its relation to the labor, feminist, and anticolonial social movements since the great upheavals of 1919. Topics include the Leninisms of the Communist movement, the anticolonial Marxisms of national liberation struggles, the cultural and intellectual trajectory of Western Marxism, the New Left, and contemporary global justice movements.  HU

*AMST 370b / THST 380b, The History of Dance  Emily Coates
An examination of major movements in the history of concert and social dance from the late nineteenth century to the present, including ballet, tap, jazz, modern, musical theater, and different cultural forms. Topics include tradition versus innovation, the influence of the African diaspora, and interculturalism. Exercises are used to illuminate analysis of the body in motion. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

*AMST 371a / ENGL 366a / THST 398a, American Experimental Theater  Marc Robinson
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU

*AMST 378a / AFAM 369a / ENGL 364a / LITR 271a / THST 369a, African American Theater  Staff
African American dramatic literature and theater history from the nineteenth century to the present. Key events in black theater history, including the emergence of black musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson, Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU
*AMST 381b / ARCH 351b, Poets’ Landscapes  Dolores Hayden
Introduction to techniques poets have used to ground their work in the landscapes and buildings of American towns and cities including Chicago, New York, and Los Angeles. Attention to poems from a national automotive landscape as well as narrative poems about cities. Writing exercises in different poetic forms; readings from the works of Dickinson, Frost, Bishop, Lowell, Wilbur, Dickey, Pinsky, Cervantes, and Merrill.  WR, HU

*AMST 382a, Culture of the Early Cold War  Joel Silverman
U.S. history and culture from the end of World War II through the 1950s. Ways in which Americans made sense of their world. The formation of American identity after World War II, with emphasis on the construction of gender identity. Texts include novels, short stories, essays, film, advertisements, and music.  HU

*AMST 383b, U.S. Border and Immigration Policy  Laura Barraclough
U.S. border and immigration policies at the national, state, and local levels from the colonial period to the present. The historical evolution of border and immigration policy; contemporary debates; the effects of shifting policy on immigrants of varying legal statuses.  SO RP

*AMST 384bG / AFAM 423bG / ENGL 306bG, American Artists and the African American Book  Robert Stepto
Visual art in African American books since 1900. Artists include Winold Reiss, Aaron Douglas, E. S. Campbell, Tom Feelings, and the FSA photographers of the 1940s. Topics include Harlem Renaissance book art, photography and literature, and children’s books. Research in collections of the Beinecke Library and the Yale Art Gallery is encouraged.  HU

*AMST 385b, Trauma in American Film and Television  Christine Muller
Origins, multiple meanings, and influence of the notion of trauma in contemporary American culture. Relations between theories of popular culture and of trauma, particularly in discussions of war, social upheaval, and September 11, 2001. The conditions and implications of engaging trauma through everyday entertainment such as film and television; the ethics of representation.  HU

*AMST 388b, Settler Colonialism and Indigenous Peoples  Jessica Cattelino
Ways in which settler colonialism conditions the lives of both indigenous and nonindigenous people in the United States and in other settler societies such as Canada, Australia, and New Zealand. Citizenship and sovereignty, the politics of kinship and sexuality, place and property, nature, the role of indigenous peoples in the imaginations of settler societies, recognition and cultural authenticity, and economy.  SO

*AMST 390a or b, The Junior Seminar  Staff
An interdisciplinary course in American history, literature, arts, and society, organized around a common core of texts. Topics vary by term.  HU, SO

Senior Seminars

*AMST 402a / ANTH 302a / FILM 324a / WGSS 380a, Gender and Sexuality in Media and Popular Culture  Laura Wexler
Investigation of visual media and popular culture in the United States and transnationally. Gender, race, class, and sexuality in relation to the production, circulation, consumption, and reception of media culture. Focus on theories of media
and the visual. Significant lab component in which students use media technologies to make and illustrate theoretical arguments.  

*AMST 403a\(^G\), Introduction to Public Humanities  Ryan Brasseaux
Introduction to the various media, topics, debates, and issues framing public humanities. The relationship between knowledge produced in the university and the circulation of ideas among a broader public, including modes of inquiry, interpretation, and presentation. Public history, museum studies, oral and community history, public art, documentary film and photography, public writing and educational outreach, and the socially conscious performing arts.  

*AMST 404b / ER&M 348b / HIST 185b, Latina/o Histories  Stephen Pitti
Survey of two hundred years of Mexican American, Puerto Rican, Central American, and Cuban American history in the United States. Transnational politics; legacies of European colonialism; labor history; the rise of ethnic nationalism.  

*AMST 405b\(^G\) / AFAM 406b\(^G\) / ENGL 405b\(^G\), Autobiography in America  Robert Stepto
A study of autobiographical writings from Mary Rowlandson’s Indian captivity narrative (1682) to the present. Classic forms such as immigrant, education, and cause narratives; prevailing autobiographical strategies involving place, work, and photographs. Authors include Franklin, Douglass, Jacobs, Antin, Kingston, Uchida, Balakian, Rodriguez, and Bechdel.  

*AMST 406b / ENGL 329b, The Spectacle of Disability  James Berger
Examination of how people with disabilities are represented in U.S. literature and culture. Ways in which these representations, along with the material realities of disabled people, frame society’s understanding of disability; the consequences of such formulations. Various media, including fiction, nonfiction, film, television, and memoirs, viewed through a wide range of analytical lenses.  

*AMST 417b / ENGL 422b / FILM 435b, The Private Eye  Paul Grimstad and Alan Trachtenberg
American novels and films of the 1940s and 1950s that introduce and develop the figure of the private eye. Attitudes toward class, gender, sexuality, criminality, race and ethnicity, state authority, and police power; visual style, narrative form, character, performance, and mise-en-scène; meanings of "noir" in film and fiction.  

*AMST 418b, Social Governance in Early America  Greta LaFleur
The management of bodies and populations in North America from c. 1790 to c. 1850. Focus on the creation, management, and hierarchization of populations through the science of classification, including categories such as race, nation, wealth, and work. Relations between new forms of government and emerging strategies of governance. The specific shape taken by the state’s investment in the management of birth, life, and death, and the legacies of that investment.  

*AMST 422a / ER&M 435a / HIST 151Ja, Writing Tribal Histories  Ned Blackhawk
Historical overview of American Indian tribal communities, particularly since the creation of the United States. Challenges of working with oral histories, government documents, and missionary records.
*AMST 426a / AFAM 411a / ER&M 413a / WGSS 411a, The Fiction of Imaginary or Imminent Futures  Hazel Carby
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.  HU

*AMST 429aG / ANTH 404aG, American Communities  Kathryn Dudley
Consideration of the concept of community and an examination of various kinds of communities—ranging from those defined by social proximity to those defined by a common experience or ideology—that are part of the American experience, in order to understand the value Americans place on community itself, and the ways in which the pull of individualism exacts a toll on that commitment.  SO

*AMST 430a / FILM 426a, Contemporary Documentary Film and Video  Charles Musser and Anne Berke
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.  HU RP

*AMST 435b / ANTH 366b, Anthropology of Inequality in America  Kathryn Dudley
Sociocultural dimensions of social inequality in the contemporary United States. Ways in which the socioeconomic processes that produce inequality are inextricably embedded in worlds of cultural meaning; how those meanings are constructed and embodied in everyday practice. Perspectives from anthropology, sociology, economics, history, and popular media.  SO

*AMST 438b / AFAM 352b / ER&M 291b / LITR 295b / WGSS 343b, 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.  HU

*AMST 445b / AFAM 210b / HIST 148Jb, Politics and Culture of the U.S. Color Line  Matthew Jacobson
The significance of race in U.S. political culture, from the "separate but equal" doctrine of Plessy v. Ferguson to the election of an African American president. Race as a central organizer of American political and social life.  HU RP

*AMST 460a / AFAM 408a / ENGL 443a, African American Poets of the Modern Era  Robert Stepto
The African American practice of poetry between 1900 and 1960, especially of sonnets, ballads, sermonic, and blues poems. Poets include Paul Laurence Dunbar, Langston Hughes, Sterling Brown, Gwendolyn Brooks, Margaret Walker, and Robert Hayden. Class sessions at the Beinecke Library for inspection and discussion of original editions, manuscripts, letters, and other archival material.  HU
III. Subjects of Instruction

*AMST 463a and AMST 464b / FILM 455a and FILM 456b, Documentary Film Workshop  Charles Musser
A yearlong workshop designed primarily for majors in Film Studies or American Studies who are making documentaries as senior projects. Seniors in majors other than Film Studies and American Studies admitted as space permits.  RP

*AMST 466a / ENGL 444a, Contemporary Historical Novels  James Berger
Attempts of contemporary American authors to put the complexities of history into written form. Narrative as the privileged mode of historical representation; differences between what is regarded as academic history, popular history, and historical fiction; the influence of power and of the writer’s own historical position on historical narrative; effects of ethnicity, gender, and race on the creation and reception of history; writers’ use of historical fiction to change the ways readers think about the present and the future.  HU

*AMST 468a / EP&E 396a / PLSC 251a, Progressivism: Theory and Practice  Stephen Skowronek
The progressive reform tradition in American politics. The tradition’s conceptual underpinnings, social supports, practical manifestations in policy and in new governmental arrangements, and conservative critics. Emphasis on the origins of progressivism in the early decades of the twentieth century, with attention to latter-day manifestations and to changes in the progressive impulse over time.  SO

*AMST 471a and AMST 472b, Individual Reading and Research for Juniors and Seniors  George Chauncey and Ned Blackhawk
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 473a / WGSS 452a, Affect in the Writing of History  Laura Wexler and Michael Amico
Methods for analyzing, interpreting, and writing about emotion experienced in the past. Focus on ways in which lived sexuality has shaped the feelings of people and the emotional tone of events in history. Psychoanalytical and affect theories as tools for studying the ephemeral, the ineffable, and what can be seen only in emotional reflections. Broader understandings of evidence and causality in historical analysis.  HU

*AMST 480b, Theories of History  Greta LaFleur
Critical, philosophical, and theoretical survey of history as an idea and a practice. The intellectual genealogy behind the historiographic practices used and discussed most often in contemporary scholarship, including new historicism and queer historiography. The problem of describing the nature, uses, and abuses of history. Readings from works by Socrates, Hegel, Marx, Freud, Benjamin, Foucault, Scott, White, Said, and Spivak.  HU

*AMST 483a, Urban Public Spaces  Laura Barraclough
The production, representation, use, and transformation of urban public spaces, with a focus on the contemporary United States. Relations to evolving practices of citizenship, the workings of democracy, and dynamics of power. Meanings of public space for
community and everyday life; power and resistance; art, theater, and performance; the work of community organizations. Includes field projects in New Haven.

**Senior Project**

*AMST 491a or b, Senior Project*   Ned Blackhawk and staff
Independent research and proseminar on a one-term senior project. For requirements see under "Senior requirement" in the American Studies program description.

*AMST 493a and AMST 494b, Senior Project for the Intensive Major*   Ned Blackhawk and staff
Independent research and proseminar on a two-term senior project. For requirements see under "Senior requirement" in the American Studies program description.

**Anthropology**

Director of undergraduate studies: William Kelly, Rm. 201, 10 Sachem St., 432-3688, william.kelly@yale.edu [F]; Kalyanakrishnan Sivaramakrishnan, Rm. 128, 10 Sachem St., 432-3684, kalyanakrishnan.sivaramakrishnan@yale.edu [Sp]; www.yale.edu/anthro

**FACULTY OF THE DEPARTMENT OF ANTHROPOLOGY**

**Professors** Richard Bribiescas (*Chair*), Richard Burger, Kamari Clarke, ‡Michael Dove, Kathryn Dudley, J. Joseph Errington, ‡Inderpal Grewal, Andrew Hill, Marcia Inhorn, William Kelly, Roderick McIntosh, Catherine Panter-Brick, Eric Sargas, ‡James Scott, Helen Siu, Kalyanakrishnan Sivaramakrishnan, Anne Underhill, David Watts, ‡Harvey Weiss

**Associate Professors** Jafari Allen, Karen Nakamura, Douglas Rogers

**Assistant Professors** Brenda Bradley, Sean Brotherton, Oswaldo Chinchilla, Narges Erami, Erik Harms, Karen Hébert, William Honeychurch, Sara Shneiderman, Brian Wood

**Senior Lecturer** ‡Carol Carpenter

‡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 human cultural, social, and biological diversity. 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 that challenges ethnocentric assumptions. The major in Anthropology covers the evolution of human and nonhuman primates and the evolutionary biology of living people; world prehistory and the emergence of civilization; diversity and commonality in social organization and culture; the importance of culture for understanding such topics as sickness and health, gender and sexuality, environment and development, media and visual culture, urban life and sport, economic organization and politics, law and society, migration, and religion; and language use as cultural behavior.
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 (numbered ANTH 001–299) in at least three subfields of anthropology, a senior essay, and three advanced courses (numbered ANTH 300–470 or 473–490, not including a senior essay seminar). The major does not have formal tracks, but majors may choose to concentrate in one of the subfields of anthropology. They may also draw on courses in sociocultural and biological anthropology to pursue a concentration in medical anthropology. Those who concentrate in sociocultural anthropology are strongly encouraged to take a course in ethnographic methods and one in anthropological theory (e.g., ANTH 303 or 311). Those who concentrate in biological anthropology are strongly encouraged to take courses that give them hands-on experience working with material used in the study of human and nonhuman primate anatomy and evolution and that introduce them to laboratory methods.

Three term courses may be selected from other departments, with approval by the director of undergraduate studies. Majors are not required to present cognate courses, but those who do should choose courses that expand their 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 Ecology and Evolutionary Biology, Geology and Geophysics, Psychology, and Forestry & Environmental Studies; cognates for sociocultural anthropology can be found in Sociology, American Studies, History, and international and area studies. Appropriate areas of cross-disciplinary concentrations include such topics as area studies (e.g., Africa); anthropological approaches to law, environment, and health; gender and sexuality studies; evolutionary biology; and geology.

**Credit/D/Fail courses** A maximum of one course taken Credit/D/Fail may be applied toward the Anthropology major.

**Graduate courses** Most 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.

**Senior essay** All majors are required to complete a substantial paper during the senior year, either in a seminar or in ANTH 491. There are three options for completing the senior essay. First, students can write a paper for an advanced seminar. A seminar senior essay must be more substantial than a typical term paper and is expected to be 20–25 pages long. It 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 apply a single seminar essay toward the senior requirement for both majors. The deadline for a seminar senior essay is the senior essay deadline, not the term paper deadline. Students choosing this option must take the seminar for which they write their essay in addition to the three advanced courses required for the major.

The second option for the senior essay is an independent essay on a subject of the student’s choice, completed in ANTH 491. A student pursuing this option must choose
a topic and identify a faculty adviser by the end of the third week of the term in which
the essay is to be written. By the same date, the adviser must approve a prospectus
that outlines the topic, objectives, and methods of the essay, as well as a preliminary
bibliography. 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 471 or 472
and completed in ANTH 491. 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 471 or 472; approval is required before the student registers for
ANTH 471 or 472, 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; 3 advanced courses (not incl senior essay sem); up to 3 cognate courses in
other depts or programs with DUS approval
Senior requirement  Senior essay in advanced sem or ANTH 491

Courses

*ANTH 014a, Ethnographies of Contemporary Cuba  Sean Brotherton
Cuban history, culture, and politics from the revolution in 1959 to the present.
Ethnographic study of multiple spheres of everyday life, from the mundane to the
spectacular. Themes include health, education, religion, dance, music, film, and
literary criticism. Enrollment limited to freshmen. Preregistration required; see under
Freshman Seminar Program.  so
Anthropology: Sociocultural

*ANTH 040b, The Evolution of Human Uniqueness  David Watts
Current ideas in anthropology about what facilitated the evolutionary success of
Homo sapiens and what distinguishes humans from other primates. The fossil and
archaeological records for human evolution and the evolution of social behavior;
research on nonhuman primate behavior and cognitive abilities, with an emphasis on
chimpanzees; insights and limitations of comparative primate research. Enrollment
limited to freshmen. Preregistration required; see under Freshman Seminar Program.
so
Anthropology: Biological

*ANTH 110b, An Introduction to Cultural Anthropology  Erik Harms
Anthropological study of cosmology, tacit knowledge, and ways of knowing the world
in specific social settings. Ways in which sociocultural specificity helps to explain
human solutions to problems of cooperation and conflict, production and reproduction,
expression, and belief. Introduction to anthropological ways of understanding cultural
difference in approaches to sickness and healing, gender and sexuality, economics,
religion, and communication.  so
Anthropology: Sociocultural

**ANTH 115b / AMST 115b / WGSS 115b, Gender in a Transnational World**  
Inderpal Grewal  
Gender and sex as constituted in modern nation-states through the divisions between domestic and foreign spheres. Ways in which the interactions between international and national issues shape gender and sexuality in everyday life. Topics include science, race, and empire; nation and identity formation; media, representation, and art practices; and migration, displacement, and globalization.  

**ANTH 116a, Introduction to Biological Anthropology**  
David Watts  
Introduction to human and primate evolution, primate behavior, and human biology. Topics include a review of principles of evolutionary biology and basic molecular and population genetics; the behavior, ecology, and evolution of nonhuman primates; the fossil and archaeological record for human evolution; the origin of modern humans; biological variation in living humans; and the evolution of human behavior.  

**ANTH 170a, Chinese Culture, Society, and History**  
Helen Siu  
Anthropological explorations of basic institutions in traditional and contemporary Chinese society. Topics include kinship and marriage, religion and ritual, economy and social stratification, state culture, socialist revolution, and market reform.  

**ANTH 171b / ARGC 171b, Great Civilizations of the Ancient World**  
Anne Underhill  
A survey of selected prehistoric and historical cultures through examination of archaeological sites and materials. Emphasis on the methodological and theoretical approaches by which archaeologists recover, analyze, and interpret the material remains of the past.  

**ANTH 182b, Primate Ecology and Social Behavior**  
David Watts  
Sociocology of primates compared with that of other mammals, emphasizing both general principles and unique primate characteristics. Topics include life-history strategies, feeding ecology, mating systems, and ecological influences on social organization.  

**ANTH 209b, Eurasia after the Soviet Union**  
Douglas Rogers  
Changes in the lives of former Soviet citizens following the Soviet Union’s disintegration in 1991. Transformations in politics, culture, religion, gender, consumption patterns, and national identity; interconnections among these issues. Changes in Eurasia viewed as windows onto global transformations of knowledge, power, and culture at the turn of the twenty-first century.  

**ANTH 221a / MMES 411a, Muslim Societies**  
Narges Erami  
Introduction to ethnographic and historical works on Muslim societies in the Middle East. Focus on relationships between sociocultural practices and experiences of living in the region. Themes include religion, nationalism, colonialism, Orientalism, kinship, media, informal networks, subjectivity, popular culture, the city, law, education, and gender and sexuality.  

WR, SO
Anthropology: Sociocultural

*ANTH 234a / WGSS 234a, Disability and Culture  Karen Nakamura
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.  SO  RP
Anthropology: Sociocultural

ANTH 242b, Human Evolutionary Biology and Life History  Richard Bribiescas
The range of human physiological adaptability across environments and ecologies.
Effects of energetic constraints on growth, reproduction, and behavior within the
context of evolution and life history theory, with special emphasis on traditional non-
Western societies.  SC, SO
Anthropology: Biological

ANTH 244b, Japan: Culture, Society, Modernity  William Kelly and Karen Nakamura
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.  WR, SO
Anthropology: Sociocultural

ANTH 267b / ARCG 267b, Human Evolution  Andrew Hill
Examination of the fossil record of human evolution, including both paleontological
and archaeological evidence for changes in hominin behavior during the Pleistocene.
Prerequisite: an introductory course in biological anthropology or biology.  SO
Anthropology: Biological

ANTH 271a, Human Ecology  Brian Wood
Introduction to ways in which people use and relate to their physical and social
environments in both the past and the present. Adaptations underlying humanity’s
unique ecological niche; cultural diversity in subsistence and resource use; population
growth and regulation; anthropogenic evolutionary and ecological change.  SO
Anthropology: Biological

ANTH 272a / AFST 272a / ARCG 272a, African Prehistory  Roderick McIntosh
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.  SO
Anthropology: Archaeology

ANTH 276a / SAST 219a, South Asian Social Worlds  Sara Shneiderman
Study of a series of texts that introduce anthropological and critical approaches
to South Asia’s peoples and cultures while questioning the historical and political
possibility of understanding such a diverse region.  WR, SO
Anthropology: Sociocultural

ANTH 294a / ARCG 294a, The Ancient Maya  Oswaldo Chinchilla
Introduction to the archaeological study of ancient Maya civilization in southern
Mexico and northern Central America. Maya origins and modes of adaptation to
a tropical forest environment; political history of the Classic Maya and competing
theories about their collapse; overviews of Maya art, calendar, and writing.  SO
Anthropology: Archaeology

*ANTH 302a / AMST 402a / FILM 324a / WGSS 380a, Gender and Sexuality in Media and Popular Culture  Laura Wexler
Investigation of visual media and popular culture in the United States and transnationally. Gender, race, class, and sexuality in relation to the production, circulation, consumption, and reception of media culture. Focus on theories of media and the visual. Significant lab component in which students use media technologies to make and illustrate theoretical arguments.  HU
Anthropology: Sociocultural

*ANTH 303a, Field Methods in Cultural Anthropology  Kamari Clarke
and Narges Erami
The fundamentals of cultural anthropology methods. The foundations of fieldwork approaches, including methods, theories, and the problem of objectivity.  WR, SO
Anthropology: Sociocultural

*ANTH 310a  E&EB 280a, Mammalogy  Eric Sargis
The evolution and diversity of mammals, including primates. Origins, evolutionary history, systematics, morphology, biogeography, physiology, behavior, and ecology of major mammalian lineages. Accompanying laboratories focus on diagnostic morphological features of mammalian groups through examination of specimens from the Peabody Museum.  SC
Anthropology: Biological

*ANTH 311a, Anthropological Theory  Sara Shneidman
Key texts in the theoretical development of sociocultural anthropology. Theorists include Emile Durkheim, Marcel Mauss, A. R. Radcliffe-Brown, Bronislaw Malinowski, E. E. Evans-Pritchard, Claude Lévi-Strauss, Mary Douglas, Clifford Geertz, Sherry Ortner, Michele Rosaldo, and Talal Asad.  SO
Anthropology: Sociocultural

*ANTH 313b / SAST 313b, Cultural Aspects of International Development  Kalyanakrishnan Sivaramakrishnan and Sara Shneidman
Critical analysis of development ideas and projects in Asia, Africa, and Latin America, with a focus on ethnographic research. Development and cultural diversity; social and economic development politics and practices; institutions that design, fund, and implement development, such as multilateral agencies, governments, and civil society organizations.  SO
Anthropology: Sociocultural

ANTH 316Lb / ARCG 316Lb, Introduction to Archaeological Laboratory Sciences  Roderick McIntosh
Introduction to techniques of archaeological laboratory analysis, with quantitative data styles and statistics appropriate to each. Topics include dating of artifacts, sourcing of ancient materials, remote sensing, and microscopic and biochemical analysis. Specific techniques covered vary from year to year.
Anthropology: Archaeology

*ANTH 317a / EAST 363a / HSAR 479a or b / SAST 363a, Himalayan Collections at Yale  Mark Turin
Online tools and new digital media are used to explore links between four library and museum collections at Yale that are from and about the Himalayan region: Bubriski's
black-and-white photographs of Nepal; Buddhist scrolls and fabric temple banners; Christian missionary archives; documents on the political history of Nepal. Collective cataloguing of materials in the collections.  

Anthropology: Archaeology

*ANTH 324a / HSAR 429a, Anthropology of Art  
David Odo  
An anthropological approach to the study of art, with a focus on visual art from the collections of the Yale University Art Gallery. Theoretical framework as well as direct experience researching museum objects. Ethnographic objects in the art museum context; the politics of exhibition; body art, including modification and adornment; gendered objects; devotional objects and their recontextualization in museums; colonial and postcolonial collecting practices.  

Anthropology: Sociocultural

*ANTH 332a, Endangered Languages in Social Context  
J. Joseph Errington  
An introduction to language endangerment as a global phenomenon. Topics include politics of bilingualism and language shift, politics of linguistic identity, ethnic and national communities, and language in media.  

Anthropology: Linguistic

*ANTH 335bG / E&EB 342bG, Primate Diversity and Evolution  
Eric Sargis  
The diversity and evolutionary history of living and extinct primates. Focus on major controversies in primate systematics and evolution, including the origins and relationships of several groups. Consideration of both morphological and molecular studies. Morphological diversity and adaptations explored through museum specimens and fossil casts. Recommended preparation: ANTH 116.  

Anthropology: Biological

*ANTH 339b, Urban Ethnography of Asia  
Erik Harms  
Introduction to the anthropological study of contemporary Asian cities. Focus on new ethnographies about cities in East, Southeast, and South Asia. Topics include rural-urban migration, redevelopment, evictions, social movements, land grabbing, master-planned developments, heritage preservation, utopian aspirations, social housing, slums and precariousness, and spatial cleansing.  

Anthropology: Sociocultural

*ANTH 346a, Anthropological Approaches to Capitalism  
Douglas Rogers  
An introduction to the anthropological study of capitalism. Focus on how markets and commodities are embedded in social, cultural, and political contexts. Discussion of the many ways people have embraced, reinterpreted, and resisted capitalism worldwide. Consideration of the implications of this diversity for theories of capitalism as a whole. Enrollment limited to sophomores.  

Anthropology: Sociocultural

*ANTH 349b / EAST 359b, Humanitarianism across Asia  
Chika Watanabe  
Introduction to international humanitarianism, with a focus on aid across Asia and by Asian actors. Theories of humanitarian moralities, charity, paradoxes, and politics. Ways in which analyses of inter-Asian connections can be developed through the study of humanitarian problems, ideologies, and actions.  

Anthropology: Sociocultural
*ANTH 353b/G / SAST 369b/G, Himalayan Languages and Cultures  Mark Turin
Exploration of social, linguistic, and political aspects of the Himalayan region. Issues
include classifications of communities and their languages; census-taking and other
state enumeration projects; the crisis of endangered oral cultures and speech forms;
the creation and adoption of writing systems and the challenges of developing mother
tongue literacy materials. Case studies are drawn from Bhutan, northern India, Nepal,
and Tibet.  

*ANTH 357a/G, Anthropology of the Body  Sean Brotherton
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.  

Anthropology: Sociocultural

*ANTH 360b/G / MMES 111b, Representing Iran  Narges Erami
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.  

Anthropology: Sociocultural

*ANTH 366b / AMST 435b, Anthropology of Inequality in America  Kathryn Dudley
Sociocultural dimensions of social inequality in the contemporary United States.
Ways in which the socioeconomic processes that produce inequality are inextricably
embedded in worlds of cultural meaning; how those meanings are constructed and
embodied in everyday practice. Perspectives from anthropology, sociology, economics,
history, and popular media.  

Anthropology: Sociocultural

*ANTH 374a/G / ARCG 374a/G, Origins of Andean Civilization  Richard Burger
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.  

Anthropology: Archaeology

*ANTH 382a / EVST 345a / F&ES 384a, Environmental Anthropology  Michael Dove
History of the anthropological study of the environment: nature-culture dichotomy,
ecology and social organization, methodological debates, politics of the environment,
and knowing the environment.  

Anthropology: Sociocultural

*ANTH 388a/G, Politics of Culture in Southeast Asia  Erik Harms
The promotion of national culture as part of political and economic agendas in
Southeast Asia. Cultural and political diversity as a method for maintaining a country’s
cultural difference in a global world.  

Anthropology: Sociocultural
*ANTH 394a, Methods and Research in Molecular Anthropology I* Brenda Bradley
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 395.  sc
Anthropology: Biological

*ANTH 395b, Methods and Research in Molecular Anthropology II* Brenda Bradley
The second part of a two-term practical introduction to molecular analysis of anthropological questions. Design and execution of laboratory projects developed in ANTH 394. 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 394.  RP
Anthropology: Biological

*ANTH 402bG / FILM 454bG, Ethnographic Filmmaking and Visual Field Methods* Karen Nakamura
A study of visual anthropology production, with readings from core texts in the analysis of visual culture and visual anthropology field methods. Analysis of the history, philosophy, ethics, production, and consumption of ethnographic film and photoethnography within both the field of anthropology and popular culture.  HU, SO  RP
Anthropology: Sociocultural

*ANTH 404aG / AMST 429aG, American Communities* Kathryn Dudley
Consideration of the concept of community and an examination of various kinds of communities—ranging from those defined by social proximity to those defined by a common experience or ideology—that are part of the American experience, in order to understand the value Americans place on community itself, and the ways in which the pull of individualism exacts a toll on that commitment.  SO
Anthropology: Sociocultural

*ANTH 406a / EVST 424a / PLSC 420a, Rivers: Nature and Politics* James Scott
The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them.  SO
Anthropology: Sociocultural

*ANTH 410aG / ARCG 410aG, Ethnohistory and Archaeology* Roderick McIntosh
Review of the major problems and methodologies associated with the use of ethnohistory by archaeologists. The construction of a historical imagination. Sources include colonial and “visitor” documents, peoples’ written descriptions of themselves, oral traditions, classic ethnographies, and writings in art history.  SO
Anthropology: Archaeology

*ANTH 412aG, Topics in Anthropological Genetics* Brenda Bradley
Molecular approaches to understanding human evolution and diversity. Emphasis on current research findings and new methodologies exploring topics such as human origins and hominin evolution, population genomics, molecular adaptations, epigenetics, and gene-culture interactions. Consideration of relevant social and ethical issues, including commercial DNA testing and ownership of biological samples.  SC
Anthropology: Biological
*ANTH 416b, Invisible and Illicit Economies  Narges Erami
The theories and ethnographies of marginal, hidden, secret, and invisible economies; new, globalized economies often considered criminal by nation-states; and long-standing economies that have always existed outside the framework of legitimacy. Examples include human trafficking, prostitution, counterfeiting, drugs, pirated music, and smuggling.  so
Anthropology: Sociocultural

*ANTH 417b / ARCG 417b, Maya Hieroglyphic Writing  Oswaldo Chinchilla
Introduction to the ancient Maya writing system. Contents of the extant corpus, including nametags, royal and ritual commemorations, dynastic and political subjects, and religious and augural subjects; principles and methods of decipherment; overview of the Maya calendar; comparison with related writing systems in Mesoamerica and elsewhere in the ancient world.  so
Anthropology: Archaeology

*ANTH 420b, Primate Genomics  Brenda Bradley
Molecular approaches to understanding primate behavior, ecology, and evolution. The nature of primatological research in an age of abundant genomic data. Topics include sexual selection; sociality and cooperation among kin and non-kin; phylogenomics and taxonomy; dietary, morphological, and behavioral adaptations; and migration, distribution, and conservation.  sc
Anthropology: Biological

*ANTH 427b, Topics in Medical Anthropology  Sean Brotherton
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 or equivalent.  so
Anthropology: Sociocultural

*ANTH 432a, Politics of Language  J. Joseph Errington
Language difference and language inequality as symbols and shapers of political dynamics and social change in plural societies. Comparative, theoretical, and ethnographic approaches to the politics of sociolinguistic difference, with case studies focused on specific issues. Topics include "problems" of substandard languages, bilingual identities, ethnic and national identity, and globalization and language shift.  so RP
Anthropology: Sociocultural

*ANTH 436b, Production and Consumption of Culture  Douglas Rogers
Theoretical works and case studies on how cultural identities are produced and consumed in the context of contemporary global capitalism. The marketing of "tradition"; city branding; cultural tourism; new transnational, national, and local identities.  so
Anthropology: Sociocultural

*ANTH 438a, Culture, Power, Oil  Douglas Rogers
The production, circulation, and consumption of petroleum as they relate to globalization, empire, cultural performance, natural resource extraction, and the nature
of the state. Case studies include the United States, Saudi Arabia, Nigeria, Venezuela, and the former Soviet Union.  SO
Anthropology: Sociocultural

*ANTH 447aG, Hunter-Gatherers  Brian Wood
Survey of the ecology, economics, and political and social organization of contemporary hunter-gatherers, and review of anthropological inquiry into foraging societies. Approaches to understanding hunter-gatherer variability and their influence on the study of human evolution and prehistory.  SO
Anthropology: Sociocultural

*ANTH 450bG / ARCG 450bG, Analysis of Lithic Technology  Oswaldo Chinchilla
Introduction to the analysis of chipped and ground stone tools, including instruction in manufacturing chipped stone tools from obsidian. Review of the development of stone tool technology from earliest tools to those of historical periods; relevance of this technology to subsistence, craft specialization, and trade. Discussion of the recording, analysis, and drawing of artifacts, and of related studies such as sourcing and use-wear analysis.  SO
Anthropology: Archaeology

*ANTH 451bG / WGSS 431b, Intersectionality and Women’s Health  Marcia Inhorn
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, and gender.  SO
Anthropology: Sociocultural

*ANTH 455bG / WGSS 459bG, Masculinity and Men’s Health  Marcia Inhorn
Ethnographic approaches to masculinity and men’s health around the globe. Issues of ethnographic research design and methodology; interdisciplinary theories of masculinity; contributions of men’s health studies from Western and non-Western sites to social theory, ethnographic scholarship, and health policy.  SO RP
Anthropology: Sociocultural

*ANTH 456aG / ARCG 456aG, Reconstructing Human Evolution: An Ecological Approach  Andrew Hill
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.  SO
Anthropology: Biological

*ANTH 457aG, Topics in Evolutionary Theory  Eric Sargis
Classic and current literature in theoretical evolutionary biology. Intensive training in critical analysis of theoretical concepts and in scientific writing. Recommended preparation: ANTH 267 or .  SO
Anthropology: Biological
**ANTH 458b, Demography and Human Experience**  Brian Wood
Introduction to the study of the growth, decline, composition, migration, and interaction of human populations. Methods for measuring, visualizing, and analyzing population processes. Theory from disciplines such as history, social science, public health, and environmental science used to explore the ways in which individual human experience reflects and contributes to population dynamics.  SO
Anthropology: Sociocultural

*ANTH 464bG / ARCG 464bG, Human Osteology**  Eric Sargis
A lecture and laboratory course focusing on the characteristics of the human skeleton and its use in studies of functional morphology, paleodemography, and paleopathology. Laboratories familiarize students with skeletal parts; lectures focus on the nature of bone tissue, its biomechanical modification, sexing, aging, and interpretation of lesions.  SO
Anthropology: Biological

*ANTH 471a and ANTH 472b, Readings in Anthropology**  Kalyanakrishnan Sivaramakrishnan and William Kelly
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 473bG / ARCG 473bG / EVST 473b, Abrupt Climate Change and Societal Collapse**  Harvey Weiss
The coincidence of societal collapses throughout history with decadal and century-scale drought events. Challenges to anthropological and historical paradigms of cultural adaptation and resilience. Examination of archaeological and historical records and high-resolution sets of paleoclimate proxies.  HU, SO
Anthropology: Sociocultural

*ANTH 482b / ARCG 482bG, Advanced Archaeological Theory**  Roderick McIntosh
Review of the intellectual history of archaeology, with readings from the Enlightenment to the present. Emphasis on the tension between science, mysticism, and nationalism in the interpretation of prehistoric processes.  SO RP
Anthropology: Archaeology

*ANTH 486aG, Digital Anthropologies**  Karen Nakamura
Ethnographic perspectives on the generation of adults who have grown up entirely immersed in a digitally connected world. The development of social networks and computer-mediated communication, from dial-up bulletin board systems to contemporary crowdsourced databases. Replacement of the telephone, postal mail, and even real-world interactions by digital communication methods.  SO RP
Anthropology: Sociocultural

*ANTH 491a or b, The Senior Essay**  Kalyanakrishnan Sivaramakrishnan
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 term in which the essay is written, 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.

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  Andrew Barron (Statistics), Donald Brown (Economics, Mathematics), Joseph Chang (Statistics), Ronald Coifman (Mathematics), Gustave Davis (School of Medicine), Eric Denardo (Operations Research), Stanley Eisenstat (Computer Science), Michael Fischer (Computer Science), Igor Frenkel (Mathematics), Roger Howe (Mathematics), Peter Jones (Mathematics), A. Stephen Morse (Electrical Engineering), David Pollard (Statistics), Nicholas Read (Physics, Applied Physics), Vladimir Rokhlin (Computer Science, Mathematics), Herbert Scarf (Economics), Peter Schultheiss (Emeritus) (Electrical Engineering), Martin Schultz (Emeritus) (Computer Science), Mitchell Smooke (Mechanical Engineering, Applied Physics), Daniel Spielman (Computer Science), Van Vu (Mathematics), Günter Wagner (Ecology & Evolutionary Biology), Xiao-Jing Wang (Neurobiology), John Wettlaufer (Geology & Geophysics, Physics), Huibin Zhou (Statistics), Steven Zucker (Computer Science, Biomedical Engineering)

Associate Professors  John Emerson (Statistics), Thierry Emonet (Molecular, Cellular, & Developmental Biology, Physics), Josephine Hoh (Epidemiology & Public Health), Yuval Kluger (Pathology), Michael Krauthammer (Pathology), Sekhar Tatikonda (Electrical Engineering, Statistics)

Assistant Professor  Lisha Chen (Statistics)

J. W. Gibbs Assistant Professors  Yael Algom Kfir (Mathematics), Kim Dang, Andrei Osipov, Ronen Talmon

Lecturer  Matthew Hirn

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 Applied Physics, Astronomy, the biological sciences (Ecology and Evolutionary Biology,
Molecular Biophysics and Biochemistry, and Molecular, Cellular, and Developmental Biology), Chemistry, Computer Science, Economics, the various programs in engineering (Biomedical, Chemical, Electrical, Environmental, and Mechanical Engineering), Geology and Geophysics, Mathematics, Operations Research, Physics, Political Science, 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 120 and MATH 222 or 225, or equivalents. It may also be satisfied by MATH 230, 231. Computer programming skills are also required and may be acquired by taking ENAS 130 or CPSC 112.

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 194 or MATH 246)
2. A course in probability (STAT 241 or 238)
3. A course in data analysis (STAT 361 or 230)
4. A course in discrete mathematics (AMTH 244 or CPSC 202)
5. Courses in at least three of the following areas: (a) optimization: AMTH 235, AMTH 237; (b) probability and statistics: STAT 242, 251, 312, 364, ECON 136, ENAS 496; (c) partial differential equations and analysis: MATH 247, 250, 260, 300, 301, 310; (d) algorithms and numerical methods: CPSC 365, 440, ENAS 440, 441; (e) graph theory: AMTH 462; (f) mathematical economics: ECON 350, 351; (g) electrical engineering: EENG 397, 436, 442, STAT 364; (h) data mining and machine learning: STAT 365, CPSC 445; (i) biological modeling and computation: AMTH 465, CPSC 475, BENG 445, ENAS 391; (j) physical sciences and engineering: MENG 280, 285, 361, 383, 463, MENG 469, CENG 301, 315, ASTR 320, 420, G&G 322, 323, 421, PHYS 343, 401, 402, 410, 420, 430, 440, PHYS 442, 460, APHY 439, 448.
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 490) or special project completed during senior year (AMTH 491)

The B.S. degree program In addition to the courses indicated for the B.A. degree, the B.S. degree, which totals fourteen term courses beyond the prerequisites, must also include:

1. Topics in analysis (MATH 300) or introduction to analysis (MATH 301); the course selected may not be counted toward the area requirement for the major (see item 5 above)
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 course numbered 300 or higher in mathematics, applied mathematics, statistics, or quantitative computer science or engineering, 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.

Credit/D/Fail courses A maximum of one course credit taken Credit/D/Fail may be counted toward the requirements of the major.

REQUIREMENTS OF THE MAJOR

Prerequisites MATH 120 and MATH 222 or 225, or equivalents; ENAS 130 or CPSC 112
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 194 or MATH 246; STAT 241 or 238; STAT 361 or 230; AMTH 244 or CPSC 202; B.S. — same, plus MATH 300 or 301
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
Substitution permitted MATH 230, 231 for mathematics prerequisites
Senior requirement Senior sem (AMTH 490) or special project (AMTH 491)

Introductory Courses

AMTH 160b, The Structure of Networks  Ronald Coifman
Network structures and network dynamics described through examples and applications ranging from marketing to epidemics and the world climate. Study of social and biological networks as well as networks in the humanities. Mathematical graphs provide a simple common language to describe the variety of networks and their properties. QR
AMTH 222a or b / MATH 222a or b, Linear Algebra with Applications
  Amanda Folsom

Intermediate and Advanced Courses

AMTH 235a / OPRS 235a, Optimization  Eric Denardo
Resource allocation problems solved by linear programming and its generalizations: the simplex method, duality, the Karush–Kuhn-Tucker conditions for nonlinear programs, economic equilibria, and selected applications. Prerequisite: MATH 118, 222, or 225, or equivalent.  QR

AMTH 244a / MATH 244a, Discrete Mathematics  Staff
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 115 or equivalent.  QR

AMTH 247b / G&G 247b / MATH 247b, Partial Differential Equations  Igor Frenkel
Introduction to partial differential equations, wave equation, Laplace’s equation, heat equation, method of characteristics, calculus of variations, series and transform methods, and numerical methods. Prerequisites: MATH 222 or 225, MATH 246, and ENAS 194, or equivalents.  QR

AMTH 260a / MATH 260a, Basic Analysis in Function Spaces  Ronald Coifman
Diagonalization of linear operators, with applications in physics and engineering; calculus of variations; data analysis. MATH 260 is a natural continuation of PHYS 301. Prerequisites: MATH 120, and 222 or 225.  QR

*AMTH 342a / EENG 442aG, Linear Systems  A. Stephen Morse
Introduction to finite-dimensional, continuous, and discrete-time linear dynamical systems. Exploration of the basic properties and mathematical structure of the linear systems used for modeling dynamical processes in robotics, signal and image processing, economics, statistics, environmental and biomedical engineering, and control theory. Prerequisite: MATH 222 or permission of instructor.  QR

AMTH 361aG / STAT 361aG, Data Analysis  Lisha Chen
Selected topics in statistics explored through analysis of data sets using the R statistical computing language. Topics include linear and nonlinear models, maximum likelihood, resampling methods, curve estimation, model selection, classification, and clustering. Weekly sessions in the Statistical Computing laboratory. After STAT 242 and MATH 222 or 225, or equivalents.  QR

AMTH 364bG / EENG 454bG / STAT 364bG, Information Theory  Andrew Barron
Foundations of information theory in communications, statistical inference, statistical mechanics, probability, and algorithmic complexity. Quantities of information and their properties: entropy, conditional entropy, divergence, redundancy, mutual information,
channel capacity. Basic theorems of data compression, data summarization, and channel coding. Applications in statistics and finance. After STAT 241.  QR

*AMTH 462a/G / CPSC 462a/G, Graphs and Networks  Daniel Spielman
A mathematical examination of graphs and their applications in the sciences. Families of graphs include social networks, small-world graphs, Internet graphs, planar graphs, well-shaped meshes, power-law graphs, and classic random graphs. Phenomena include connectivity, clustering, communication, ranking, and iterative processes. Prerequisites: linear algebra and discrete mathematics; a course in probability is recommended.  QR

*AMTH 480a or b, Directed Reading  Daniel Spielman
Individual study for qualified students who wish to investigate an area of applied mathematics not covered in regular courses. A student must be sponsored by a faculty member who sets the requirements and meets regularly with the student. Requires a written plan of study approved by the faculty adviser and the director of undergraduate studies.

*AMTH 490b, Senior Seminar and Project  Andrew Barron
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
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: Daniel Prober, 417 BCT, 432-4280, daniel.prober@yale.edu; appliedphysics.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, Victor Henrich, †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  †Eric Dufresne, †Jack Harris, Sohrab Ismail-Beigi, †Corey O’Hern, †Hongxing Tang

Assistant Professors  Liang Jiang, Peter Rakich

†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. Applied physics thus forms 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 such as 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 Web site (http://yalecollege.yale.edu/content/class-2017)).

The recommended sequence in mathematics for students interested in Applied Physics or Electrical or Mechanical Engineering is MATH 115, APHY 151, MATH 222, and APHY 194. Either MATH 120 or MATH 230, 231 is an acceptable alternative to APHY 151, and MATH 225 is an acceptable alternative to MATH 222. Similarly, PHYS 301 may be substituted for and MATH 222.

The recommended starting courses in physics are PHYS 200 and 201. 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 PHYS 260 and 261 instead. Students who are less well prepared in physics and mathematics may choose to take PHYS 180 and 181 during their freshman year, or PHYS 200 and 201 during their sophomore year after they have taken more mathematics courses. Two laboratory courses, such as PHYS 205L and 206L, should be taken at some time during the freshman or sophomore year.

Because computers are ubiquitous in the practical applications of physics, students interested in Applied Physics should also take a course on the use of computers early in their studies. ENAS 130, Introduction to Computing for Engineers and Scientists, is recommended; a comparable course in computer science may be substituted with the approval of the director of undergraduate studies.

The multiplicity of choices facing students interested in this general area indicates the importance of informed advice for freshmen. Students should consult freely with directors of undergraduate studies and individual faculty members in their departments of interest to optimize choices and to ensure maximum flexibility at the time a major is selected.

The major in Applied Physics requires eight courses beyond the introductory sequence. Two of these must be APHY 471, 472. All majors are also required to take APHY 322, 439, and PHYS 420, or equivalents. The three remaining advanced courses should focus on a particular area of concentration. For example, a student interested in solid-state and/or quantum electronics might choose from APHY 321, 448, 449, EENG 320, and 325. A student interested in the physics of materials and/or nanoscience might choose
from APHY 448, 449, CHEM 220, 450, and MENG 285. Many other concentrations are possible.

**Senior requirement** Seniors must complete an independent research project, taken as APHY 471 and 472. 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 materials physics or quantum electronics who starts the senior research in the junior year might elect the following course sequence:

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<td>APHY 151</td>
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A student interested in alternative energy who starts physics in the sophomore year and conducts research in the senior year might elect:

<table>
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<th>Freshman</th>
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<td>MATH 115</td>
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<td>MATH 120</td>
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**Approval of 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 180, 181, or 200, 201, with appropriate math coreq and 2 lab courses as specified; APHY 151 or MATH 120; MATH 222 and APHY 194, or PHYS 301; ENAS 130

**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 322, 439, PHYS 420, or equivalents

**Substitution permitted** Any relevant course approved by DUS

**Senior requirement** APHY 471 and 472
Courses

*APHY 050a / PHYS 050a, Science of Modern Technology  Daniel Prober and staff
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. SC RP

*APHY 110b / ENAS 110b, The Technological World  Victor Henrich and Daniel Prober
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: high school physics or chemistry. Enrollment limited to 90. QR SC

APHY 151a or b / ENAS 151a or b, Multivariable Calculus for Engineers
Mitchell Smooke [F] and Sohrab Ismail-Beigi [Sp]
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 115 or equivalent. QR RP

APHY 194a or b / ENAS 194a or b, Ordinary and Partial Differential Equations with Applications  Richard Dobbins [F] and Charles Ahn [Sp]
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 151 or equivalent, and knowledge of matrix-based operations. QR RP

APHY 321bG / EENG 401bG, Semiconductor Silicon Devices and Technology  Tso-Ping Ma
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 320 or equivalent or permission of instructor. QR SC

APHY 322b, Electromagnetic Waves and Devices  Michel Devoret
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 180, 181, or 200, 201. QR SC
APHY 439a* / PHYS 439a, Basic Quantum Mechanics  Sohrab Ismail-Beigi
and Robert Schoelkopf
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 181 or 201, PHYS 301, or equivalents, or permission of instructor.  QR, SC

APHY 448a* / PHYS 448a, Solid-State Physics I  Victor Henrich and Charles Ahn
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 322, 439, PHYS 420.  QR, SC

APHY 449b* / PHYS 449b, Solid-State Physics II  A. Douglas Stone
and Michel Devoret
The second term of the sequence described under APHY 448.  QR, SC

APHY 458a* / PHYS 458a, Principles of Optics with Applications  Hui Cao
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 430.  QR, SC

*APHY 471a and APHY 472b, Special Projects  Victor Henrich and Daniel Prober
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.

Archaeological Studies

Director of undergraduate studies: Oswaldo Chinchilla, Rm. 301, 51 Hillhouse Ave., 436-5923, oswaldo.chinchilla@yale.edu

COUNCIL ON ARCHAEOLOGICAL STUDIES

Anthropology  Richard Burger (Chair), Oswaldo Chinchilla, Andrew Hill, William Honeychurch, Roderick McIntosh, Eric Sargis, Anne Underhill

Classics  Milette Gaifman, Andrew Johnston, Diana Kleiner

Geology & Geophysics  Ronald Smith

History  Valerie Hansen

History of Art  Edward Cooke, Jr., Mary Miller

Near Eastern Languages & Civilizations  John Darnell, Stephen Davis, Karen Foster, Eckart Frahm, Colleen Manassa, Harvey Weiss
This special interdisciplinary 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. Also emphasized are substantive studies including (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 prehistoric, early historic, and medieval cultures, including the iconography of ancient cultures, the relationship between art and society, ancient writing systems, and American historical archaeology.

Requirements of the major for the Class of 2014 Students in the Class of 2014 may fulfill the requirements of the Archaeological Studies major as described below for the Class of 2015 and subsequent classes. Alternatively, they may fulfill the requirements of the major that were in place when they entered it, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS).

Requirements of the major for the Class of 2015 and subsequent classes The major consists of thirteen courses including the senior project. The following six courses are required: an introductory survey; a summer course in field techniques or a Yale-affiliated summer research project, approved in advance by the Council; the introductory laboratory course ARCG 316L; an advanced laboratory course; a theory course; and the senior research project ARCG 491. The remaining seven courses required for the major must be distributed among the six subject areas represented by the departments and programs offering courses multiple-titled with Archaeological Studies, with three of those seven courses falling in different departments and programs. The relevant 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 seven 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 are strongly encouraged, but not required, to devote a second summer either to archaeological research in the field or laboratory or to an additional field course in archaeology. Members of the Council faculty currently direct archaeological field projects in China, Egypt, Guatemala, Peru, Mali, Mongolia, Senegal, Syria, and Rome. 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 491) 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 course required**  ARCG 316L

**Distribution of courses**  1 intro survey; 1 summer field techniques course or research project, as specified; 1 advanced lab; 1 theory course; 7 electives, at least 1 in each of 3 areas, as specified

**Substitution permitted**  For 3 electives, 3 courses related to research, with DUS permission

**Senior requirement**  Research project (ARCG 491)

Anthropology

**ARCG 171b / ANTH 171b, Great Civilizations of the Ancient World**  Anne Underhill

A survey of selected prehistoric and historical cultures through examination of archaeological sites and materials. Emphasis on the methodological and theoretical approaches by which archaeologists recover, analyze, and interpret the material remains of the past.  so

**ARCG 267b / ANTH 267b, Human Evolution**  Andrew Hill

Examination of the fossil record of human evolution, including both paleontological and archaeological evidence for changes in hominid behavior during the Pleistocene. Prerequisite: an introductory course in biological anthropology or biology.  so

**ARCG 272a / AFST 272a / ANTH 272a, African Prehistory**  Roderick McIntosh

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.  so

**ARCG 294a / ANTH 294a, The Ancient Maya**  Oswaldo Chinchilla

Introduction to the archaeological study of ancient Maya civilization in southern Mexico and northern Central America. Maya origins and modes of adaptation to a tropical forest environment; political history of the Classic Maya and competing theories about their collapse; overviews of Maya art, calendar, and writing.  so

**ARCG 316Lb / ANTH 316Lb, Introduction to Archaeological Laboratory Sciences**  Roderick McIntosh

Introduction to techniques of archaeological laboratory analysis, with quantitative data styles and statistics appropriate to each. Topics include dating of artifacts, sourcing of ancient materials, remote sensing, and microscopic and biochemical analysis. Specific techniques covered vary from year to year.

**ARCG 374aG / ANTH 374aG, Origins of Andean Civilization**  Richard Burger

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.  SO RP

*ARCG 410aG / ANTH 410aG, Ethnohistory and Archaeology  Roderick McIntosh
Review of the major problems and methodologies associated with the use of ethnohistory by archaeologists. The construction of a historical imagination. Sources include colonial and "visitor" documents, peoples’ written descriptions of themselves, oral traditions, classic ethnographies, and writings in art history.  SO

*ARCG 417bG / ANTH 417bG, Maya Hieroglyphic Writing  Oswaldo Chinchilla
Introduction to the ancient Maya writing system. Contents of the extant corpus, including nametags, royal and ritual commemorations, dynastic and political subjects, and religious and augural subjects; principles and methods of decipherment; overview of the Maya calendar; comparison with related writing systems in Mesoamerica and elsewhere in the ancient world.  SO

*ARCG 450bG / ANTH 450bG, Analysis of Lithic Technology  Oswaldo Chinchilla
Introduction to the analysis of chipped and ground stone tools, including instruction in manufacturing chipped stone tools from obsidian. Review of the development of stone tool technology from earliest tools to those of historical periods; relevance of this technology to subsistence, craft specialization, and trade. Discussion of the recording, analysis, and drawing of artifacts, and of related studies such as sourcing and use-wear analysis.  SO

*ARCG 456aG / ANTH 456aG, Reconstructing Human Evolution: An Ecological Approach  Andrew Hill
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.  SO

*ARCG 464bG / ANTH 464bG, Human Osteology  Eric Sargis
A lecture and laboratory course focusing on the characteristics of the human skeleton and its use in studies of functional morphology, paleodemography, and paleopathology. Laboratories familiarize students with skeletal parts; lectures focus on the nature of bone tissue, its biomechanical modification, sexing, aging, and interpretation of lesions.  SO

*ARCG 482bG / ANTH 482b, Advanced Archaeological Theory  Roderick McIntosh
Review of the intellectual history of archaeology, with readings from the Enlightenment to the present. Emphasis on the tension between science, mysticism, and nationalism in the interpretation of prehistoric processes.  SO RP

Classics

ARCG 170a / CLCV 170a / HSAR 250a, Roman Art: Empire, Identity, and Society  Diana Kleiner
Masterpieces of Roman art from the Republic to Constantine studied in their historical and social contexts. The great Romans and the monuments they commissioned—portraits, triumphal arches, columns, and historical reliefs. The concept of empire and
imperial identity, politics and portraiture, the making and unmaking of history through art, and the art of women, children, freedmen, and slaves.  

**ARGC 243b / CLCV 160b / HSAR 243b, Greek Art and Architecture** Milette Gafman Monuments of Greek art and architecture from the late geometric period (c. 760 B.C.) to Alexander the Great (c. 323 B.C.). Emphasis on social and historical contexts.  

**ARGC 252b / CLCV 175b / HSAR 252b, Roman Architecture** Diana Kleiner 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.  

*ARGC 424b / CLCV 230b / HSAR 424b, eClavdia: Women in Ancient Rome* 
Diana Kleiner The contributions of Roman women to one of the greatest cities – and one of the greatest empires – in world history. Lost stories of real-life Roman women recovered from public and residential buildings, portraits, paintings, and other works of Roman art and architecture.  

**Environmental Studies**  
*ARGC 473b G / ANTH 473b G / EVST 473b, Abrupt Climate Change and Societal Collapse* Harvey Weiss The coincidence of societal collapses throughout history with decadal and century-scale drought events. Challenges to anthropological and historical paradigms of cultural adaptation and resilience. Examination of archaeological and historical records and high-resolution sets of paleoclimate proxies.  

**Geology and Geophysics**  
*ARGC 362b G / EVST 362b G / G&G 362b G, Observing Earth from Space* Xuhui Lee 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.  

**History of Art**  
**ARGC 110b / HSAR 110b, Introduction to the History of Art: Global Decorative Arts**  
Edward Cooke, Jr. Global history of the decorative arts from antiquity to the present. The materials and techniques of ceramics, textiles, metals, furniture, and glass. Consideration of forms, imagery, decoration, and workmanship. Themes linking geography and time, such as trade and exchange, simulation, identity, and symbolic value.  

**ARGC 235b / HSAR 235b / HUMS 245b / NELC 106b, The Worlds of Homer**  
Karen Foster 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
Homer's 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. HU

ARC 237a / HSAR 237a / NELC 108a, Ancient Painting and Mosaics  Karen Foster Developments in wall painting, vase painting, and mosaics as seen in ancient Egypt, the Aegean Bronze Age, and the Greek, Etruscan, and Roman world. HU

Near Eastern Languages and Civilizations

*ARC 001b / NELC 001b, Egypt and Northeast Africa: A Multidisciplinary Approach  John Darnell Examination of approximately 10,000 years of Nile Valley cultural history, with an introduction to the historical and archaeological study of Egypt and Nubia. Consideration of the Nile Valley as the meeting place of the cultures and societies of northeast Africa. Various written and visual sources are used, including the collections of the Peabody Museum and the Yale Art Gallery. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. WR, HU

ARC 221aG / HSAR 234a / NELC 120aG, Egyptomania  Colleen Manassa Conceptual underpinnings of the use of ancient Egyptian motifs in architecture, painting, sculpture, and decorative arts throughout western Europe, the Middle East, and North America from antiquity to the present. Coordinated with the exhibit Egyptomania at the Peabody Museum. HU

ARC 223bG / NELC 220bG / WGSS 226bG, Lives in Ancient Egypt  Colleen Manassa Introduction to the social history of ancient Egypt from 3,100 to 30 B.C.E. Focus on the lives of particular individuals attested in the textual and archaeological record, from pharaohs and queens to artists, soldiers, and farmers. Reading of primary sources in translation; course projects integrate ancient objects in Yale collections. HU

ARC 346aG / NELC 314aG, Ancient Civilizations of Nubia  Maria Gatto Introduction to the sociocultural history and archaeology of ancient Nubia; special attention to interconnections with Egypt and Africa. Nubia's role in shaping both the origin of pharaonic civilization and African cultural identity; parallels and divergences with Saharan, West African, and Near Eastern cultures. Use of the Nubian collection of the Peabody Museum. SO

Advanced Research Courses

*ARC 471a and ARC 472b, Directed Reading and Research in Archaeology  William Honeychurch 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.

*ARC 491a or b, Senior Research Project in Archaeology  William Honeychurch Required of all students majoring in Archaeological Studies. Supervised investigation of some archaeological topic in depth. The course requirement is a long essay to be submitted as the student's senior essay. The student should present a prospectus and bibliography to the director of undergraduate studies no later than the third week of
the term. Written approval from the faculty member who will direct the reading and writing for the course must accompany the prospectus.

Architecture

Director of undergraduate studies: Bimal Mendis, 328 RDH, 432-8325, bimal.mendis@yale.edu

MEMBERS OF THE SCHOOL OF ARCHITECTURE TEACHING IN YALE COLLEGE

Professors D. Michelle Addition, Kent Bloomer (Adjunct), Turner Brooks (Adjunct), Peggy Deamer, Keller Easterling, Alexander Garvin (Adjunct), Steven Harris (Adjunct), Dolores Hayden, Alan Plattus, Alexander Purves (Emeritus)

Associate Professors Eeva-Liisa Pelkonen, Emmanuel Petit

Assistant Professors Kyoung Sun Moon, W. Todd Reisz (Visiting), Elihu Rubin

Lecturers Victor Agran, Karla Britton, Ariane Lourie Harrison, Amy Lelyveld, Daniel Sherer

Critics Katherine Davies, Andrei Harwell, Adam Hopfner, Joyce Hsiang, Bimal Mendis, Michael Young, I. Thomas Zook

Application to the Architecture major Yale College students must apply to enter the major during the spring term of their sophomore year, after taking ARCH 150, 154, and 249. 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 28, 2014, in Room 328 RDH (third floor). All applications are reviewed by a faculty committee. Applications must include the following information: name, address, telephone number, courses related to architecture already taken, a statement of purpose, and a writing sample from Yale College. Portfolios representative of course work for ARCH 150, 154, and 249 must also be submitted for review as part of the application process by May 1, 2014. Applicants must stipulate their first, second, and third choices for the three concentrations in the major. The concentrations, described below, are design; history, theory, and criticism; 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 concentration. Applicants will be notified in writing regarding acceptance to the major by May 30, 2014. The major is usually limited to twenty students in the junior year and twenty students in the senior year, with a maximum of sixteen students in the design concentration for each year. Students have an opportunity to petition the director of undergraduate studies at the end of either the fall or spring term of their junior year if they wish to change concentrations. The director of undergraduate studies will notify students of the result of such a petition.

Introduction to architecture Introductory courses are ARCH 150, 154, and 249. 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 a freshman seminar, ARCH 260, 261, or STCY 176.

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 with a major in Architecture. As a liberal arts major in Yale College, it is not an accredited professional degree program. For accredited professional degree programs, refer to the requirements of the National Architectural Accrediting Board (http://www.naab.org) (NAAB).

The design concentration introduces complex processes involved in solving spatial and programmatic problems. Creative work is grounded in the study of history and culture, and in the analysis of social conditions influencing architecture. Teaching formats include lectures, studio workshops, and individual presentations that culminate in a senior project design studio. The history, theory, and criticism concentration 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 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 also urged to study a foreign language. The urban studies concentration encourages a broad, interdisciplinary investigation of the complex forces that shape the urban physical environment. The sequence of courses culminates in a senior essay that builds on course work, and either develops analysis and planning proposals for a specific site or furthers an individual research agenda.

Requirements of the major Students majoring in Architecture are required to take 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) design, (2) history, theory, and criticism, or (3) urban studies.

The courses for all concentrations include three prerequisites: ARCH 150, 154, and 249. The core of five course credits required for all three concentrations include the studio courses ARCH 250 and 251 (to be taken during the junior year after the student is accepted into the major) and the history of architecture surveys ARCH 260 and 261 (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 design concentration, the following additional courses are required:

1. ARCH 450, Senior Studio
2. ARCH 494 (the senior requirement)
3. One elective in history and theory of architecture chosen from the following: ARCH 341, 431, 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 340, 344, 345, 351; STCY 176; or other relevant course in American Studies, Ethics, Politics, and
Economics, Environmental Studies, or Political Science approved by the director of undergraduate studies

5. One elective in materials and technology chosen from the following: ARCH 163, 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 161, an approved calculus or physics course, or other relevant course approved by the director of undergraduate studies. Elementary calculus is strongly recommended as preparation for graduate studies in Architecture

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

1. ARCH 490 and 491 (the senior requirement)

2. Four electives in history and theory of architecture, chosen from the following: ARCH 341, 431, 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 340, 344, 345, 351; STCY 176; or other relevant course in American Studies, Ethics, Politics, and Economics, Environmental Studies, or Political Science approved by the director of undergraduate studies

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

1. ARCH 495 and 491 (the senior requirement)

2. Four electives in urbanism and landscape chosen from the following: ARCH 340, 344, 345, 351; STCY 176; 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 341, 431, or other relevant course in History of Art approved by the director of undergraduate studies

**Digital media orientation** All Architecture students are required to complete orientation sessions in digital media workshop and materials laboratory. Students enrolled in ARCH 249 are required to complete these sessions at the beginning of the spring term of the sophomore year. Access to digital media equipment will not be allowed until the required orientation sessions have been completed. Questions should be addressed to the director of undergraduate studies or the director of digital media, John Eberhart (432-9655, john.eberhart@yale.edu).

**Library orientation** The Architecture program requires all students to complete a ninety-minute introductory library research session. Students enrolled in ARCH 249 must take this session at the beginning of the spring term of the sophomore year. Failure to complete the required orientation will preclude completion of the major. Students may offer no substitutions for this orientation. Students should register with the Haas Family Arts Library Public Services Librarian, Lindsay King
(436–8052, lindsay.king@yale.edu). Questions should be addressed to the director of undergraduate studies.

**Shop orientation**  The Architecture program requires all majors to complete a three-hour woodshop and materials lab orientation session. Students enrolled in ARCH 249 must take this session during the first week of the spring term of the sophomore 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 (432–7234).

**Senior requirement**  Seniors in the design track take the senior project design studio (ARCH 494). Seniors in the history, theory, and criticism track take ARCH 490, the senior research colloquium, and 491, the senior project. Seniors in the urban studies track take ARCH 495, the senior research colloquium in urban studies, and 491, 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. Senior essays and projects (ARCH 491) are due in the office of the director of undergraduate studies by Friday, April 18, 2014. In the spring term, all seniors must submit a portfolio of their work to the office of the director of undergraduate studies by Thursday, May 1, 2014. 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.

**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.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites**  ARCH 150, 154, 249

**Number of courses**  15 course credits (incl prereqs and senior req)

**Specific courses required**  All concentrations — ARCH 250, 251, 260, 261;

  Design — ARCH 450

**Distribution of courses**  Design — 1 elective in history and theory of architecture, 1 elective in urbanism and landscape, 1 elective in materials and technology, 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; Urban studies — 4 electives in urbanism and landscape, 1 elective in history and theory of architecture, all approved by DUS

**Other**  Orientation sessions in digital media, library, and shop

**Senior requirement**  All concentrations — portfolio representative of design work, including prerequisites and the senior requirement; Design — ARCH 494; History, theory, and criticism — ARCH 490 and 491; Urban studies — ARCH 495 and 491
Courses

ARCH 150a, Introduction to Architecture  Alexander Purves
Lectures and readings in the language of architecture. Architectural vocabulary, elements, functions, and ideals. Notebooks and projects required. Not open to freshmen. Required for all Architecture majors.  HU

*ARCH 154b, Drawing Architecture  Victor Agran
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. Required for all Architecture majors.

*ARCH 161b, Introduction to Structures  Kyoung Sun Moon
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 20.  QR, SC

ARCH 163b, Environment, Energy, Building  D. Michelle Addington
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 230b / STCY 176b, Introduction to the Study of the City  Alexander Garvin
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.  SO

*ARCH 240b, The Analytic Model  Emmanuel Petit
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. Required for all Architecture majors.

*ARCH 250a, Methods and Form in Architecture I  Bimal Mendis and staff
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.  1½ Course cr

*ARCH 251b, Methods and Form in Architecture II  Joyce Hsiang and Michael Young
Continuation of ARCH 250. 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.  1½ Course cr
ARCH 260a, History of Architecture I: Antiquity to the Baroque  Daniel Sherer
The first half of a two-term sequence in the history of architecture. Architecture and
urbanism from ancient Egypt through Greek and Roman classical traditions to the
Enlightenment. The formal expression—organizational, structural, and ornamental
—and social context of specific buildings and urban areas. Architecture as a form of
social expression that builds on its own stylistic development, articulating a response to
changes in history and culture. Emphasis on Western architecture, with selections from
other parts of the world.  HU

*ARCH 261b / HSAR 325b, History of Architecture II: The Eighteenth Century to the
Millennium  Eeva-Liisa Pelkonen
Modern architecture and urbanism from the eighteenth century to the end of the
twentieth. Genesis and meaning of architectural form, applying national, cultural, and
international contexts.  HU

*ARCH 271a / HSAR 266a / HUMS 450a / MMES 126a / SAST 266a, Introduction to
Islamic Architecture  Kishwar Rizvi
Introduction to the architecture of the Islamic world from the seventh century to the
present, encompassing regions of Asia, North Africa, and Europe. A variety of sources
and media, from architecture to urbanism and from travelogues to paintings, are used
in an attempt to understand the diversity and richness of Islamic architecture. Field trip
to the Metropolitan Museum of Art in New York.  HU

ARCH 340aG / AMST 207a, American Cultural Landscapes: An Introduction to the
History of the Built Environment  Dolores Hayden
Introduction to land use, transportation, urban planning, and vernacular architecture
in the United States. After a brief review of Native American and colonial settlement
patterns, the first half of the course deals with the development of cities from 1800
to 1920. The second half emphasizes suburban growth that transformed traditional
downtowns and created diffuse metropolitan regions between 1920 and the present.
WR, HU, SO

*ARCH 341aG / LAST 318a, Globalization Space  Keller Easterling
Infrastructure space as a primary medium of change in global polity. Networks of
trade, energy, communication, transportation, spatial products, finance, management,
and labor, as well as new strains of political opportunity that reside within their
spatial disposition. Case studies include free zones and automated ports around the
world, satellite urbanism in South Asia, high-speed rail in Japan and the Middle
East, agripoles in southern Spain, fiber optic submarine cable in East Africa, spatial
products of tourism in North Korea, and management platforms of the International
Organization for Standardization.  HU

*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.  HU
ARCH 345b, Civic Art: Introduction to Urban Design  Alan Plattus
and 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.  HU

*ARCH 347b / PLSC 250b, Infrastructure: Politics and Design  Elihu Rubin
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.  SO

*ARCH 348b, The Benevolent City  W. Todd Reisz
Cities as places of violence, vice, and irrelevance vs. cities as stages where humanity
reaches its most elevated heights of self-realization and cultural production. Critical
review of writing about cities to identify recurring arguments and value systems.
The question of whether cities should be expected to convey benevolence on their
inhabitants.  HU

*ARCH 351b / AMST 381b, Poets’ Landscapes  Dolores Hayden
Introduction to techniques poets have used to ground their work in the landscapes and
buildings of American towns and cities including Chicago, New York, and Los Angeles.
Attention to poems from a national automotive landscape as well as narrative poems
about cities. Writing exercises in different poetic forms; readings from the works of
Dickinson, Frost, Bishop, Lowell, Wilbur, Dickey, Pinsky, Cervantes, and Merrill.  WR, HU

ARCH 431b, Religion and Modern Architecture  Karla Britton
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.  WR, HU

*ARCH 450a, Senior Studio  Turner Brooks and I. Thomas Zook
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. To be taken before ARCH 491 or 494.
Enrollment limited to Architecture majors.  1½ Course cr

*ARCH 471a or b, Individual Tutorial  Bimal Mendis
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.
III. Subjects of Instruction

*ARCH 472La or b, Individual Tutorial Laboratory  Bimal Mendis
An independent tutorial focusing on methods and techniques of representation in architecture, including the synthesis of studio work using a variety of visual media. Concurrently with ARCH 471 or after a spring term abroad.  RP  ½ Course cr

*ARCH 490a, Senior Research Colloquium  Karla Britton
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
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.

*ARCH 494b, Senior Project Design Studio  Staff
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.  ½ Course cr

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

Art

(Drawing, Filmmaking, Graphic Design, Painting, Photography, Printmaking, and Sculpture)

Director of undergraduate studies: Lisa Kerész, 122 GRN, 432-2600, 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)

Associate Professors  Anoka Faruqee, Clint Jukkala, Martin Kersels

Assistant Professors  Marie Lorenz, Michael Queensland

Senior Critics  Alice Chung, John Gambell, Jessica Helfand, Pamela Hovland, Christopher Pullman, Henk van Assen

Critics  Johannes DeYoung, Lisa Kerész, Sandra Luckow, Sarah Oppenheimer

Lecturers  Jonathan Andrews, Mark Aronson, Anna Betbeze, Julian Bittiner, Sandra Burns, Benjamin Donaldson, Dru Donovan, Julian Gilbert-Davis, Brent Howard,
Michelle Lopez, Joseph Maida, Dushan Petrovich, Carolyn Salas, Victoria Sambunaris, Laurel Schuwlst, Scott Stowell, Jeffrey Stucker, William Villalongo, Anahita Vossoughi, Natalie Westbrook

The program in Art offers courses in a variety of mediums that provide a background in visual arts as part of a liberal education and as 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, August 27, adjacent to the School of Art Gallery at Holcombe T. Green, Jr., Hall, 1156 Chapel Street, from 10:30 a.m. to 1:30 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, August 28. For courses beginning in the spring term, counseling will be held on Monday, January 13, 2014, adjacent to the School of Art Gallery, from 12 to 1:30 p.m.; Art classes begin on Tuesday, January 14, 2014. 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 introductory (100-level) term courses. Four of the introductory courses must have been completed at the time of the sophomore review. Visual Thinking (ART 111) and Basic Drawing (ART 114) 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 term courses, 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 395) and/or Critical Theory in the Studio (ART 201); (4) the Senior Project (ART 495); 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 Battel 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 111 and 114; 3 addtl 100-level courses

Number of courses 14 term courses (incl prereqs and senior project)

Specific course required ART 395 and/or 201

Distribution of courses 5 upper-level courses; 2 courses in history of art

Senior requirement Senior project (ART 495)

Unless otherwise indicated, spring-term classes in Art begin on Tuesday, January 14,
2014.

Introductory Courses

*ART 001a, Studies in Visual Biography  Jessica Helfand

Study of diaries, journals, and scrapbooks 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.  RP

*ART 002b, Paper  Elana Herzog

Paper as a material for making 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.

RP

*ART 003b, Blue  Jessica Helfand

The cultural and iconic history of the color blue and its role as both a method and a
motive for making work in the studio. The word "blue" and its etymological core,
evocative connotations, colloquial nuance, and semantic role in different languages
and cultures; scientific and sociological issues; blue in film and the fine arts. Projects
experiment with writing, collecting, collage, and digital video. Use of materials from
the Beinecke Library. Enrollment limited to 15 freshmen. Preregistration required; see
under Freshman Seminar Program.  HU

*ART 004a, Words and Pictures  Dushan Petrovich

Introduction to visual narration, the combination of words and pictures to tell a story.
Narrative point of view, counternarrative and counterculture, visual satire, personal
history, depictions of space and time, and strategies and politics of representation.
Sources include illuminated manuscripts, biblical paintings, picture-stories, comic
strips, and graphic novels.  HU  RP
*ART 110a, Sculpture Basics  Carolyn Salas and Michelle Lopez
Introduction to the concepts of space, form, weight, mass, and design in sculpture. Basic types and techniques of construction and material; concepts and approaches to the understanding and development of sculptural ideas. Shops and studio are available during days and evenings throughout the week. Materials fee: $75. Enrollment limited to 12. Recommended to be taken before ART 120–125.  RP

*ART 111a or b, Visual Thinking  Anna Betbeze and staff
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 art and to the study of art history and popular culture. Projects address all four major concentrations (graphic design, printing/printmaking, photography, and sculpture). Materials fee: $25. Open to all undergraduates. Required for Art majors.  HU  RP

*ART 114a or b, Basic Drawing  Robert Reed, Jr.
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. No prior drawing experience required. Materials fee: $25. Open to all undergraduates. Required for Art majors.  HU  RP

*ART 116b, Color  Clint Jukkala
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.  HU  RP

*ART 120a, Introductory Sculpture: Wood  Julian Gilbert-Davis
Introduction to wood technology and the use of machines and hand tools in context of the studio. The range of what sculpture might be; understanding and articulating form in space; responses to current issues in contemporary sculpture. Assignments foster hands-on appreciation of materials and craftsmanship and initiate awareness of the aesthetic and political implications of handmade objects in a digital world. Shops and studio are available during days and evenings throughout the week. Materials fee: $75. Enrollment limited to 12.  HU  RP

*ART 121b, Introductory Sculpture: Metal  Brent Howard
Introduction to working with metal. The range of what sculpture might be; creative approaches to perception, creation, and critical analysis; understanding and articulating form in space; responses to current issues in contemporary sculpture. Assignments foster hands-on appreciation of materials and craftsmanship and initiate awareness of the aesthetic and political implications of handmade objects in a digital world. Shops and studio are available during days and evenings throughout the week. Materials fee: $75. Enrollment limited to 12.  HU  RP

*ART 122a, Introductory Sculpture: Time-Based Mediums  Sandra Burns
Ways in which digital tools can inform the production of three-dimensional objects. Digital photography, including RAW photography, video, editing, basic lighting, color correction, and inkjet printing. Introduction to basic woodworking and welding. Digital processes as they intersect with a variety of materials and subjects. Materials fee: $150. Enrollment limited to 12.  HU  RP
*ART 125a, Mold Making and Casting  Carolyn Salas
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.  HU  RP

*ART 130a or b, Painting Basics  Anna Betbeze and staff
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 230 and/or 231.  HU  RP

*ART 132a or b, Introductory Graphic Design  Julian Bittiner
A studio introduction to visual communication, with emphasis on the 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.  HU  RP

*ART 136a or b, Introductory Black-and-White Photography  Lisa Kereszi and Victoria Sambunaris
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.  HU  RP

*ART 138a or b, Digital Photography  Joseph Maida and staff
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.  HU  RP

*ART 141a and ART 142b, The Language of Film Workshop  Michael Roemer
Problems and aesthetics of film studied in practice as well as in theory. In addition to exploring movement, image, montage, point of view, and narrative structure, students photograph and edit their own short videotapes. The fall term emphasizes the writing and production of short dramatic scenes. Materials fee: $150. Priority to majors in Art and in Film Studies. Prerequisite for Film Studies majors: FILM 150.  RP

*ART 145a or b, Introduction to Digital Video  Johannes DeYoung and staff
Introduction to the basic tools of digital video production. 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

Intermediate Courses

*ART 201b, Critical Theory in the Studio  Jeffrey Stuker and staff
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. HU RP

*ART 202a, Feminist Theory and Feminist Art  Susan Cahan
Major issues in feminist theory and art practice since the 1960s. Topics include women’s art of the 1960s and 1970s, performance and body art, representation and the social construction of gender, and the intersection of gender, race, sexuality, and class. HU RP

*ART 223a and ART 224b, Figure Drawing  Samuel Messer and William Villalongo
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. RP

*ART 230a and ART 231b, Introductory Painting  Robert Reed, Jr.
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 114. RP

*ART 237b, Intermediate Photography  Lisa Kereszi
A class in black-and-white photography extending the concerns of ART 136. Introduction to the use of medium-format cameras. Specialized topics include night photography, the use of flash, developing roll film, basic digital scanning, and grayscale printing techniques. Survey of the rich tradition of handheld photography and the production of artists such as Lartigue, Brassai, Diane Arbus, Lee Friedlander, and Robert Adams. Materials fee: $150. Prerequisite: ART 136 or equivalent. HU RP

*ART 245a, Digital Projection  Staff
Digital techniques and concepts as they expand the possibilities of traditional drawing. The structure of the digital image; print, video, and projected media; creative and critical explorations of digital imaging technologies. Historical contexts for contemporary artworks and practices utilizing digital technologies. Group critiques of directed projects. The second half of the course is focused on individual development and exploration. Materials fee: $150. Enrollment limited. Prerequisite: ART 111 or 114 or permission of instructor. RP

*ART 264a, Typography in Graphic Design I  Julian Bittiner and Alice Chung
An intermediate course 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 132. RP

*ART 265b, Typography in Graphic Design II  Henk van Assen
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 264. RP

*ART 285b, Digital Animation  Johannes DeYoung
Introduction to the principles, history, and practice of animation in visual art and film. Historical and theoretical developments in twentieth- and twenty-first-century animation used as a framework for making digital animation. Production focuses on digital stop-motion and compositing, as well as 2-D and 3-D computer-generated animation. Workshops in relevant software. Materials fee: $150. Prerequisites: ART 111, 114, or 145, and familiarity with Macintosh-based platforms. RP

*ART 324b, Painting Materials and Methods  Mark Aronson
An introduction to historical materials and methods of painting. Students examine masterworks in the Yale Art Gallery and the Center for British Art, and explore observed techniques in their own painting. Techniques include quick-drying indirect tempera, slow-drying and layered oil painting, and the modernist direct application of paint; supports include wood, canvas, paper, and metal. Materials fee $75. Prerequisite: ART 114 or 130 or permission of instructor. RP

*ART 330a and ART 331b, Intermediate Painting  Staff
Further exploration of concepts and techniques in painting, emphasizing the individuation of students’ pictorial language. Various approaches to representational and abstract painting. Studio work is complemented by in-depth discussion of issues in historical and contemporary painting. Materials fee: $150 per term. Prerequisite: ART 230 or 231. RP

*ART 338a, Intermediate Digital Photography  Joseph Maida and Benjamin Donaldson
Exploration of both the technical and conceptual aspects of digital photography. Range of tools includes advanced film scanning, working with RAW files, masks, compositing and grayscale, and color inkjet printing. Students produce original work, with special attention to ways in which their technical decisions can clarify their artistic intentions. Materials fee: $150. Prerequisite: ART 138. RP

*ART 341a or b, Intermediate Fiction Film Workshop  Michael Roemer [F] and Jonathan Andrews [Sp]
In the first half of the term, students write three-scene short films and learn the tools and techniques of staging, lighting, and capturing and editing the dramatic scene. In the second half of the term, students work collaboratively to produce their films. Focus on using the tools of cinema to tell meaningful dramatic stories. Materials fee: $150. Enrollment limited to 8. Priority to majors in Art and in Film Studies. Prerequisites: ART 141 or 142, and FILM 150. RP

*ART 342b, Intermediate Documentary Film Workshop  Sandra Luckow
Students explore the storytelling potential of the film medium by making documentary art. The class concentrates 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 are considered using examples of students’ work. Exercises in storytelling principles. Materials fee: $150. Limited enrollment. Priority to majors in Art and in Film Studies. Prerequisites: ART 141 or 142, and FILM 150.  

*ART 345a and ART 346b, Intermediate Sculpture  
Staff  
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 120, 121, or 122, or equivalent; or with permission of instructor.  

*ART 348b, Sculpture with Time-Based Mediums  
Sandra Burns  
Exploration of time-based art mediums such as moving-image work, performance, sound, and installation, with emphasis on the integration and manipulation of different mediums and materials. Ways in which the history of time-based works informs contemporary practice. Individual studio projects as well as workshops in the use of various processes, practices, and techniques. Materials fee: $75. Enrollment limited to 12. Prerequisite: ART 122 or permission of instructor.  

*ART 355b, Silkscreen Printing  
Marie Lorenz  
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 114 or equivalent.  

*ART 356a, Printmaking I  
Marie Lorenz and Natalie Westbrook  
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 114 or equivalent.  

[ ART 367, Intermediate Graphic Design ]  

*ART 368b, Intermediate Graphic Design I  
Pamela Hovland  
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. Prerequisite: ART 132 and 264, or permission of instructor.  

*ART 369b, Interactive Design  
Laurel Schwulst  
Interactive design explored through the development of projects that are based on line. Concepts of prompt, feedback, and variable conditions; Web-specific design issues such as navigation and pacing, as well as design for variable sizes and devices; best practices in code craft and design. The Web as a social ecosystem in which time and performance play important roles. Instruction in HTML, CSS, and some Javascript. No prior programming experience required. Materials fee: $150. Prerequisite: ART 132 or permission of instructor.
*ART 370a, Motion Design  Christopher Pullman
A studio class that explores how the graphic designer’s conventions of print typography and the dynamics of word-image relationship change with the introduction of time, motion, and sound. Projects focus on the controlled interaction of words and images to express an idea or tell a story. The extra dimensions of time-based communications; choreography of aural and visual images through selection, editing, and juxtaposition. Materials fee: $150. Prerequisite: ART 265; ART 368 recommended.  RP

*ART 371a / MUSI 370a, Sound Art  Brian Kane and Martin Kersels
Introduction to sound art, a contemporary artistic practice that uses sound and listening as mediums, often creating psychological or physiological reactions as part of the finished artwork. The history of sound art in relation to the larger history of art and music; theoretical underpinnings and practical production; central debates and problems in contemporary sound art. Includes creation and in-class critique of experimental works. Materials fee: $25.  HU

*ART 379b, Photographic Techniques  Benjamin Donaldson
An opportunity for experienced photography students to become involved with the technical aspects of the medium. Concentrated study of view camera operations; techniques in added lighting and advanced printing; scanning and printing of negatives; discussion of historic photographic traditions. Student work is discussed in regular critiques. Previous digital training may be employed, but focus is primarily analog. Materials fee: $150. Prerequisite: ART 237 or permission of instructor.  RP

*ART 395a, Junior Seminar  Anoka Faruqee
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.  RP

Advanced Courses

*ART 401a, Advanced Photography  Lisa Kereszi
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. Prerequisites: ART 379 and, for those working digitally, ART 138. Required for Art majors concentrating in photography.  RP

*ART 430a and ART 431b, Painting Studio  Clint Jukkala and Samuel Messer
Development of individual themes through independent studio practice and projects. Studio work and discussion of pertinent topics in historical and contemporary painting. May be taken more than once. Materials fee: $75. Prerequisites: ART 330, 331.  RP

*ART 442a and ART 443b / FILM 483a and FILM 484b, Advanced Fiction Film Workshop  Jonathan Andrews
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 341.
*ART 445a, Advanced Sculpture I  Staff
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 345 or 346 or equivalent, or permission of instructor.  RP

[ ART 446, Advanced Sculpture ]

*ART 468a and ART 469b, Advanced Graphic Design  Julian Bittiner and Henk van Assen
A probe into questions such as how an artist can be present as an idiosyncratic individual in his or her work, and how that work can still communicate on its own to a broad audience. Concentration on making graffiti, i.e., the design of a set of outdoor marks and tours for New Haven. A technological component is included, both in the metaphor of designing outdoor interaction as a way to learn about screen-based interaction and in the final project to design an interface for a handheld computer. Materials fee: $150 per term. Prerequisites: ART 264 or 265, and 367 or 368, or permission of instructor.  RP

*ART 471a and ART 472b, Independent Projects  Clint Jukkala and Lisa Kereszi
Independent work that would not ordinarily be accomplished within existing courses, designed by the student in conjunction with a School of Art faculty member. A course proposal must be submitted on the appropriate form for approval by the director of undergraduate studies and the faculty adviser. Expectations of the course include regular meetings, end-of-term critiques, and a graded evaluation.  RP

*ART 495a or b, Senior Project  Clint Jukkala and staff
A project of creative work formulated and executed by the student under the supervision of an adviser designated in accordance with the direction of the student’s interest. Proposals for senior projects are submitted on the appropriate form to the School of Art Undergraduate Studies Committee (USC) for review and approval at the end of the term preceding the last resident term. Projects are reviewed and graded by an interdisciplinary faculty committee made up of members of the School of Art faculty. An exhibition of selected work done in the project is expected of each student.  RP

Astronomy

Director of undergraduate studies: Debra Fischer, 259 JWG, 432-1613, astro.dus@yale.edu; www.astro.yale.edu

FACULTY OF THE DEPARTMENT OF ASTRONOMY

Professors  Charles Bailyn, †Charles Baltay, Sarbani Basu, Paolo Coppi, Pierre Demarque (Emeritus), Debra Fischer, Jeffrey Kenney, Richard Larson (Emeritus), Priyamvada Natarajan, †Peter Parker (Emeritus), Sabatino Sofia (Emeritus), †C. Megan Urry, William van Altena (Emeritus), Pieter van Dokkum (Chair), Robert Zinn

Associate Professors  Hector Arce, Marla Geha, †Daisuke Nagai, Frank van den Bosch

Assistant Professor  †Nikhil Padmanabhan

Lecturers  Louise Edwards, Michael Faison
A joint appointment with primary affiliation in another department.

The Department of Astronomy offers courses both for the nonscientist interested in learning about modern astronomy and for the student wishing to prepare for graduate work in astronomy or a related science. The department offers two degree programs: the B.A. degree program in Astronomy and the B.S. degree program in Astronomy and Physics.

The department offers a variety of courses without prerequisites that provide an introduction to astronomy with particular attention to recent discoveries and theories. Courses numbered below 150, including ASTR 110, 120, and 130, 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 155, 160, and 170, 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 155 provides a hands-on introduction to astronomical observing, while ASTR 160 and 170 provide an introduction to topics in modern astrophysics and cosmology. For students with good preparation in high school mathematics and physics, ASTR 210 and 220 provide a more intensive introduction to astronomy with emphasis on topics of current interest, and ASTR 255 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 170 and 171, or 180 and 181, or 200 and 201; and MATH 112 and 115. 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 255 or 355; ASTR 310, or both ASTR 210 and 220 (ASTR 170 may substitute for 220 in the latter case); and a senior project or essay (ASTR 490 or 491). Also required are MATH 120 or ENAS 151 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 490 or 491).
Before entering the junior year, the student should consult the director of undergraduate studies.

**B.S. degree program in Astronomy and Physics** The B.S. degree 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 (180, 181, or 200, 201, or 260, 261); one of the physics laboratory sequences (PHYS 165L, 166L, or 205L, 206L); and the mathematics sequence MATH 112, 115, and either MATH 120 or ENAS 151. ASTR 155 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 255 or 355; ASTR 310; ASTR 320 or a more advanced astrophysics course with the permission of the director of undergraduate studies; a two-term senior project (ASTR 490 and 491); 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 410, 420, 430, and either 439 or 440; the sequence PHYS 401, 402, 440, and 441 may also fulfill this requirement. With the permission of the director of undergraduate studies, ASTR 440 may be substituted for PHYS 430. In mathematics, the student should complete one course in mathematics numbered 200 or above, or PHYS 301 or ENAS 194; 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 490 and 491).

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 170, 171, or 180, 181, or 200, 201; MATH 112, 115

**Number of courses** 10 term courses beyond prereqs, incl senior req

**Distribution of courses** 5 courses in astronomy, 4 of them numbered 200 or above; 4 electives in science or math, at least 2 with college-level prereqs (may include addtl astronomy courses)

**Specific courses required** ASTR 255 or 355; ASTR 310, or both 210 and 220; MATH 120 or ENAS 151

**Substitution permitted** ASTR 170 for 220

**Senior requirement** Senior essay or senior research project (ASTR 490 or 491)

**ASTRONOMY AND PHYSICS, B.S.**

**Prerequisites** PHYS 180, 181, or 200, 201, or 260, 261; PHYS 165L, 166L, or 205L, 206L; MATH 112, 115; MATH 120 or ENAS 151
III. Subjects of Instruction

**Number of courses**  12 term courses beyond prereqs, incl senior req

**Distribution of courses**  6 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 255 or 355; ASTR 310, 320

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

**Senior requirement**  Senior independent research project (ASTR 490 and 491)

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**Courses**

* **ASTR 030a, Search for Extraterrestrial Life**  Hector Arce and Michael Faison
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.  WR, SC

* **ASTR 110a, Planets and Stars**  Louise Edwards
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.  QR, SC

* **ASTR 120b, Galaxies and the Universe**  Jeffrey Kenney
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.  QR, SC

* **ASTR 130a, Life in the Universe**  Debra Fischer
An introduction to the astronomical and physical conditions that were conducive to life on Earth and the searches for similar conditions and for intelligent life elsewhere in the universe. Detailed survey of the objects making up the solar system as determined from astronomical observations and in situ planetary probes. No prerequisite other than a working knowledge of elementary algebra.  SC

* **ASTR 135b, Archaeoastronomy**  Michael Faison
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. No prerequisites.  SC

* **ASTR 155a, Introduction to Astronomical Observing**  Michael Faison
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.  SC  ½ Course cr
ASTR 160b, Frontiers and Controversies in Astrophysics  Marla Geha
and Louise Edwards
A detailed study of three fundamental areas in astrophysics that are currently subjects of intense research and debate: planetary systems around stars other than the sun; pulsars, black holes, and the relativistic effects associated with them; and the age and ultimate fate of the universe. No prerequisite other than a working knowledge of elementary algebra.  QR, SC

ASTR 170a, Introduction to Cosmology  Priyamvada Natarajan and Frank van den Bosch
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.  QR, SC

ASTR 210b, Stars and Their Evolution  Sarbani Basu
An intensive introduction to stars. Nuclear processes and element production, stellar evolution, stellar deaths and supernova explosions, and stellar remnants including white dwarfs, neutron stars, and black holes. A close look at our nearest star, the sun. Prerequisite: a strong background in high school calculus and physics.  QR, SC

ASTR 220a, Galaxies and Cosmology  Louise Edwards
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 calculus and physics.  QR, SC

ASTR 255a / PHYS 255a, Research Methods in Astrophysics  Marla Geha
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. Use of the Python programming language. Includes an optional field trip during October recess to the Arecibo 300-meter radio telescope. No previous programming experience required.  QR, SC  RP

ASTR 310a, Galactic and Extragalactic Astronomy  Robert Zinn and Jeffrey Kenney
Stellar populations and the structure of the Milky Way galaxy; the structure and evolution of external galaxies; the distribution of galaxies in the universe; galaxy interactions and active galactic nuclei. Prerequisites: MATH 115, PHYS 201, and ASTR 210 or 220, or equivalents, or with permission of instructor.  QR, SC

[ ASTR 320, Physical Processes in Astronomy ]

ASTR 343b / PHYS 343b, Gravity, Astrophysics, and Cosmology  Nikhil Padmanabhan
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 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor.  QR, SC
[ ASTR 355, Observational Astronomy ]
[ ASTR 360, Interstellar Matter and Star Formation ]

*ASTR 375b, Exoplanets  Debra Fischer
Current techniques used to detect planets orbiting around other stars, including Doppler measurements, transit techniques, microlensing, astrometric direct imaging, and timing variations. The physics of planetary orbits; recent progress in the characterization of exoplanet interiors and atmospheres; updates to the traditional model of planet formation and evolution. Prerequisites: MATH 120 and PHYS 201 or equivalents, and one astronomy course numbered above 200.  QR, SC

ASTR 380b, Stellar Populations  Robert Zinn
The stellar populations of our galaxy and galaxies of the Local Group. Topics include the properties of stars and star clusters, stellar evolution, and the structure and evolution of our galaxy. Prerequisites: PHYS 201 and MATH 120, and one astronomy course numbered above 200. Taught in alternate years.  QR, SC  RP

[ ASTR 385, Introduction to Radio Astronomy ]

ASTR 418b, Stellar Dynamics  Marla Geha
The dynamics and evolution of star clusters; structure and dynamics of our galaxy; theories of spiral structure; dynamical evolution of galaxies. Prerequisites: PHYS 201 and MATH 246 or equivalents; ASTR 310. Taught in alternate years.  QR, SC  RP

ASTR 420a, Computational Methods for Astrophysics  Paolo Coppi
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 320, MATH 120, 222 or 225, and 246.  QR  RP

[ ASTR 430, Galaxies ]
[ ASTR 440, Radiative Transfer in Stellar Atmospheres ]
[ ASTR 450, Stellar Astrophysics ]

ASTR 465a, The Evolving Universe  Pieter van Dokkum
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 120, PHYS 201, and one astronomy course numbered above 200. Taught in alternate years.  QR, SC  RP

*ASTR 490a and ASTR 491b, Independent Project in Astronomy  Debra Fischer
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.

Biology

Yale offers three different biological sciences majors, including Ecology and Evolutionary Biology (EEB), Molecular Biophysics and Biochemistry (MB&B), and Molecular, Cellular, and Developmental Biology (MCDB). The distinctions between
these majors reflect the types of biological systems analysis each represents: the analysis of whole organisms, populations, and ecosystems (EEB); use of the tools of chemistry and physics to study life at the molecular level (MB&B); and molecular, cellular, and developmental biology, genetics, and neurobiology (MCDB). These approaches cover the vast breadth of disciplines in the biological sciences.

The courses BIOL 101–104 are designed as entry points to all three programs in the biological sciences. The prerequisites for the three majors are similar, so students need not commit to a specific major in the freshman year.

For information on the major requirements, course offerings, and departmental faculty of Ecology and Evolutionary Biology, Molecular Biophysics and Biochemistry, and Molecular, Cellular, and Developmental Biology, see under those headings.

Students in the Class of 2015 and previous classes may fulfill the requirements of the combined Biology major that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdf/files/YCPS). Alternatively, they may fulfill the requirements of the major in Ecology and Evolutionary Biology, in Molecular Biophysics and Biochemistry, or in Molecular, Cellular, and Developmental Biology, as described under those headings.

Courses

**BIOL 101a or b, Biochemistry and Biophysics**  Michael Koelle [F]
and Anthony Koleske [Sp]
Introduction to the study of life at the molecular level. Topics include the three-dimensional structures and function of large biological molecules, the human genome, and the design of antiviral drugs to treat HIV/AIDS. The first of four modules in a yearlong introductory biology sequence; meets for the first half of the term.  SC ½ Course cr

**BIOL 102a or b, Principles of Cell Biology and Membrane Physiology**  Mark Mooseker and staff
Introduction to the study of cell biology and membrane physiology. Topics include organization and functional properties of biological membranes, membrane physiology and signaling, rough endoplasmic reticulum and synthesis of membrane/secretory membrane proteins, endocytosis, the cytoskeleton, and cell division. The second of four modules in a yearlong introductory biology sequence; meets for the second half of the term.  SC ½ Course cr

*BIOl 103b, Genes and Development*  Surjit Chandhoke and Frank Slack
Introduction to genes, genetics, and developmental biology. How genes control development and disease; Mendel’s rules; examples of organ physiology. The third of four modules in a yearlong introductory biology sequence; meets for the first half of the term.  SC ½ Course cr

**BIOL 104b, Principles of Ecology and Evolutionary Biology**  Surjit Chandhoke
and Leo Buss
Introduction to ecology, evolutionary biology, animal behavior, and the history of life. Evolutionary transitions and natural selection. Adaptation at genic, chromosomal, cellular, organismal, and supra-organismal levels. Distributional and social
III. Subjects of Instruction

consequences of particular suites of organismal adaptations. The fourth of four
modules in a yearlong introductory biology sequence; meets for the second half of the
term. sc ½ Course cr

Biomedical Engineering

Director of undergraduate studies: James Duncan, N309 D TAC, 785-2427, 313 MEC,
432-9917, james.duncan@yale.edu; seas.yale.edu/departments/biomedical-engineering

FACULTY OF THE DEPARTMENT OF BIOMEDICAL ENGINEERING

Professors Richard Carson, R. Todd Constable, James Duncan, Jay Humphrey,
Fahmeed Hyde, †Laura Niklason, Douglas Rothman, Mark Saltzman, †Frederick
Sigworth, †Brian Smith, †Hemant Tagare, †Paul Van Tassel, †Corey Wilson, Steven
Zucker

Associate Professors †Robin de Graaf, Tarek Fahmy, Themis Kyriakides, Michael
Levene, †Evan Morris, †Xenophon Papademetris, Lawrence Staib

Assistant Professors †Joerg Bewersdorf, Stuart Campbell, †Michael Choma, Rong
Fan, Anjelica Gonzalez, †Chi Liu, Kathryn Miller-Jensen, †Jianbing Zhou

Lecturers †Liqiong Gui, †Jing Zhou

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

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 traditional areas of engineering, 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 194, Ordinary
and Partial Differential Equations with Applications, BENG 249, Introduction to
Biomedical Computation, and BENG 350, Physiological Systems. In the junior year,
students obtain a comprehensive grounding in the field through taking BENG 351,
Biotransport and Kinetics, 352, Biomedical Signals and Images, 353, Introduction
to Biomechanics, 355L, Physiological Systems Laboratory, and 356L, Biomedical
Engineering Laboratory. They also take 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: BIOL 101 and 102 (or a higher-level course in MCDB or MB&B, with permission of the director of undergraduate studies); CHEM 112, 114, or 118; ENAS 194; MATH 115; MATH 120 or ENAS 151; PHYS 180, 181, 205L, and 206L (or 165L and 166L, with permission of the director of undergraduate studies).

Students must complete twelve term courses, totaling at least eleven course credits, beyond the prerequisites, including at least three required courses in the chosen track, two terms of a biomedical engineering laboratory (BENG 355L, 356L), and the two-term senior requirement.

Students in all tracks are required to take the following seven term courses: BENG 249, 350, 351, 352, 353, 355L, and 356L. Students in the bioimaging track must also take three courses chosen from EENG 310, BENG 410, 421, 436, 445, or 475. Students in the biomechanics track must also take three courses chosen from MENG 185, 280, 361, BENG 410, 434, 453, 455, or 457. Students in the molecular engineering track must also take three courses chosen from BENG 410, 434, 435, 464, MENG 361, or MB&B 300. Any relevant course may be substituted with the permission of the director of undergraduate studies. By the end of senior year, two term 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 471 or 472) and the senior seminar (BENG 480).

**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** BIOL 101 and 102, or higher-level course in MCDB or MB&B with DUS permission; CHEM 112, 114, or 118; ENAS 194; MATH 115; MATH 120 or ENAS 151; PHYS 180, 181, and 205L, 206L (or 165L, 166L with DUS permission)

**Number of courses** 12 term courses, totaling at least 11 course credits, beyond prereqs (incl senior req)

**Specific courses required** All tracks—BENG 249, 350, 351, 352, 353, 355L, 356L; Bioimaging track—3 from EENG 310, BENG 410, 421, 436, 445, or 475; Biomechanics track—3 from MENG 185, 280, 361, BENG 410, 434, 453, 455, or 457; Molecular engineering track—3 from BENG 410, 434, 435, 464, MENG 361, or MB&B 300

**Distribution of courses** 2 term courses in life sciences among prereq and req courses

**Substitution permitted** Relevant course with DUS permission

**Senior requirement** Senior project in final term (BENG 471 or 472) and senior sem (BENG 480)
Courses

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

**BENG 249b, Introduction to Biomedical Computation**  Richard Carson
Computational and mathematical tools used in biomedical engineering for the simulation of biological systems and the analysis of biomedical data. Basics of computational programming in MATLAB; applications to modeling, design, and statistical and data analysis. Prerequisite: MATH 120 or ENAS 151.  QR

*BENG 350a\(^6\) / MCDB 310a\(^6\), Physiological Systems*  Mark Saltzman and staff
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 113 or 115, or PHYS 180 and 181; MCDB <120>, or BIOL 101 and 102.  SC

**BENG 351a\(^6\) / CENG 351a\(^6\), Biotransport and Kinetics**  Kathryn Miller-Jensen and Tarek Fahmy
Creation and critical analysis of models of biological transport and reaction processes. Topics include mass and heat transport, biochemical interactions and reactions, and thermodynamics. Examples from diverse applications, including drug delivery, biomedical imaging, and tissue engineering. Prerequisites: PHYS 180, 181, MATH 115, ENAS 194; MCDB <120>, or BIOL 101 and 102; CHEM 112, 114, or 118.  QR

**BENG 352b, Biomedical Signals and Images**  James Duncan and Lawrence Staib
Principles and methods used to represent, model, and process signals and images arising from biomedical sources. Topics include continuous and discrete linear systems analysis, Fourier analysis and frequency response, metrics for signal similarity, and noise filtering. Biomedical examples range from one-dimensional electrical signals in nerves and muscles to two-dimensional images of organs and cells. Prerequisite: MATH 120 or ENAS 151. BENG 249, 350, and ENAS 194 strongly recommended.  QR

**BENG 353a\(^6\), Introduction to Biomechanics**  Jay Humphrey
An introduction to the biomechanics used in biosolid mechanics, biothermomechanics, and biochemomechanics. Diverse aspects of biomedical engineering, from basic mechanobiology to the design of novel biomaterials, medical devices, and surgical interventions. Prerequisites: PHYS 180, 181, MATH 115, and ENAS 194.  QR

*BENG 355a, Physiological Systems Laboratory*  Rong Fan
Introduction to laboratory techniques and tools used in biomedical engineering for physiological measurement. Topics include bioelectric measurement, signal processing, and dialysis. Enrollment limited to majors in Biomedical Engineering, except by permission of the director of undergraduate studies.  SC  ½ Course cr
*BENG 356Lb, Biomedical Engineering Laboratory  Michael Levene  Continuation of BENG 355L, introducing laboratory techniques and tools used in biomedical engineering. Topics include image processing, ultrasound, and microscopy. Enrollment limited.  SC  ½ Course cr

[BENG 405, Biotechnology and the Developing World ]

*BENG 410aG, Physical and Chemical Basis of Bioimaging and Biosensing  Douglas Rothman and staff  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 351 and 352 or permission of instructor.  QR, SC

BENG 411bG, Biomedical Microtechnology and Nanotechnology  Rong Fan  Principles and applications of micro- and nanotechnologies for biomedicine. Approaches to fabricating micro- and nanostructures. Fluid mechanics, electrokineatics, and molecular transport in microfluidic systems. Integrated biosensors and microTAS for laboratory medicine and point-of-care uses. High-content technologies, including DNA, protein microarrays, and cell-based assays for differential diagnosis and disease stratification. Emerging nanobiotechnology for systems medicine. Prerequisites: CHEM 112, 114, or 118, and ENAS 194.  SC

*BENG 421bG, Fundamentals of Medical Imaging  R. Todd Constable  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 194, and PHYS 180, 181, or 200, 201, or permission of instructor.  QR, SC

[BENG 434, Biomaterials ]

*BENG 435bG, Biomaterial-Tissue Interactions  Themis Kyriakides  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 112, 114, or 118; MCDB <120>, or BIOL 101 and 102; or equivalents.  SC

[BENG 436, Biophotonics and Optical Microscopy ]

BENG 445aG / EENG 445aG, Biomedical Image Processing and Analysis  James Duncan and Lawrence Staib  A study of the basic computational principles related to processing and analysis of biomedical images (e.g., magnetic resonance, computed X-ray tomography, fluorescence microscopy). Basic concepts and techniques related to discrete image representation, multidimensional frequency transforms, image enhancement, motion analysis, image segmentation, and image registration. Prerequisite: BENG 352 or
EENG 310 or permission of instructors. Recommended preparation: familiarity with probability theory.

[BENG 449, Biomedical Data Analysis]

BENG 453b, Continuum Biomechanics  Jay Humphrey
Advanced state-of-the-art methods of continuum and computational biomechanics. New theories of soft tissue growth, remodeling, disease progression, healing, and aging. Emphasis on mechanics driven by advances in vascular mechanobiology. Prerequisite: BENG 353. QR

[BENG 455, Vascular Mechanics]

BENG 456aG, Cellular Mechanics  Jing Zhou
Introduction to mechanical principles in biological systems at the cellular level. Basic cellular physiology; tools and methodology for the study of cellular mechanics; models for cellular deformation; mechanics and cell differentiation and proliferation; mechanical principles in developmental and regenerative medicine. Readings from recently published papers. Recommended preparation: BENG 353. QR, SC

BENG 457bG / MENG 457b, Musculoskeletal Biomechanics  Jing Zhou
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 280 and 383 or permission of instructor. QR, SC  RP

BENG 463b / CENG 320b, Immunobiology  Tarek Fahmy
Introduction to immunobiology, a field combining immunology with the physical sciences and engineering. Focus on biophysical principles and biomaterial applications for understanding and engineering immunity. SC

BENG 464b, Tissue Engineering  Laura Niklason and Liqiong Gui
Introduction to the major aspects of tissue engineering, including materials selection, scaffold fabrication, cell sources, cell seeding, bioreactor design, and tissue characterization. Class sessions include lectures and hands-on laboratory work. Prerequisite: CHEM 112, 114, or 118. Recommended preparation: organic chemistry, cell biology, and physiology. SC  1½ Course cr

*BENG 471a and BENG 472b, Special Projects  James Duncan and Lawrence Staib
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 475aG / CPSC 475aG, Computational Vision and Biological Perception  Steven Zucker
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 CPSC 112 and MATH 120, or with permission of instructor.

*BENG 480a, Seminar in Biomedical Engineering*    Xenophon Papademetriou
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.

*BENG 485b, Fundamentals of Neuroimaging*    Fahmed Hyder
The neuroenergetic and neurochemical basis of several dominant neuroimaging methods, including fMRI. Technical aspects of different methods, interpretation of results, and controversies or challenges regarding the application of fMRI and related methods in medicine.  SC

**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. Students take all four courses offered, and courses taught at the Paul Mellon Centre must be taken for a letter grade. Further information is available on the program’s Web site (http://britishart.yale.edu/education/yale-college-students/yale-in-london). Inquiries may also be directed to yaleinlondon@yale.edu. The application deadline for spring term 2014 is Friday, October 4, 2013. Students will be notified of acceptance within one month of the application deadline. Inquiries about the summer program, described in the Undergraduate Curriculum section, should be directed to the same address. Applications for summer 2014 are due Monday, February 3, 2014.

**Courses**

*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.  HU

*BRST 191b, Visual Sociology in London*    Philip Smith
An introduction to the methods of visual sociology, with particular reference to the opportunities provided by the city of London. Humanistic and more positivist approaches to the study of images, objects, and settings. Ethnographic photography, autophotography, and analysis of existing images; study of visibility, ordering and display in objects, and spaces and public life.  SO

*BRST 192b, Sociology of Tourism in London*    Philip Smith
Introduction to the sociological study of tourism. The history of tourism, tourist cultures, and tourist behaviors; mass vs. niche tourism; ties to modernity and postmodernity. Special consideration to examples in London and elsewhere in the United Kingdom.  SO
III. Subjects of Instruction

*BRST 478b, Modern British Drama* Sheila Fox and Sheila Fox
A detailed study of representative works of modern British drama, based on current productions on the London stage. Theatrical conventions developed by playwrights and actors in the theater of postwar Britain, both on the fringe and in the mainstream of the West End. Attention to social issues addressed by the plays. HU

Chemical Engineering

Director of undergraduate studies: Michael Loewenberg, 303 ML, 432-4334, michael.loewenberg@yale.edu; seas.yale.edu/departments/chemical-and-environmental-engineering

FACULTY OF THE DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING

Professors Eric Altman, †Michelle Bell, †Gaboury Benoit, †Stephen Edberg, Menachem Elimelech, Abbas Firoozabadi (Adjunct), †Thomas Graedel, Gary Haller, †Edward Kaplan, Yehia Khalil (Adjunct), Michael Loewenberg, Robert McGraw (Adjunct), Lisa Pfefferle, Joseph Pignatello (Adjunct), Daniel Rosner, †James Saiers, †Mark Saltzman, †Udo Schwarz, T. Kyle Vanderlick, Paul Van Tassel, Corey Wilson, †Kurt Zilm

Associate Professors †Eric Dufresne, †Tarek Fahmy, Chinedum Osuji, Jordan Peccia, †Julie Zimmerman

Assistant Professor André Taylor

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

Energy, the environment, and health care are key challenges facing humanity in the twenty-first century. Chemical engineering is a discipline well placed to confront these challenges. Chemical engineering is rooted in the basic sciences of mathematics, chemistry, physics, and biology; a traditional engineering science core of thermodynamics, transport phenomena, and chemical kinetics; a rigorous design component; and an expanding focus on emerging topics in materials, nanotechnology, and life sciences. The discipline has grown from its petrochemical origins to become central to state-of-the-art technologies in microelectronics, alternative energy, biomedicine, and pharmaceutics.

The Chemical Engineering program is principally focused on basic and engineering sciences and on problem solving. Additional emphasis is on communication, analysis of experiments, and chemical process design. A special feature of the program is the accessibility of laboratory research – most Chemical Engineering majors participate in faculty-led research projects, often resulting in publication and/or presentation at national meetings.

Chemical Engineering graduates find a wide range of professional opportunities in academia, industry, government, business, and the nonprofit sector. Many majors go on to graduate programs in chemical, biomedical, or environmental engineering or to medical, law, or business schools.

The educational objectives of the Chemical Engineering program are the following. Graduating students will achieve positions of leadership within academia, industry, and
government; excel in top graduate programs in chemical, biomedical, environmental, and related engineering fields; excel in top professional schools in fields such as law, medicine, or management; join and rise in the ranks of large and small corporations; become successful entrepreneurs; practice engineering toward the benefit of humankind.

Students considering a chemical engineering major are encouraged to take two terms of chemistry and mathematics during the freshman year, and to contact the director of undergraduate studies.

**Requirements of the major** Two degree programs are offered: a B.S. in Chemical Engineering accredited by the Engineering Accreditation Commission of ABET, Inc., and a B.S. in Engineering Sciences (Chemical).

**Prerequisites** Students in both degree programs take the following prerequisite courses: MATH 112, 115, and ENAS 151 or equivalent; PHYS 180, 181; CHEM 114, 115, and 116L, or CHEM 118; ENAS 130. 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 194 or equivalent
2. Chemistry: CHEM 124 and 125, or CHEM 220 and 230; CHEM 332, 333, and 330L
3. Engineering science: MENG 361 and three term courses chosen from engineering electives
4. Chemical engineering: CENG 210, 300, 301, 315, 411, 412, 480

**Senior requirement** In their senior year students must pass CENG 416, Chemical Engineering Process Design.

**B.S. degree program in Engineering Sciences (Chemical)** The B.S. degree in Engineering Sciences (Chemical) requires 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 194 or equivalent
2. Chemistry: CHEM 124 and 125, or CHEM 220 and 230, or CHEM 332 and 333
3. Engineering science: MENG 361
4. Chemical engineering: CENG 210, 300, 301, 315, 411

**Senior requirement** In their senior year students must complete a senior research project in CENG 490.

**REQUIREMENTS OF THE MAJOR**

**CHEMICAL ENGINEERING, B.S.**

**Prerequisites** MATH 112, 115, ENAS 151 or equivalent; CHEM 114, 115, and 116L, or CHEM 118; PHYS 180, 181; ENAS 130
Number of courses  18 term courses beyond prereqs (incl senior req)
Specific courses required  ENAS 194 or equivalent; CHEM 124, 125, or CHEM 220, 230; CHEM 332, 333, and 330L; MENG 361; CENG 210, 300, 301, 315, 411, 412, 480
Distribution of courses  3 addtl electives in engineering
Senior requirement  CENG 416

ENGINEERING SCIENCES (CHEMICAL), B.S.

Prerequisites  MATH 112, 115, ENAS 151 or equivalent; CHEM 114, 115, and 116L, or CHEM 118; PHYS 180, 181; ENAS 130
Number of courses  10 term courses beyond prereqs (incl senior req)
Specific courses required  ENAS 194 or equivalent; CHEM 124, 125, or CHEM 220, 230, or CHEM 332, 333; MENG 361; CENG 210, 300, 301, 315, 411
Senior requirement  CENG 490

*CENG 120b / ENAS 120b / ENVE 120b, Introduction to Environmental Engineering
Jordan Peccia
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 114, 115 (may be taken concurrently) or permission of instructor.  QB, SC

CENG 210a / ENVE 210a, Principles of Chemical Engineering and Process Modeling
Gary Haller
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 120 or permission of instructor.  QB, SC  RP

CENG 300a, Chemical Engineering Thermodynamics  Chinedum Osuji
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 120 or ENAS 151 or permission of instructor.  QB, SC  RP

CENG 301b, Chemical Kinetics and Chemical Reactors  Lisa Pfefferle
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 194 or permission of instructor.  QB, SC  RP

CENG 315b / ENVE 315b, Transport Phenomena  André Taylor
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 194 or permission of instructor. QR, SC RP

**CENG 320b / BENG 463b, Immunoeengineering**  Tarek Fahmy
Introduction to immunoengineering, a field combining immunology with the physical sciences and engineering. Focus on biophysical principles and biomaterial applications for understanding and engineering immunity. SC

**CENG 351a** / **BENG 351a**, Biotransport and Kinetics  Kathryn Miller-Jensen and Tarek Fahmy
Creation and critical analysis of models of biological transport and reaction processes. Topics include mass and heat transport, biochemical interactions and reactions, and thermodynamics. Examples from diverse applications, including drug delivery, biomedical imaging, and tissue engineering. Prerequisites: PHYS 180, 181, MATH 115, ENAS 194; MCDB <120>, or BIOL 101 and 102; CHEM 112, 114, or 118. QR

* **CENG 373a / ENVE 373a, Air Pollution Control**  Yehia Khalil
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 210 or permission of instructor. QR, SC RP

* **CENG 377a / ENVE 377a, Water Quality Control**  Jachong Kim
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 120 or permission of instructor. SC RP

**CENG 410a**, Biomolecular Engineering  Corey Wilson
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. RP

**CENG 411a, Separation and Purification Processes**  Michael Loewenberg
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 300 or 315 or permission of instructor. QR, SC RP
CENG 412a or b, Chemical Engineering Laboratory and Design  Corey Wilson and staff
An introduction to design as practiced by chemical and environmental engineers. Engineering fundamentals, laboratory experiments, and design principles are applied toward a contemporary chemical process challenge. Sustainability and economic considerations are emphasized.  SC

CENG 416a or b / ENVE 416a or b, Chemical Engineering Process Design  
Paul Van Tassel and staff
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 301 and 411.  QR, SC  RP

CENG 471a or b, Independent Research  Paul Van Tassel [F] and Michael Loewenberg [Sp]
Faculty-supervised individual student research and design projects. Emphasis on the integration of mathematics with basic and engineering sciences in the solution of a theoretical, experimental, and/or design problem. May be taken more than once for credit.

CENG 480a, Chemical Engineering Process Control  Eric Altman
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 194 or permission of instructor.  QR, SC  RP

*CENG 490a or b, Senior Research Project  Michael Loewenberg [F] and Paul Van Tassel [Sp]
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.

Related Course That Counts toward the Major

MENG 361a, Mechanical Engineering II: Fluid Mechanics  Nicholas Ouellette
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 194 or equivalent, and physics at least at the level of PHYS 170.  QR, SC  RP

Chemistry
Director of undergraduate studies: Kurt Zilm, 249 SCL, 432-3956, kurt.zilm@yale.edu; www.chem.yale.edu

FACULTY OF THE DEPARTMENT OF CHEMISTRY

Professors  †Sidney Altman, Victor Batista, Gary Brudvig, Robert Crabtree, †Craig Crews, R. James Cross, Jr. (Emeritus), Jonathan Ellman, John Faller (Emeritus), †Gary
Haller, Patrick Holland, †Francesco Iachello, Mark Johnson, William Jorgensen, J. Patrick Loria, J. Michael McBride (Emeritus), Scott Miller, Peter Moore (Emeritus), Andrew Phillips, †Anna Pyle, Paul Rablen (Visiting), †Lynne Regan, †James Rothman, Martin Saunders, Alanna Schepartz, Charles Schmuttenmaer, †Dieter Söll, †Thomas Steitz, †Scott Strobel, John Tully, Patrick Vaccaro, Frederick Ziegler (Emeritus), Kurt Zilm

Associate Professors  Seth Herzon, David Spiegel, Elsa Yan

Assistant Professors  Richard Baxter, Jason Crawford, Nilay Hazari, Timothy Newhouse

Lecturers  Paul Anastas, Christine DiMeglio, N. Ganapathi, Jonathan Parr

†A joint appointment with primary affiliation in another department.

The wide range of courses offered by the Department of Chemistry reflects the position of chemistry as the foundation of all the molecular sciences. 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  A one-term course with no prerequisites is offered for non-science majors: CHEM 103, Chemistry, Energy, and the Environment. This course does 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 112 and 113, Chemistry with Problem Solving I and II; CHEM 114 and 115, Comprehensive General Chemistry I and II; or CHEM 118, Quantitative Foundations of General Chemistry. Any of these courses fulfills the prerequisite for general chemistry in the Chemistry major. A typical student in CHEM 112 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 114 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 114 last took chemistry as sophomores in high school. Students who have done well in an advanced placement chemistry course or shown other evidence of high achievement in science and mathematics may start in CHEM 115 or 118. For instance, students with a Chemistry Advanced Placement test score of 5 may elect either CHEM 115 or 118.

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 124 and 125, Freshman Organic Chemistry I and II, are offered expressly for freshmen. Other courses in organic chemistry, CHEM 220 and 230, also are available to qualified freshmen. Students with a strong background in physics and calculus may be eligible for the physical chemistry courses CHEM 332 and 333.
Placement procedures  The Chemistry department reviews the preparation of all freshmen prior to the beginning of the fall term, using test scores, admission records, and information supplied by students (see the Freshman Web site (http://yalecollege.yale.edu/content/chemistry-1) for details on information to submit during the summer before matriculation). The department determines the appropriate general chemistry course for every entering freshman, either CHEM 112, 114, 115, or 118. Students will be able to view their initial placement in late August on the "Chem Placement 2013" site on Classes*v2 (https://classesv2.yale.edu/portal); instructions for using the site will be available on the Chemistry department Web site (http://chem.yale.edu/undergrad).

Freshmen wishing to take CHEM 124, 220, or 332, or those wishing to take a higher-level course than their initially 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 placed incorrectly 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 1 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. They must bring a nonprogrammable, nongraphing calculator and a #2 pencil with them to the examination; cell phones may not be used. Times and places for the examination are published in the Calendar for the Opening Days of College. After the examination, final placements are posted on the "Chem Placement 2013" site on Classes*v2 (https://classesv2.yale.edu/portal). For further information about placement and the examination, consult the Calendar for the Opening Days of College, the Freshman Web site (http://yalecollege.yale.edu/content/chemistry-1), and the departmental Web site (http://chem.yale.edu/undergrad).

Permission keys  Enrollment in any introductory chemistry course requires an electronic permission key. Keys are issued automatically 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, 1 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/oci. 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 114, 115, or 118 should confirm their placement on line at chem.yale.edu/undergrad and, if needed, obtain permission keys by inquiring at the department office, 1 SCL. Because CHEM 112 and 113 are restricted to freshmen, upperclassmen are placed into either CHEM 114, 115, or 118. Upperclassmen wishing to enroll in CHEM 220 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 112 and 113, or 114 and 115, or CHEM 328 or 332 followed by 333. In general, students with advanced placement taking only CHEM 115 or 118 may complete this requirement by taking a course in biochemistry with laboratory. CHEM 252, Introductory Inorganic Chemistry, with laboratory (CHEM 251L) may be substituted for the biochemistry course, but biochemistry is the preferred option. 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 major leading to a B.S., a B.A., and a combined B.S./M.S. The B.S. degree is intended to prepare students for graduate study while permitting extensive exploration of other disciplines. The B.S. degree with an intensive major provides more focused preparation for a career in chemical research, and requires greater breadth in laboratory courses and electives. Students electing this major program 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 Two terms of general chemistry and laboratory, or the equivalent in advanced placement, are prerequisite to all four degree programs. In addition, all degrees require two terms of organic chemistry (CHEM 124 or 220, and 125, CHEM 221, or 230) and laboratory (CHEM 126L or 222L, and CHEM 127L or 223L), one term of physical chemistry (CHEM 332 or 328), one term of physical chemistry laboratory (CHEM 330L), and one term of inorganic chemistry (CHEM 252 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 prerequisites for the physical chemistry courses. Students also are encouraged to complete a course in multivariable calculus.

B.S. degree In addition to the prerequisites and common degree requirements, the B.S. requires completion of a second term of physical chemistry (CHEM 333), 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 the Chemistry department. One term of CHEM 490 involving original research may be applied toward the advanced-course requirement.

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

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 490. At least one of the advanced courses must be a lecture course in the Chemistry department. CHEM 333 can be counted toward this requirement, although not as the sole advanced chemistry lecture course.

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 no later than the last day of classes in the fifth term of enrollment. To be considered for admission, by the end of their fifth term applicants must 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 the major, including prerequisites. Two terms of CHEM 490 must be taken in the fifth and sixth terms with grades of A or A− earned to continue in the program. The B.S./M.S. degree program requires completion of the intensive major 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. Students in the program must earn grades of A in at least two of their graduate-level term courses (or in one year course) and have at least a B average in the remaining ones. For more information, see "Simultaneous Award of the Bachelor’s and Master’s Degrees" in section K of the Academic Regulations.

Advanced courses For the purposes of degree requirements, all Chemistry courses numbered 410 or higher count as advanced lecture or laboratory courses, as do CHEM 226L, 251L, and 331L. Because most advanced courses either are offered in fall term or have a fall-term course as a prerequisite, students should not plan to take an isolated spring-term advanced course in any given year.

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 116L and 117L may count one-half course credit of physics laboratory toward the laboratory requirement, with approval of the director of undergraduate studies. CHEM 490 may not in any circumstances be substituted for any of the laboratory requirements. The graduate courses CHEM 562L, 564L, and 565L may not be counted toward any requirement of the major.

Senior requirement All bachelor’s degrees require the preparation of a capstone report or essay describing either independent research activities or a chemistry-related topic. Papers are written under the guidance of a faculty member as arranged by the instructor
of CHEM 490 and are expected to be fifteen to twenty-five pages in length (double-spaced, twelve-point font, exclusive of figures, tables, and bibliography). All students must secure a faculty sponsor no later than the end of the term immediately preceding the term during which they plan to submit their report or essay.

Students pursuing the B.S degree or the B.S degree with an intensive major also must present their capstone work in the form of an oral or poster presentation, as coordinated by the instructor of CHEM 490. Students pursuing the B.A. degree typically do not give an oral or poster presentation, but often elect to attend the senior seminar (CHEM 400).

**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:

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<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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**Programs of study with special emphasis** The flexibility of the degree requirements makes it possible for a student’s program of study to emphasize a particular area of specialization in chemistry. For example, a program specializing in chemical biology includes CHEM 421, Chemical Biology, and two biochemistry electives chosen from MCDB 300, MB&B 300, 301, or selected graduate courses. An inorganic chemistry specialization requires CHEM 450, Physical Methods in Inorganic Chemistry, CHEM 452, Organometallic Chemistry, and CHEM 457, Modern Coordination Chemistry. A program with emphasis in physical chemistry and chemical physics requires three electives chosen from CHEM 430, Statistical Mechanics and Thermodynamics, CHEM 440, Molecules and Radiation I, CHEM 442, Molecules and Radiation II, CHEM 470, Introductory Quantum Chemistry, or a graduate course in quantum mechanics. Students interested in synthetic organic chemistry complete three electives chosen from CHEM 418, Advanced Organic Chemistry I, CHEM 423, Synthetic Methods in Organic Chemistry, CHEM 425, Spectroscopic Methods of Structure Determination, or selected graduate courses. An emphasis in biophysical chemistry includes a course in either chemical biology or biochemistry, as well as two electives chosen from graduate courses in biophysics or biochemistry. Students may design programs with other areas of emphasis in consultation with the director of undergraduate studies. For a list of graduate courses appropriate for a particular specialization, consult the director of undergraduate studies.

**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 student’s goals is created and recorded on a Chemistry Course of Study form kept on 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. A current list of advisers to the major may be obtained in the department office, 1 SCL.
Special restrictions on lecture courses  Completion of the first term of the general, organic, or physical chemistry sequences CHEM 112 and 113, 124 and 125, 220 and 230, and 332 and 333 with a passing grade is a prerequisite for registration in the subsequent term. Completion of CHEM 114 with a passing grade is a prerequisite for registration in CHEM 115 unless the student’s assigned placement is in 115.

Students receive credit for only one chemistry sequence of any given type. For example, a student who has completed CHEM 112 and 113 may not subsequently enroll in CHEM 114 or 118; a student who has completed CHEM 124 and 125 may not subsequently enroll in CHEM 220 or 230. Similarly, students may not enroll in a course (typically of lower number) that is a prerequisite to a course they already have 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, although the department does not recommend it. However, the appropriate lecture course is a prerequisite or corequisite for each 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. In most instances, Chemistry majors find their course of study easier to schedule if they choose to study abroad in a spring term. For general information on the Year or Term Abroad, see under "Special Arrangements" in the Academic Regulations.

REQUIREMENTS OF THE MAJOR

Prerequisites  CHEM 112 and 113, or 114 and 115, or 118; CHEM 116L and 117L, or 119L; MATH 112, 115 (MATH 120 or ENAS 151 suggested); PHYS 180 and 181, or 200 and 201 (170, 171 acceptable); or equivalents in advanced placement

Number of courses  B.A. – at least 10 term courses, totaling 9 course credits; B.S. – at least 13 term courses, totaling 11½ course credits; B.S., intensive major – at least 14 term courses, totaling 13 course credits

Specific courses required  All degrees – 2 terms of organic chem (CHEM 124 or 220, and CHEM 125, CHEM 221, or 230); 2 terms of organic chem lab (CHEM 126L or 222L, and CHEM 127L or 223L); physical chem I (CHEM 332 or 328); 1 term of inorganic chem (CHEM 252, 450, 452, or 457); physical chem lab I (CHEM 330L); B.S. – CHEM 333; B.S., intensive major – CHEM 333, two terms of CHEM 490

Distribution of courses  B.A. – 3 course credits in advanced lectures or labs; B.S. – addtl lab for ½ course credit; 4 course credits in advanced lectures or labs; B.S., intensive major – 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 490, 400, or senior essay
Courses for nonmajors without prerequisites

**CHEM 102b, Introduction to Green Chemistry**  Paul Anastas
Overview of the basic concepts and methods needed to design processes and synthesize materials in an environmentally benign way. Related issues of global sustainability. Case studies that suggest possible solutions for the serious environmental and toxicological issues currently facing industry and society. Intended for non-science majors with a basic high school background in chemistry and physics, as well as high school algebra. Does not satisfy premedical chemistry requirements or requirements for the Chemistry major.

[ CHEM 103, Chemistry, Energy, and the Environment ]

Introductory courses

Freshmen planning to take an introductory Chemistry course during their first term are required to preregister over the summer. Those planning to elect CHEM 124, 220, or 332 must also register in person and take a placement examination as described in the Chemistry department program description and on the Freshman Web site (yalecollege.yale.edu/content/chemistry-1). Placement in other introductory Chemistry courses is made on the basis of test scores and other admissions data, as discussed in the Chemistry department program description. Time and place for the orientation meeting, registration, and placement examination are listed in the Calendar for the Opening Days of College. For further information on placement see the Freshman Web site.

*CHEM 112a, Chemistry with Problem Solving I*  N. Ganapathi
A systematic introduction to chemistry. Topics include atomic/molecular structure, stoichiometry, thermochemistry, chemical periodicity/bonding, and reactions in aqueous solutions. For beginning students in chemistry or for those whose exposure to the subject has been moderate. Special emphasis on scientific problem-solving skills through an additional discussion section devoted to quantitative reasoning. Attendance at one discussion section and one problem-solving section required. Enrollment limited to freshmen, by placement only.  QR, SC  RP

*CHEM 113b, Chemistry with Problem Solving II*  N. Ganapathi
Continuation of CHEM 112. 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. After CHEM 112. Enrollment limited to freshmen, by placement only.  QR, SC  RP

*CHEM 114a or b, Comprehensive General Chemistry I*  Jonathan Parr
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 116L. Enrollment by placement only.  QR, SC  RP
*CHEM 115a or b, Comprehensive General Chemistry II  Gary Brudvig [F]  
and Kurt Zilm [Sp]  
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. Prerequisite: CHEM 114 or the  
equivalent in advanced placement. Normally accompanied by CHEM 117L. Enrollment  
by placement only.  QR, SC  RP  
CHEM 116La or b, General Chemistry Laboratory I  N. Ganapathi  
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 112 or 114. May not be taken after a higher-numbered  
laboratory course.  SC  RP  ½ Course cr  
CHEM 117La or b, General Chemistry Laboratory II  N. Ganapathi  
Introduction to rate and equilibrium measurements, acid-base chemistry, synthesis of  
inorganic compounds, and qualitative/quantitative analysis. After CHEM 116L or the  
equivalent in advanced placement. To accompany or follow CHEM 113 or 115. May not  
be taken after a higher-numbered laboratory course.  SC  RP  ½ Course cr  
*CHEM 118a, Quantitative Foundations of General Chemistry  Mark Johnson  
An advanced course emphasizing conceptual aspects and physical principles in general  
chemistry. Fulfills the general chemistry prerequisite for organic chemistry. Attendance  
at a weekly discussion section required. Must be taken concurrently with CHEM 119L.  
Enrollment by placement only.  QR, SC  
CHEM 119La, Laboratory for Quantitative Foundations of General Chemistry  
Jonathan Parr  
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 118. Also suggested for freshmen  
enrolled in CHEM 332.  SC  ½ Course cr  
*CHEM 124a, Freshman Organic Chemistry I  Jonathan Ellman  
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.  
Attendance at a weekly discussion section required. Normally accompanied by CHEM  
222L. Enrollment by placement only.  SC  RP  
*CHEM 125b, Freshman Organic Chemistry II  William Jorgensen  
and Alanna Schepartz  
Continuation of CHEM 124. Survey of simple and complex reaction mechanisms,  
spectroscopy, organic synthesis, and the molecules of nature. Attendance at a weekly  
discussion section required. After CHEM 124. Normally accompanied by CHEM 223L.  
Enrollment by placement only.  SC  RP  
*CHEM 167b / MCDB 167b, From Microbes to Molecules II  Andrew Phillips  
The second term of a yearlong introduction to biology and chemistry through research  
on soil bacteria isolated from the Yale campus. Focus on the molecular basis of  
antibiotic activity. Introduction to organic chemistry, the structure of small molecules  
and their place in central dogma, physical principles underpinning separations science,  
and basic ideas of chemical evolution.  SC  RP
molecular spectroscopy, and mass spectroscopy. Class sessions include lecture and laboratory components. Prerequisite: MCDB 166. Enrollment limited to freshmen and sophomores, with preference to freshmen. SC 1½ Course cr

Intermediate courses

*CHEM 220a or b, Organic Chemistry Paul Rablen
An introductory course covering the fundamental principles of organic chemistry. The laboratory for this course is CHEM 222L. 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 230. SC RP

CHEM 222La or b, Laboratory for Organic Chemistry I Christine DiMeglio
First term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. Prerequisite: CHEM 117L or equivalent. After or concurrently with CHEM 124 or 220. SC ½ Course cr

CHEM 223La or b, Laboratory for Organic Chemistry II Christine DiMeglio
Second term of an introductory laboratory sequence covering basic synthetic and analytic techniques in organic chemistry. Prerequisite: CHEM 222L. After or concurrently with CHEM 125, <221>, or 230. SC ½ Course cr

*CHEM 226Lb, Intensive Advanced Chemistry Laboratory Christine DiMeglio and Jonathan Parr
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 <127L> or 223L. For enrollment procedures, contact the instructors. WR, SC RP

*CHEM 230a or b, Organic Chemistry of Biological Pathways Jason Crawford
Chemical principles that underpin living systems explored through organic chemistry. Examples drawn from chemistry, medicine, biotechnology, and the emergent field of chemical biology. Key conceptual frameworks such as structure, function, and mechanism and their relations to the chemistry of proteins, nucleic acids, selected drugs, and other topics in the life sciences. Mechanistic principles are used to examine enzymatic processes and the role of cofactors in the context of primary metabolism and natural products biosynthesis. After CHEM 220. SC

CHEM 251Lb, Inorganic Chemistry Laboratory Jonathan Parr
Introductory laboratory course covering synthetic and physical characterization techniques in inorganic chemistry. Prerequisite: CHEM 119L, <126L>, or 222L; concurrently with or after CHEM 252. SC

CHEM 252b, Introductory Inorganic Chemistry Robert Crabtree
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. Prerequisite: college-level general chemistry. After or concurrently with CHEM 220 or by permission of instructor. May not be taken after CHEM 450, 452, or 457. SC RP
CHEM 328a, Physical Chemistry with Applications in the Biological Sciences
   Elsa Yan
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 332 is preferred for Chemistry
majors. Prerequisites: introductory physics, college-level general chemistry, and single-
variable calculus, or permission of instructor; MATH 120 or ENAS 151 suggested. May
not be taken after CHEM 332. QR, SC RP

CHEM 330La, Laboratory for Physical Chemistry I   Patrick Vaccaro and N. Ganapathi
Introduction to the tools and techniques of modern experimental physical
chemistry, including analog/digital electronics, quantitative measurements of basic
thermodynamic properties, and nuclear magnetic resonance spectrometry. After or
concurrently with CHEM 328 or 332. Meets on Wednesday, Thursday, and Friday from
1:30 to 2:20 for the first week of the term. SC RP

CHEM 331Lb, Laboratory for Physical Chemistry II   Staff
Application of physical methods to chemical analysis by spectroscopic and
spectrometric techniques. After CHEM 330L. After or concurrently with CHEM 333.
Meets on Wednesday, Thursday, and Friday from 1:30 to 2:20 for the first week of the
term. SC RP

*CHEM 332a, Physical Chemistry with Applications in the Physical Sciences I
   R. James Cross, Jr.
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, or permission of instructor; MATH 120 or ENAS 151 suggested. May not be
taken after CHEM 328. QR, SC RP

*CHEM 333b, Physical Chemistry with Applications in the Physical Sciences II
   Patrick Vaccaro
Continuation of CHEM 332, including topics drawn from quantum mechanics, atomic/
molecular structure, spectroscopy, and statistical thermodynamics. Prerequisite:
CHEM 328 or 332, or permission of instructor. Recommended preparation: familiarity
with differential equations. QR, SC RP

Advanced courses

*CHEM 400a, Current Chemistry Seminar   Jonathan Parr and Christine DiMeglio
Designed to engage students in the Chemistry research-seminar program by providing
requisite scientific guidance and a forum for directed discussion. Participants explore
current avenues of chemical research as presented orally by the prime movers in the
field, thereby exploring the frontiers of current knowledge while still retaining the
structured environment of a classroom.

*CHEM 418a, Advanced Organic Chemistry I   William Jorgensen
Concise overview of structure, properties, thermodynamics, kinetics, reactions, and
intermolecular interactions for organic molecular systems. Prerequisites: two terms of
organic chemistry, CHEM 328 or 332, and CHEM 333. SC RP
CHEM 421a{G}, Chemical Biology  Alanna Schepartz
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: two terms of organic chemistry, and BIOL 101 or equivalent; BIOL 102 recommended.  SC  RP

CHEM 425b{G}, Spectroscopic Methods of Structure Determination  Martin Saunders
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: two terms of organic chemistry and CHEM 333.  SC  RP

[ CHEM 426, Computational Chemistry and Biochemistry ]

CHEM 430b{G}, Statistical Mechanics and Thermodynamics  Victor Batista
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 328 or 332, and CHEM 333, or permission of instructor.  QR, SC  RP

[ CHEM 437, Chemistry of Isotopes ]

CHEM 440a{G}, Molecules and Radiation I  Kurt Zilm
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, line shapes, Bloch equations, and NMR spectroscopy. Prerequisite: CHEM 333 or permission of instructor.  QR, SC  RP

CHEM 442b{G}, Molecules and Radiation II  Charles Schmuttenmaer
An extension of the material covered in CHEM 440 to atomic and molecular spectroscopy, including rotational, vibrational, and electronic spectroscopy, as well as an introduction to laser spectroscopy. Prerequisite: CHEM 440 or permission of instructor.  QR, SC  RP

CHEM 450b{G}, Physical Methods in Inorganic Chemistry  Nilay Hazari
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 452. Prerequisites: CHEM 328 or 332 and CHEM 333; CHEM 457 or equivalent.  SC  RP

CHEM 452a{G}, Organometallic Chemistry  Robert Crabtree
A survey of the organometallic chemistry of the transition elements and of homogeneous catalysis. May be taken independently of CHEM 450. Prerequisites: two terms of organic chemistry and CHEM 252.  SC  RP
CHEM 457a, Modern Coordination Chemistry  Patrick Holland
The principles of modern inorganic chemistry. Main group and transition element chemistry: reactions, bonding, structure, and spectra. Prerequisite: CHEM 252 or permission of instructor. SC RP

CHEM 470a, Introductory Quantum Chemistry  Victor Batista
The elements of quantum mechanics developed and illustrated with applications in chemistry and chemical physics. Prerequisites: CHEM 333, and MATH 120 or ENAS 151. QR, SC RP

*CHEM 490a or b, Independent Research in Chemistry  Jonathan Parr
After consulting with the director of undergraduate studies no later than the last week of the preceding academic term, students choose to work on individual laboratory and/or theoretical research problems under the supervision of a faculty member in Chemistry or in a closely related field of molecular science. Mandatory class meetings address issues of essential laboratory safety and ethics in science, with other class sessions focusing on core topics of broad interest including chemistry literature searching, oral presentation skills, and effective scientific writing. At least ten hours of research required per week. May be taken multiple times for credit. For each term of enrollment, students must complete a CHEM 490 registration form, have it signed by their research adviser and the course instructor, and submit it to the director of undergraduate studies for final approval no later than the last week of the preceding term. RP

Graduate courses of interest to undergraduates

Graduate courses in chemistry that may be of particular interest to undergraduates are listed in the online bulletin of the Graduate School. Information about them is available in the office of the director of undergraduate studies. Enrollment requires permission of both the director of graduate studies and the instructor.

Child Study Center

The Child Study Center is a department of the School of Medicine that works to further understanding of the problems of children and families. Among the disciplines involved in this work are child psychiatry, pediatrics, genetics, neurobiology, epidemiology, psychology, nursing, social work, and social policy. The mission of the Center is to understand child development, social, behavioral, and emotional adjustment, and psychiatric disorders, and to help children and families in need of care. More information is available on the Center’s Web site (http://medicine.yale.edu/childstudy).

Courses

*CHLD 125a / EDST 125a / PSYC 125a, Child Development  Nancy Close and Carla Horwitz
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.  WR, SO

*CHLD 126a or b / EDST 191a or b, Clinical Child Development and Assessment of
Young Children  Nancy Close
Exposure to both conceptual material and clinical observations on the complexity
of assessing young children and their families.  SO  ½ Course cr

*CHLD 127a / EDST 127a / PSYC 127a, Early Childhood Education: Implications of
Curriculum and Policy  Carla Horwitz
Development of curricula for preschool children—infants through five-year-olds—in
light of current research and child development theory.  WR, SO  RP

*CHLD 128b / EDST 128b / PSYC 128b, Language, Literacy, and Play  Nancy Close
and Carla Horwitz
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.  WR, SO  RP

*CHLD 350a or b / PSYC 350a or b, Autism and Related Disorders  James McPartland
Weekly seminar focusing on autism and related disorders of socialization. A series of
lectures on topics in etiology, diagnosis and assessment, treatment and advocacy, and
social neuroscience methods; topics cover infancy through adulthood. Supervised
experience in the form of placement in a school, residence, or treatment setting for
individuals with autism spectrum disorders. Details about admission to the course are
explained at the first course meeting. Prerequisite: an introductory psychology course.
SO

Classics

Director of undergraduate studies: Emily Greenwood, M04 PH, 432-9457;
emily.greenwood@yale.edu; www.yale.edu/classics

FACULTY OF THE DEPARTMENT OF CLASSICS

Professors  Egbert Bakker, Victor Bers, Kirk Freudenburg (Chair), Emily Greenwood,
Verity Harte, Diana Kleiner, Christina Kraus, Joseph Manning, John Matthews,
William Metcalf (Adjunct)

Associate Professors  Milette Gaifman, Irene Peirano

Assistant Professors  Joshua Billings, Andrew Johnston, Pauline LeVen, Barbara Sattler

Lecturers  Ann Ellis Hanson, Susan Matheson, Timothy Robinson, Joseph Solodow

The Department of Classics offers a major in Classics, concentrating in either Greek
or Latin literature, or in both literatures; 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.

The Major in Classics
The major in Classics is primarily a liberal arts major. It provides a rigorous interdisciplinary education in the literature, material culture, and history that underlie Western civilization and other humanities disciplines; it can also provide foundational disciplinary expertise for students 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 the linguistic, historical, and theoretical interpretative tools to analyze classical antiquity and its relevance in the modern world. All courses in the department emphasize a combination of precise analysis, original thought, creativity, and breadth of historical inquiry. 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 of 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.

**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, a survey of the literature and culture of ancient Athens (CLCV 256), a survey of the literature and culture of ancient Rome (CLCV 257), and two additional courses in related areas of history and art. The language courses must include GREK 390 or LATN 390 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 who have completed CLCV 254 and CLCV 255 may count them toward the survey requirements in the literature and culture of Athens and Rome, respectively.

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, a survey of the literature and culture of ancient Athens (CLCV 256), a survey of the literature and culture of ancient Rome (CLCV 257), 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 390 or LATN 390 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 (131 and 141) in the second language for two 400-level courses in the major literature. Students who have completed CLCV 254 and CLCV 255 may count them toward the survey requirements in the literature and culture of Athens and Rome, respectively.

**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.

**Credit/D/Fail courses** Courses taken Credit/D/Fail may not be counted toward the requirements of the major.
**The intensive major** Students who desire a larger measure of independence than the standard major offers may elect the intensive major. 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 490 and 491) 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.

**Combined B.A./M.A. degree program** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See "Simultaneous Award of the Bachelor's and Master's Degrees" under "Special Arrangements" in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in Classics.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** None

**Number of courses** 10 term courses

**Specific courses required** GREK 390 or LATN 390; CLCV 256 or CLCV 254, and 257 or CLCV 255

**Distribution of courses** Two literatures—6 courses in both langs 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 490, 491) in addition to above

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**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 contemporary societies. Each year, the department offers courses that focus on ways that subsequent ages have used and made sense of classical antiquity. Ancient texts are studied primarily in translation, though under the guidance of instructors who have expertise in Greek and Latin.

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 a survey of the literature and culture of ancient Athens (CLCV 256) and a survey of the literature and culture of ancient Rome (CLCV 257); those who have completed CLCV 254 and CLCV 255 may count these courses toward the survey requirements. It is strongly recommended that candidates elect one course each in the general areas of ancient epic, drama, philosophy, Roman civilization, and the classical tradition. Candidates for the major are encouraged to take related courses in other departments.

**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 450, 451). 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.

**Credit/D/Fail courses**  Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**Approval of schedules**  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 256 or CLCV 254, and 257 or CLCV 255

**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 450, 451)

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**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, a survey of the literature and culture of ancient Athens (CLCV 256), a survey of
the literature and culture of ancient Rome (CLCV 257), and one term course in ancient Greek history. The language courses should include GREK 390. Students who have completed CLCV 254 and CLCV 255 may count them toward the survey requirements in the literature and culture of Athens and Rome, respectively. 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 130, 140) 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.

Senior requirement At the end of the senior year the student takes a comprehensive examination in the history of Greek literature.

Credit/D/Fail courses Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

The intensive major Students who desire a larger measure of independence than the standard major offers may elect the intensive major. In addition to fulfilling the requirements of the standard major, students in the intensive major devote two terms in the senior year to writing an essay (CLSS 490 and 491) 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 390, CLCV 256 or CLCV 254, and 257 or CLCV 255

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 Senior essay (CLSS 490, 491) in addition to above

Placement policy Students are encouraged to take courses as advanced as they can handle with profit and pleasure. The department, recognizing the great variety of 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 141 or LATN 141 after a 400-level course, or to be admitted to a 400-level course after completion of GREK 131 or LATN 131. Freshmen are encouraged to take advantage of the initial course selection period before course schedules are due to find the most appropriate course.
Greek

**GREK 110a, Beginning Greek: The Elements of Greek Grammar**  Timothy Robinson and staff
Introduction to ancient Greek. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for GREK 120. No prior knowledge of Greek assumed.  L1  RP  1½ Course cr

**GREK 120b, Beginning Greek: Review of Grammar and Selected Readings**  Timothy Robinson and staff
Continuation of GREK 110. Emphasis on consolidating grammar and on readings from Greek authors. The sequence GREK 110, 120 prepares for 131 or 141. Prerequisite: GREK 110 or equivalent.  L2  RP  1½ Course cr

*GREK 125b, Intensive Beginning Greek*  Timothy Robinson
An introduction to classical Greek for students with no prior knowledge of the language. Readings from Greek authors supplement intensive instruction in grammar and vocabulary. The course is intended to be of use to students with diverse academic backgrounds and interests. Prepares for GREK 131. Not open to students who have taken GREK 110, 120.  L1, L2  RP  2 Course cr

**GREK 131a, Greek Prose: An Introduction**  Timothy Robinson and staff
Close reading of selections from classical Greek prose with review of grammar. Counts as L4 if taken after GREK 141 or equivalent.  L3

**GREK 141b, Homer: An Introduction**  Pauline LeVen
A first approach to reading Homeric poetry in Greek. Selected books of the *Iliad* or the *Odyssey*. Counts as L4 if taken after GREK 131 or equivalent.  L3

**GREK 390a**, Greek Syntax and Stylistics  Victor Bers
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.  L5, HU

*GREK 419a, Helen after Troy*  Pauline LeVen
The representation of Helen of Troy after Homer, in Gorgias’s *Encomium of Helen* and Euripides’ *Helen*. A bridge between 300-level and other 400-level courses.  L5

*GREK 422a*, Sophocles and Troy  Alexander Loney
Close reading and critical study of of Sophocles’ *Ajax* and *Philoctetes* in Greek. Issues of diction, ethics, and intertextuality. Focus on the relevance of Homer and of myths of the Trojan War for fifth-century Athens.  L5

*GREK 430b, Aristophanes*  Victor Bers
Intensive reading and study of Aristophanes’ plays in their historical, social, and intellectual context.  L5, HU

*GREK 434a, Thucydides*  Victor Bers
An intensive reading of selections from Thucydides’ *History*, interpreting the Greek text in relation to its historical and intellectual context.  L5, HU

**GREK 438b / PHIL 216b, Plato’s Republic, Book Eight**  Verity Harte
Reading and discussion of the Greek text of Plato’s *Republic*, Book Eight, focused on Plato’s psychological and political theory. Contrasts between the philosophical ideal and
various nonideal conditions of city and of person. Prerequisites: GREK 131 and 141 or equivalents. L5, HU

*GREK 443bG, Homer’s Iliad  Egbert Bakker
Reading of selected books of the Iliad, with attention to Homeric language and style, the Homeric view of heroes and gods, and the reception of Homer in antiquity. L5, HU

*GREK 454bG, Greek Myth, Fiction, and Science Fiction  Pauline LeVan
Relationships between ancient Greek myths, fiction, and speculative/science fiction, with attention to interpretive approaches and methodologies. Narrative modes of representing reality; distinguishing fiction from myth and science fiction; cultural uses of myth and fiction. Readings include works by Homer, Longus, Lucian, and Philostratus. L5

*GREK 494a or b, Independent Tutorial in Greek Language and Literature  Emily Greenwood
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 courses may be offered toward the major. Offered subject to faculty availability.

Latin

LATN 110a, Beginning Latin: The Elements of Latin Grammar  Timothy Robinson and staff
Introduction to Latin. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for LATN 120. No prior knowledge of Latin assumed. Preregistration, which is required, takes place at the Academic Fair. See the Calendar for the Opening Days or the departmental Web site for details about preregistration. L1 RP 1½ Course cr

LATN 120b, Beginning Latin: Review of Grammar and Selected Readings  Timothy Robinson and staff
Continuation of LATN 110. Emphasis on consolidating grammar and on readings from Latin authors. The sequence LATN 110, 120 prepares for 131 or 141. Prerequisite: LATN 110 or equivalent. L2 RP 1½ Course cr

LATN 131a, Latin Prose: An Introduction  Christina Kraus and staff
Close reading of a major work of classical prose; review of grammar as needed. Counts as L4 if taken after LATN 141 or equivalent. L3

LATN 141b, Latin Poetry: An Introduction  Timothy Robinson and staff
The course is devoted to Vergil. Counts as L4 if taken after LATN 131 or equivalent. L3

LATN 390bG, Latin Syntax and Stylistics  Joseph Solodow
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. L5, HU
LATN 4244G, Latin Lyric  Christina Kraus
Reading and analysis of selections from the canon of Latin lyric poetry. Focus on Horace’s *Odes*, with some attention to his *Epodes* and to works by Catullus and lesser-known Republican poets. Emphasis on literary interpretation.  L5

LATN 436b, Cicero’s Letters  William Metcalf
An introduction to the introduction 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.  HU

*LATN 448bG, Latin Epigraphy  Andrew Johnston
Introduction to the study of Latin prose and verse inscriptions on stone and bronze. Texts from Rome, Italy, and the provinces, ranging from the sixth century B.C.E. to the third century C.E. Emphasis both on the methodology of epigraphy and on close reading of the texts situated in their social, cultural, historical, and monumental contexts.  L5

LATN 450a, Roman Food and Drink  Joseph Solodow
Eating and drinking as occasions for social, political, literary, and cultural exchanges in ancient Rome. Close reading of texts on the production and preparation of food, invitations to meals, and descriptions of meals in works by Petronius and Juvenal. A bridge course between L4 and other L5 courses.  L5

*LATN 494a or b, Independent Tutorial in Latin Language and Literature  
Emily Greenwood
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 courses may be offered toward the major. Offered subject to faculty availability.

Classics

*CLSS 403a / PHIL 400aG, Aristotle’s Physics, Book II  Verity Harte
Reading and discussion of the Greek text of Aristotle’s *Physics*, Book II. Aristotle’s core conception of nature and his physical theory. Prerequisites: GREK 131, 141, and PHIL 125 or equivalents, or with permission of instructor.  L5, HU

*CLSS 430aG, Medical Thought in Greek and Latin Literature  Ann Ellis Hanson
Classical understandings of the human body and medical science as reflected in ancient Greek and Roman epic, history, drama, and other literature. Medical concepts of the body’s functioning in sickness and health, from birth and growth to old age and death, and their influence on literary accounts of human activity. Prerequisite: GREK 131 or 141, or LATN 131 or 141, or with permission of instructor.  HU

*CLSS 444aG / HIST 201Ja, Documents of Roman History  William Metcalf
An introduction to principal documents, preserved primarily on stone or in metal, that bear on Roman history from the fifth century B.C. to the fourth century A.D. Selected documents are either themselves important (e.g., the Twelve Tables) or are paradigmatic for occurrences that are extensive in time and space (e.g., imperial rescripts, city and colonial charters). Documents are in either Latin or Greek, and are accompanied by English translations.  WR, HU
*CLSS 490a and CLSS 491b, Senior Essay for the Intensive Major in Classics
   Emily Greenwood
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 051a / HUMS 099a, Performance and Society in Ancient Greece
   Pauline LeVen
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.
   WR, HU

CLCV 125a / PHIL 125a, Introduction to Ancient Philosophy
   Verity Harte
An introduction to 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 126.  HU

CLCV 160b / ARGC 243b / HSAR 243b, Greek Art and Architecture
   Milette Gaițan
Monuments of Greek art and architecture from the late Geometric period (c. 760 B.C.)
to Alexander the Great (c. 323 B.C.). Emphasis on social and historical contexts.  HU

CLCV 170a / ARGC 170a / HSAR 250a, Roman Art: Empire, Identity, and Society
   Diana Kleiner
Masterpieces of Roman art from the Republic to Constantine studied in their historical
and social contexts. The great Romans and the monuments they commissioned—
portraits, triumphal arches, columns, and historical reliefs. The concept of empire and
imperial identity, politics and portraiture, the making and unmaking of history through
art, and the art of women, children, freedmen, and slaves.  HU

CLCV 175b / ARGC 252b / HSAR 252b, Roman Architecture
   Diana Kleiner
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.  HU

CLCV 206a / HIST 217a / HUMS 446a, The Roman Republic
   Andrew Johnston
The origins, development, and expansion of Rome from the earliest times to the deaths
of Caesar and Cicero. Cultural identity and interaction; slavery, class, and the family;
politics, rhetoric, and propaganda; religion; imperialism; monumentality and memory;
and the perception and writing of history. Application of literary and archaeological
evidence.  HU

CLCV 207b / HIST 218b, The Roman Empire
   Andrew Johnston
The history of the Roman Empire from its establishment by Augustus to the reign
of Justinian. Attention to social, intellectual, and religious changes, as well as to the
framework of historical events within which these changes took place, and to the
processes by which the Roman Empire was replaced by the institutions of the Western Middle Ages and the Byzantine Empire.  

*CLCV 216b / HUMS 214b / LITR 239b / MGRK 216b, Dionysus in Modernity
George Syrimis
Modernity’s fascination with the myth of Dionysus. Questions of agency, identity and community, and psychological integrity and the modern constitution of the self. Manifestations of Dionysus in literature, anthropology, and music; the Apollonian-Dionysiac dichotomy; twentieth-century variations of these themes in psychoanalysis, surrealism, and magical realism.  

WR, HU  Tr

*CLCV 230b / ARCG 424b / HSAR 424b, eClavdia: Women in Ancient Rome
Diana Kleiner
The contributions of Roman women to one of the greatest cities—and one of the greatest empires—in world history. Lost stories of real-life Roman women recovered from public and residential buildings, portraits, paintings, and other works of Roman art and architecture.  

HU  RP

*CLCV 237b / HUMS 326b, Socrates
Joshua Billings
The figure of Socrates from ancient Athens to the present. The question of the historical Socrates and appropriations by Plato and later philosophers. Socratic themes of ignorance, irony, writing, and the state. Readings from works by Aristophanes, Xenophon, Plato, Cicero, Ficino, Hegel, Kierkegaard, Nietzsche, and Derrida.  

*CLCV 256a / HUMS 445a, Ancient Athenian Civilization
Emily Greenwood
Introduction to the city of ancient Athens and its political institutions, culture, society, and history from 510 to 323 B.C. Topics include politics, law, economics, intellectual culture, drama and performance, sex and reproduction, immigration, warfare, and the environment. The creation of political and cultural forms that continue to influence contemporary debates.  

HU

CLCV 257b / HUMS 246b, Cultural Introduction to the Romans
Kirk Freudenburg
An introduction to ancient Roman culture. Focus on the ideals of elite identity and on the lives that were lived on the margins of those ideals, by slaves, prostitutes, freedmen, gladiators, foreigners, and the urban poor. Rome both as a city of grandeur and pageantry and as a place of unthinkable cruelty and injustice.  

*CLCV 268a / HSAR 423a, The Art of Dionysos: Drink, Drama, and Ecstasy
Milette Gaifman
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.  

*CLCV 308b  / HIST 212b, 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.  

HU
*CLCV 312b / HUMS 442b / NELC 315b, Translating the Hero*  Kathryn Slanski
Relationships between masterworks of ancient Near Eastern and Greek literature and their reworkings by Western authors and artists. Traditional notions of heroism, such as the righteous sufferer, the epic hero, and the tragic hero. Adaptation and transformation of ancient heroic themes in modern literature and film. Manipulation of ancient sources in the retelling of stories and themes; the mechanics of transmission and borrowing; questions of archetype.  
HU

*CLCV 406a / HUMS 321a, The Classics and Modern Theory*  Joshua Billings
HU

*CLCV 450a and CLCV 451b, Senior Project for the Major in Classical Civilization*  
Emily Greenwood
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*  Emily Greenwood
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 courses may be offered toward the major. Readings in translation. Offered subject to faculty availability.

**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: Joshua Knobe, 102 C, 432-1699, joshua.knobe@yale.edu; www.yale.edu/cogsci

**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 (Chair) (Psychology), Hal Blumenfeld (School of Medicine), Marvin Chun (Psychology), Michael Della Rocca (Philosophy), Ravi Dhar (School of Management), Julie Dorsey (Computer Science), Carol Fowler (Adjunct) (Psychology), Robert Frank (Linguistics), David Gelernter (Computer Science), Tamar Gendler (Philosophy), Laurence Horn (Linguistics), Marcia Johnson (Psychology), Dan Kahan (Law School), Frank Keil (Psychology, Linguistics), Joshua
Knobe (Philosophy), Gregory McCarthy (Psychology), Drew McDermott (Computer Science), Nathan Novemsky (School of Management, Psychology), Rhea Paul (School of Medicine), Kenneth Pugh (School of Medicine), Ian Quinn (Music), Holly Rushmeier (Computer Science), Brian Scholl (Psychology), Sun-Joo Shin (Philosophy), Zoltán Szabó (Philosophy), Fred Volkmar (School of Medicine), Xiao-Jing Wang (School of Medicine), David Watts (Anthropology), Bruce Wexler (School of Medicine), Karen Wynn (Psychology), Raffaella Zanuttini (Linguistics), Steven Zucker (Computer Science, Biomedical Engineering)

**Associate Professors** Keith Chen (School of Management), Daeyeol Lee (School of Medicine), James Mazer (School of Medicine), Kevin Pelphrey (School of Medicine), Maria Piñango (Linguistics), Laurie Santos (Psychology), Brian Scassellati (Computer Science)

**Assistant Professors** Daylian Cain (School of Management), Yarrow Dunham (Psychology), June Gruber (Psychology), Gaja Jarosz (Linguistics), Hedy Kober (School of Medicine), George Newman (School of Management), Ève Poudrier (Music), David Rand (Psychology), Gregory Samanez-Larkin (Psychology)

**Lecturer** Kathryn Davidson

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, economics, 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 course** An introductory survey course, CGSC 110, is normally taken by the end of the fall term of the sophomore year and prior to admission to the major.

**The major for the Classes of 2014 and 2015** Students in the Class of 2014 must fulfill the requirements of the Cognitive Science major that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepddfiles/YCPS). Students in the Class of 2015 may also fulfill the requirements of the major that were in place when they entered it. Alternatively, students in the Class of 2015 may fulfill the requirements for the major as described below for the Class of 2016 and subsequent classes.

**Requirements of the major for the Class of 2016 and subsequent classes** Fourteen term courses, for a total of thirteen course credits, are required for the major, including the introductory course and the senior requirement. Each major program must include the elements described below. The particular selection of courses must be approved by the director of undergraduate studies in order to assure overall coherence.
A breadth requirement introduces students to the subfields of cognitive science. Each student is required to take a course from four of the following six areas:

1. Computer science: CPSC 201
2. Economics and decision making: ECON 159, PSYC 553
4. Neuroscience: CGSC 201, MCDB 320, PSYC 160, 270
5. Philosophy: PHIL 126, 181, 269, 270, 271
6. Psychology: PSYC 110, 140, 304

Students also fulfill a depth requirement by completing six courses that focus on a specific topic or area in cognitive science. The depth courses must be chosen from at least two disciplines, and are typically drawn from the six cognitive science subfields. It may be possible to draw depth courses from other fields when necessary to explore the student’s focal topic, in consultation with the director of undergraduate studies. All six depth courses must be at the intermediate or advanced level; for most disciplines, courses numbered 300 or above fulfill the requirement. With permission of the director of undergraduate studies, up to one directed reading or research course may count toward the depth requirement.

Because formal techniques are fundamental to cognitive science, one skills course is required, preferably prior to the senior year. Courses that fulfill the skills requirement include CPSC 112, 202, LING 224, PSYC 200, and 270. Other courses may fulfill this requirement with permission of the director of undergraduate studies. No course may be used to fulfill more than one requirement for the major.

In the junior year, students are required to take CGSC 395, a half-credit colloquium in which majors discuss current issues and research in cognitive science and select a senior essay topic.

**Senior requirement** In the senior year, students take CGSC 491, a half-credit capstone course in which the senior essay is written. Students in the course meet regularly with one another and with the faculty to discuss current work in cognitive science and their own developing research projects.

**Credit/D/Fail 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.

**Application to the major** Students can apply to enter the major at any point after the freshman year. Applications must be made in writing to the director of undergraduate studies. Applications must include (a) an official or unofficial transcript of work at Yale, (b) a brief statement of purpose, which indicates academic interests and expected focus within the areas of the Cognitive Science major, and (c) a list of the six upper-level courses that the student plans to take as part of the research focus. Application forms and answers to frequently asked questions are available on the program’s Web site (http://www.yale.edu/cogsci/info_undergrad.html).
REQUIREMENTS OF THE MAJOR

Prerequisite  CGSC 110

Number of courses  14 term courses, for a total of 13 course credits (incl prereq and senior req)

Specific course required  CGSC 395

Distribution of courses  1 course each in 4 of 6 subfields, as specified; 6 courses in a specific topic or area, as specified; 1 skills course, as specified

Senior requirement  Senior essay (CGSC 491)

Introductory Courses

CGSC 110a / PSYC 130a, Introduction to Cognitive Science  Brian Scholl
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.  so

*CGSC 201a / PSYC 120a, Brain and Thought: An Introduction to the Human Brain  Amy Arnsten
An introduction to human brain anatomy, physiology, and function, designed for neuroscience-related majors but accessible to nonscience majors. Focus on basic concepts of neural function and on brain mechanisms underlying perception, memory, and higher cognitive abilities, and how these are altered in neurological and neuropsychiatric disorders.  sc

CGSC 216b / LING 116b, Cognitive Science of Language  Robert Frank
The study of language from the perspective of cognitive science. Exploration of mental structures that underlie the human ability to learn and process language, drawing on studies of normal and atypical language development and processing, brain imaging, neuropsychology, and computational modeling. Innate linguistic structure vs. determination by experience and culture; the relation between linguistic and nonlinguistic cognition in the domains of decision making, social cognition, and musical cognition; the degree to which language shapes perceptions of color, number, space, and gender.  so

CGSC 281b / PHIL 181b / PSYC 181b, Philosophy and the Science of Human Nature  Tamar Gendler
Central texts from the Western philosophical tradition paired with recent findings in cognitive science and related fields. Plato’s discussion of parts of the soul and contemporary work on dual processing; Aristotle’s conception of character and modern research in social psychology; Epictetus’s writings on human flourishing and contemporary work on happiness; writings on morality by Kant and Mill and recent research on moral intuitions.  hu

Advanced Courses

CGSC 304a / PSYC 304a, The Mental Lives of Babies and Animals  Karen Wynn
Interdisciplinary exploration of the cognitive, social, and emotional capacities of creatures lacking language and culture. The extent to which our complex psychology is unique to mature humans; the relative richness of a mental life without language or
culture. Some attention to particular human populations such as children with autism and adults with language disorders.  

*CGSC 343a / MUSI 343a, Music Cognition  Ian Quinn
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 110 or familiarity with music notation.  

*CGSC 425b / PSYC 425bG, Social Perception  Brian Scholl
Connections between visual perception, among the earliest and most basic of human cognitive processes, and social cognition, among the most advanced forms of higher-level cognition. The perception of animacy, agency, and goal-directedness; biological motion; face perception (including the perception of facial attractiveness); gaze processing and social attention; "thin-slicing" and "perceptual stereotypes"; and social and cultural influences on perception.  

*CGSC 432a / PHIL 432aG, Experimental Philosophy  Joshua Knobe
Overview of research in and critical responses to experimental philosophy, a field in which scientific studies are conducted to examine people's intuitions about philosophical problems. Applications of this method to philosophical questions about morality, language, knowledge, and consciousness.  

Courses for Majors

*CGSC 395a, Junior Colloquium  Karen Davidson
Survey of contemporary issues and current research in cognitive science. By the end of the term, students select a research topic for the senior essay. Enrollment limited to Cognitive Science majors.  

*CGSC 471a and CGSC 472b, Directed Research in Cognitive Science  Brian Scholl and Joshua Knobe
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. Only one term may be offered toward the major, with permission of the director of undergraduate studies; two terms may be offered toward the bachelor's degree.  

*CGSC 473a and CGSC 474b, Directed Reading in Cognitive Science  Brian Scholl and Joshua Knobe
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. Only one term may be offered toward the major, with permission of the
director of undergraduate studies; two terms may be offered toward the bachelor’s degree.

*CGSC 490a, Senior Colloquium  Karen Davidson
A research colloquium leading to the selection of a topic for the senior essay. Students attend regular colloquium presentations by outside scholars. Enrollment limited to Cognitive Science majors in the Classes of 2014 and 2015. ½ Course cr

*CGSC 491b, Senior Project  Karen Davidson
A research colloquium leading to the completion of the senior essay. Students attend regular colloquium presentations. Enrollment limited to Cognitive Science majors. ½ Course cr

Related Courses That May Count toward the Major

*CHLD 35oa or b / PSYC 35oa or b, Autism and Related Disorders  James McPartland
Weekly seminar focusing on autism and related disorders of socialization. A series of lectures on topics in etiology, diagnosis and assessment, treatment and advocacy, and social neuroscience methods; topics cover infancy through adulthood. Supervised experience in the form of placement in a school, residence, or treatment setting for individuals with autism spectrum disorders. Details about admission to the course are explained at the first course meeting. Prerequisite: an introductory psychology course.  so

CPSC 112a or b, Introduction to Programming  Daniel Abadi and staff
Development on the computer of programming skills, problem-solving methods, and selected applications. No previous experience with computers necessary.  QR

CPSC 201a or b, Introduction to Computer Science  Dana Angluin [F] and Holly Rushmeier [Sp]
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 112 or equivalent.  QR
Math: Stat/Applied Math

CPSC 202a, Mathematical Tools for Computer Science  James Aspnes
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.  QR

CPSC 470aG, Artificial Intelligence  Brian Scassellati
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 201 and 202.  QR

*CPSC 471bG, Advanced Topics in Artificial Intelligence  Drew McDermott
An in-depth study of one area of artificial intelligence. Topics vary from year to year. The topic for 2013–2014 is artificial intelligence and philosophy of mind. After CPSC 470 or with permission of instructor.  WR
ECON 159b, Game Theory  Barry Nalebuff
An introduction to game theory and strategic thinking. Ideas such as dominance, backward induction, Nash equilibrium, evolutionary stability, commitment, credibility, asymmetric information, adverse selection, and signaling are applied to games played in class and to examples drawn from economics, politics, the movies, and elsewhere. After introductory microeconomics. No prior knowledge of game theory assumed. QR, SO

*LING 018b, Acquiring a First Language  Maria Piñango
Current debates and areas of consensus in the field of language acquisition. The logical problem of language acquisition; phonological, morphological, and syntactic milestones; the bootstrapping problem; acquisition under special circumstances; acquiring a second language; language loss. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. SO

LING 110aG, Language: Introduction to Linguistics  Ryan Bennett
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. SO

LING 117aG / PSYC 137a, Language and Mind  Maria Piñango
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. SO

LING 130aG / PSYC 322a, Evolution of Language  Stephen Anderson
The origin and evolution of human language from an interdisciplinary perspective. Topics include the design features of language, the structure of evolutionary theory, elementary molecular genetics and genetic evidence for language evolution, cognitive continuity and discontinuity with other species, hominid evolutionary history, domain specificity and generality of the language faculty, evidence for evolutionary shaping of physical and cognitive structures.

*LING 169bG / PHIL 436bG, Meaning  Laurence Horn and Benjamin George
Analysis of selected classic readings in the study of meaning. Problems of sense and reference, presupposition, speaker intention, semantics of descriptions, names, and natural kinds. Historical tensions concerning the relationship between logical formalism and ordinary language; debates about the role of context in theories of meaning. Readings from works by Frege, Russell, Strawson, Donnellan, Austin, Grice, Kripke, and Putnam. SO

LING 220bG / PSYC 318b, General Phonetics  Jelena Krivokapic
Investigation of possible ways to describe the speech sounds of human languages. Acoustics and physiology of speech; computer synthesis of speech; practical exercises in producing and transcribing sounds. (Formerly LING 120) SO

*LING 224aG, Formal Foundations of Linguistic Theories  Robert Frank
Study of formal systems that play an important role in the scientific study of language. Exploration of a range of mathematical structures and techniques; demonstrations of
their application in theories of grammatical competence and performance including set theory, graphs and discrete structures, algebras, formal language, and automata theory. Evaluation of strengths and weaknesses of existing formal theories of linguistic knowledge; formulation of students’ own theories. QR

LING 227bG / PSYC 327b, Language and Computation  Gaja Jarosz
Design and analysis of computational models of language. Topics include finite state tools, computational morphology and phonology, grammar and parsing, lexical semantics, and the use of linguistic models in applied problems. Prerequisite: Prior programming experience or permission of instructor. (Formerly LING 141) QR, SO

LING 231bG / PSYC 331bG, Neurolinguistics  Maria Piñango
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. SO

LING 232aG, Introduction to Phonological Analysis  Ryan Bennett
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 220, or a grade of B or above in LING 110. (Formerly LING 132) SO

*LING 235bG, Phonological Theory  Ryan Bennett
Topics in the architecture of a theory of sound structure. Motivations for replacing a system of ordered rules with a system of ranked constraints. Optimality theory: universals, violability, constraint types and their interactions. Interaction of phonology and morphology, as well as the relationship of phonological theory to language acquisition and learnability. Opacity, lexical phonology, and serial versions of optimality theory. Prerequisite: LING 232 or permission of instructor. (Formerly LING 135) SO

LING 253aG, Syntax I  Raffaella Zanutti
An introduction to the syntax of natural language. Generative syntactic theory and key theoretical concepts. Syntactic description and argumentation. Topics include the structure of clauses and noun phrases, movement operations, and the notion of parameter. (Formerly LING 153) SO

LING 254bG, Syntax II  Robert Frank
Recent developments in the principles and parameters approach to syntactic theory. In-depth exploration of theoretical and empirical issues in long-distance dependencies (island effects, dependency types, movement vs. binding), the character of syntactic structure (constituency, thematic mapping, functional categories), and the architecture of grammatical derivations (logical form, operations for structure building, anaphora). Prerequisite: LING 253. SO

LING 263aG, Semantics  Ashwini Deo
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. QR, so

*LING 280bG, Morphology  Stephen Anderson
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 232 and 253, or permission of instructor. so

*LING 361aG / PSYC 360a, Topics in Syntax: The Mental Lexicon  María Piñango
Definitions of lexical knowledge; views of the lexicon as a repository of information vs. a "generative" system; the case of idioms; the lexicon and the grammar-structural interface; acquisition of the lexicon. (Formerly LING 260) so

MCDB 320aG, Neurobiology  Haig Keshishian and Paul Forscher
The excitability of the nerve cell membrane as a starting point for the study of molecular, cellular, and systems-level mechanisms underlying the generation and control of behavior. After a year of college-level chemistry; a course in physics is strongly recommended. sc

*PHIL 126b, Introduction to Modern Philosophy from Descartes to Kant  
Michael Della Rocca
An introduction to major figures in the history of modern philosophy, with critical reading of works by Descartes, Malabranche, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Intended to be taken in conjunction with PHIL 125 although PHIL 125 is not a prerequisite. HU

PHIL 267aG, Mathematical Logic  Sun-Joo Shin
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Introduction to the basic concepts of set theory. Prerequisite: PHIL 115 or permission of instructor. QR

Math: Logic/Foundations

PHIL 269b, The Philosophy of Science  Daniel Greco
Central questions about the nature of scientific theory and practice. Factors that make a discipline a science; how and why scientific theories change over time; interpreting probabilistic claims in science; whether simpler theories are more likely to be true; the laws of nature; whether physics has a special status compared to other sciences; the legitimacy of adaptationist thinking in evolutionary biology. HU

PHIL 270bG, Epistemology  Keith DeRose
Introduction to current topics in the theory of knowledge. The analysis of knowledge, justified belief, rationality, certainty, and evidence. HU

PHIL 271a / LING 271a, Philosophy of Language  Zoltán Szabó
An introduction to contemporary philosophy of language, organized around four broad topics: meaning, reference, context, and communication. Introduction to the use of logical notation. HU

*PHIL 429aG / LING 391a, Problems in Semantics: Quantification  Benjamin George
Topics in the semantics of quantification, with a focus on the expressive power of quantification in natural language. Analysis of quantifiers such as some, every, no, many, fewer, and most; generalizations about and possible universals of quantification
in natural language; implications for mathematical and philosophical properties of
logics that are suitable for modeling natural language semantics; plural quantification.

HU

*PSYC 110a or b, Introduction to Psychology  Marvin Chun [F] and Paul Bloom [Sp]
A survey of major psychological approaches to the biological, cognitive, and social bases
of behavior.  SO

*PSYC 131a, Human Emotion  June Gruber
Introduction to major discoveries in human emotion. Evolutionary theories of anger,
love, and disgust; emotion and morality; cultural and gender differences; emotion
and the brain; relation between emotion and thinking; development of emotion; and
abnormal emotions in mental illness.  SO  RP
Psychology: Social Science

PSYC 140a, Developmental Psychology  Frank Keil and staff
An introduction to research and theory on the development of perception, action,
emotion, personality, language, and cognition from a cognitive science perspective.
Focus on birth to adolescence in humans and other species. Prerequisite: PSYC 110.  SO
Psychology: Core
Psychology: Social Science

PSYC 150b, Social Psychology  John Bargh
Study of social cognition, attitudes and persuasion, group processes, intergroup
processes, prosocial behavior, aggression, and conformity. Theories, methodology, and
applications of social psychology. Prerequisite: PSYC 110.  SO
Psychology: Core
Psychology: Social Science

PSYC 160b, The Human Brain  Gregory McCarthy
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,
neuropysiology, and neuropharmacology are also introduced. Prerequisite: PSYC 110.
SC
Psychology: Core
Psychology: Natural Science

PSYC 200b, Statistics  Gregory Samanek-Larkin
Measures of central tendency, variability, association, and the application of probability
cancepts in determining the significance of research findings.  QR

*PSYC 270b, Research Methods in Behavioral Neuroscience  Nelson Donegan
Laboratory course in which students design and conduct research to study brain
function and behavior. Emphasis on hands-on participation in behavioral and
neuroscience techniques. Prerequisites: PSYC 160 or <170>, and a course in statistics,
or with permission of instructor.  SC
Psychology: Natural Science
Psychology: Research Methods
*PSYC 479b, Thinking  Woo-kyoung Ahn
A survey of psychological studies on thinking and reasoning, with discussion of ways to improve thinking skills. Topics include judgments and decision making, counterfactual reasoning, causal learning, inductive inferences, analogical reasoning, problem solving, critical thinking, and creativity.  SO

College Seminars

Residential college seminars for the fall and spring terms are described on the college seminar program’s Web site (http://yalecollege.yale.edu/content/residential-college-seminar-program). The online listings contain course titles, descriptions, and prerequisites. Course syllabi are available on Classes*v2 (http://classesv2.yale.edu).

Students apply to college seminars before classes begin through an online tool on the program’s Web site (http://yalecollege.yale.edu/content/application-information) or through a link in the online course description. Students may apply to a maximum of three college seminars in a given term; choices are not ranked by order of preference. Students may enroll in no more than two college seminars per term and may enroll in no more than four total during their time at Yale. Auditing is not permitted in college seminars.

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, Vladimir Rokhlin, Holly Rushmeier (Chair), Brian Scassellati, Martin Schultz (Emeritus), Zhong Shao, Avi Silberschatz, Daniel Spielman, Y. Richard Yang, Steven Zucker

Associate Professor  Daniel Abadi

Assistant Professor  Bryan Ford

Lecturer  Brad Rosen

The Department of Computer Science offers both B.S. and B.A. degree programs, as well as combined majors with the Departments of Electrical Engineering (see Electrical Engineering and Computer Science), Mathematics (see Computer Science and Mathematics), and Psychology (see Computer Science and Psychology). Each major program not only provides a solid technical education but also allows students either to take a broad range of courses in other disciplines or to complete the requirements of a second major.

The Computer Science and combined major programs share a common core of five computer science courses. The first is CPSC 201, Introduction to Computer Science, a survey that demonstrates the breadth and depth of the field to students who have taken the equivalent of an introductory programming course. The remaining core courses cover discrete mathematics; data structures; systems programming and computer
architecture; and algorithm analysis and design. Together these courses include the material that every major should know.

The core courses are supplemented by electives (and, for the joint majors, core courses in the other discipline) that offer great flexibility in tailoring a program to each student's interests. The capstone is the senior project, through which students experience the challenges and rewards of original research under the guidance of a faculty mentor.

Prospective majors are encouraged to discuss their programs with the director of undergraduate studies as early as possible.

**Introductory courses** The department offers a broad range of introductory courses to meet the needs of students with varying backgrounds and interests. With the exception of CPSC 201, none assumes previous knowledge of computers.

1. 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. CPSC 101b introduces nonmajors to some of the central ideas in computer science, including algorithms, elementary programming, hardware, complexity, and representation of information.
3. CPSC 112a or b teaches students majoring in any subject area how to program a computer and solve problems using the language Java. Students with previous programming experience should consider taking CPSC 201 instead.
4. 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 or the humanities and arts distributional requirement.
5. 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. CPSC 183a explores the myriad ways that law and technology intersect, with a special focus on the role of cyberspace. This course satisfies the social science distributional requirement.
7. CPSC 201a or b surveys the field of computer science, including systems (computers and their languages) and theory (algorithms, complexity, and computability). Students with sufficient programming experience may elect CPSC 201 without taking CPSC 112. (These courses meet at the same time so that students are easily able to change levels if necessary.)
8. CPSC 202a presents the formal methods of reasoning and the concepts of discrete mathematics and linear algebra used in computer science and related disciplines.

**Requirements of the major** The B.S. and the B.A. degree programs have the same required core courses: CPSC 201; CPSC 202a or MATH 244a; CPSC 223b, 323a, 365b, and 490. The B.S. degree program requires six additional intermediate or advanced courses in Computer Science, for a total of twelve; the B.A. degree program, four, for a total of ten. CPSC 480 and 490 may not be counted toward these electives. All courses in the major must be taken for a letter grade.
Students majoring in Computer Science are advised to complete CPSC 201 and 223 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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<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<tr>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Two electives</td>
<td>CPSC 490a</td>
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<tr>
<td>CPSC 223b</td>
<td>CPSC 323a</td>
<td>Two electives</td>
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and

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<tr>
<th>Sophomore</th>
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<tr>
<td>CPSC 201a</td>
<td>CPSC 323a</td>
<td>Two electives</td>
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<tr>
<td>CPSC 202a</td>
<td>One elective</td>
<td>Two electives</td>
</tr>
<tr>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Two electives</td>
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For typical B.A. programs, two of the electives would be omitted.

**Electives** The Computer Science department encourages interdisciplinary study in which computer science plays a major role. Advanced courses in other departments that involve concepts from computer science and are relevant to an individual program may, with permission of the director of undergraduate studies, be counted toward the requirements.

Students considering graduate study in computer science are advised to take CPSC 421 and 422, as well as courses covering the breadth of computer science, including programming languages and systems, artificial intelligence, scientific computing, and theoretical computer science.

Students interested in using computers to solve scientific and engineering problems are advised to take CPSC 440 as well as computational courses offered in Applied Mathematics and in Engineering and Applied Science.

The core mathematical background necessary to complete the Computer Science major is provided in CPSC 202. 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 222 or 225 and MATH 120.

**Senior requirement** In the senior year students must take CPSC 490, 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 490 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. Eligibility requirements are described under "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations. Specific requirements for the combined degree in Computer Science 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 690, 691, or 692.
3. At the end of their fifth term of enrollment students must have achieved at least three-fourths A or A– grades in all of their course credits directly relating to the major.

**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 201; CPSC 202 or MATH 244;  
CPSC 223, 323, 365

**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 490)

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**Introductory Courses**

[ CPSC 079, Digital Photorealism ]

**CPSC 101b, Great Ideas in Computer Science** Dana Angluin  
An introduction for nonmajors to some of the most important ideas in computer science: what the computer is; how it works; what it can do and what it cannot do, now and in the future. Topics include algorithms, elementary programming, hardware, language interpretation, software engineering, complexity, models of computation, and artificial intelligence. No previous programming experience required.  
QR

**CPSC 112a or b, Introduction to Programming** Daniel Abadi and staff  
Development on the computer of programming skills, problem-solving methods, and selected applications. No previous experience with computers necessary.  
QR

**CPSC 150a / HUMS 407a, Computer Science and the Modern Intellectual Agenda**  
David Gelernter  
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.  
WR, HU
*CPSC 151b / HUMS 408b, The Graphical User Interface  David Gelernter
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.  WR

CPSC 183a, Law, Technology, and Culture  Brad Rosen
An exploration of the myriad ways in which law and technology intersect, with a special focus on the role of cyberspace. Topics include digital copyright, free speech, privacy and anonymity, information security, innovation, online communities, the impact of technology on society, and emerging trends. No previous experience with computers or law necessary.  SO

*CPSC 185b, Control, Privacy, and Technology  Brad Rosen
The evolution of various legal doctrines with and around technological development. Topics include criminal law, privacy, search and seizure, digital rights, and the implications of technologically permitted methods of control on the law. Special attention to case law and policy. After CPSC 183.  WR, SO

CPSC 201a or b, Introduction to Computer Science  Dana Angluin [F]
and Holly Rushmeier [Sp]
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 112 or equivalent.  QR
Math: Stat/Applied Math

CPSC 202a, Mathematical Tools for Computer Science  James Aspnes
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.  QR

CPSC 223b, Data Structures and Programming Techniques  Stanley Eisenstat
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 201 or equivalent.  QR  RP

*CPSC 290a or b, Directed Research  Stanley Eisenstat
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
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 115 or equivalent.  QR
Math: Stat/Applied Math
Intermediate Courses

**CPSC 323a, Introduction to Systems Programming and Computer Organization**  
Stanley Eisenstat  
Machine architecture and computer organization, systems programming in a high-level language, issues in operating systems, software engineering, prototyping in scripting languages. After CPSC 223.  
QR  
RP

**CPSC 365b, Design and Analysis of Algorithms**  
Daniel Spielman  
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 202 and 223.  
QR  
Math: Stat/Applied Math

Advanced Courses

*CPSC 421b, Compilers and Interpreters*  
Zhong Shao  
Compiler organization and implementation: lexical analysis, formal syntax specification, parsing techniques, execution environment, storage management, code generation and optimization, procedure linkage and address binding. The effect of language-design decisions on compiler construction. After CPSC 323.  
QR

**CPSC 422b, Operating Systems**  
Bryan Ford  
The design and implementation of operating systems. Topics include synchronization, deadlock, process management, storage management, file systems, security, protection, and networking. After CPSC 323.  
QR  
[ CPSC 424, Parallel Programming Techniques ]

**CPSC 426a, Building Decentralized Systems**  
Bryan Ford  
Challenges and techniques for building decentralized computing systems, in which many networked computers need to cooperate reliably despite failures and without assuming centralized management. Topics include decentralized storage systems, mobile and remote execution, hosting untrusted code, fault tolerance, naming, capabilities, information flow control, distributed shared memory, distributed hash tables, content distribution, and practical uses of cryptography. After CPSC 323.  
QR  
[ CPSC 427, Object-Oriented Programming ]

**CPSC 430a, Formal Semantics**  
Zhong Shao  
Introduction to formal approaches to programming language design and implementation. Topics include 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 202 and 323.  
QR  
[ CPSC 431, Computer Music: Algorithmic and Heuristic Composition ]

**CPSC 432b, Computer Music: Sound Representation and Synthesis**  
Paul Hudak  
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. Ability to read music is assumed. After CPSC 202 and 223. QR

**CPSC 433a**, Computer Networks Y. Richard Yang
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 323. QR

[ CPSC 434, Mobile Computing and Wireless Networking ]

**CPSC 437b**, Introduction to Databases Avi Silberschatz

[ CPSC 438, Database System Implementation and Architectures ]

**CPSC 440b**, Numerical Computation Vladimir Rokhlin
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 112 or an equivalent introductory programming course; MATH 120; and MATH 222 or 225 or CPSC 202. QR
Math: Stat/Applied Math

**CPSC 445a**, Introduction to Data Mining Vladimir Rokhlin
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 202, 223, and MATH 222, or equivalents. QR

* **CPSC 457a**, Sensitive Information in a Wired World Joan Feigenbaum
Issues of ownership, control, privacy, and accuracy of the huge amount of sensitive information about people and organizations that is collected, stored, and used by today’s ubiquitous information systems. Readings consist of research papers that explore both the power and the limitations of existing privacy-enhancing technologies such as encryption and "trusted platforms." After or concurrently with CPSC 365 and 467. QR

* **CPSC 462a** / AMTH 462a, Graphs and Networks Daniel Spielman
A mathematical examination of graphs and their applications in the sciences. Families of graphs include social networks, small-world graphs, Internet graphs, planar graphs, well-shaped meshes, power-law graphs, and classic random graphs. Phenomena include connectivity, clustering, communication, ranking, and iterative processes. Prerequisites: linear algebra and discrete mathematics; a course in probability is recommended. QR
CPSC 465bG, Theory of Distributed Systems  James Aspnes
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 323 and
365.  QR

CPSC 467aG, Cryptography and Computer Security  Michael Fischer
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 202 and 223.  QR

[ CPSC 468, Computational Complexity ]

[ CPSC 469, Randomized Algorithms ]

CPSC 470aG, Artificial Intelligence  Brian Scassellati
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 201 and 202.  QR

*CPSC 471bG, Advanced Topics in Artificial Intelligence  Drew McDermott
An in-depth study of one area of artificial intelligence. Topics vary from year to
year. The topic for 2013–2014 is artificial intelligence and philosophy of mind. After
CPSC 470 or with permission of instructor.  WR

CPSC 473bG, Intelligent Robotics  Brian Scassellati
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 202; after or concurrently with CPSC 223.  QR

CPSC 475aG / BENG 475aG, Computational Vision and Biological Perception
Steven Zucker
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 CPSC 112 and MATH 120, or with permission of instructor.
QR, SC  RP

[ CPSC 478, Computer Graphics ]

CPSC 479bG, Advanced Topics in Computer Graphics  Julie Dorsey
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 202 and 223.  QR
*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  Stanley Eisenstat
Individual research. Requires a faculty supervisor and the permission of the director of
undergraduate studies. The student must submit a written report about the results of
the project. May be taken more than once for credit.

Computer Science and Mathematics

Directors of undergraduate studies: Stanley Eisenstat (Computer Science), 208 AKW,
432-1246, stanley.eisenstat@yale.edu; Andrew Casson (Mathematics), 216 LOM,
432-7056, andrew.casson@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 201, 223, 323, and 365; one from CPSC 440,
462, 465, 468, or 469; and one additional advanced term course other than CPSC 480
or 490. The remaining eight courses must be in mathematics: MATH 120, either 222
or 225, 244, and five additional term courses numbered above MATH 200 other than
MATH 470. MATH 230, 231 may replace (but do not count in addition to) MATH 120
and 222 or 225.

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 201, 223, 323, 365; one from CPSC 440, 462, 465, 468,
or 469; MATH 120, 222 or 225, 244

Distribution of courses  5 addtl courses in math numbered above 200 (may not be
MATH 470); 1 addtl advanced course in comp sci (may not be CPSC 480 or 490)

Substitution permitted  MATH 230, 231 for MATH 120 and 222 or 225

Senior requirement  Senior project or senior essay on topic acceptable to Comp Sci and
Math depts; oral report to Math dept on mathematical aspects of project
Computer Science and Psychology

Directors of undergraduate studies: Stanley Eisenstat (Computer Science), 208 AKW, 432-1246, stanley.eisenstat@yale.edu; Laurie Santos (Psychology), 213 SSS, 432-4524, 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, and biological perception.

The prerequisite for the major is PSYC 110, from which students who have scored 5 on the Advanced Placement test in Psychology are exempt. Beyond the prerequisite, the major requires fourteen term courses as well as a senior project.

Eight of the fourteen courses must be in computer science: CPSC 201, 202, 223, 323, 365, and three advanced computer science courses in artificial intelligence (e.g., CPSC 470, 471, 473, or 475). MATH 244 may substitute for CPSC 202. CPSC 480 and 490 may not be counted as one of these courses.

The remaining six courses must be in psychology, including PSYC 200, at least one from PSYC 210–299, at least two Psychology courses from the social science point of view, and at least one course in cognitive psychology or cognitive science listed in Psychology. PSYC 490, 491, 492, and 493 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. An additional course in psychology and an examination arranged with the instructor of PSYC 200 may substitute for PSYC 200.

**Senior requirement** Students must take CPSC 490 or PSYC 492 or 493, and the project must be approved by the director of undergraduate studies in each department.

**Approval of program** 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** PSYC 110

**Number of courses** 14 term courses beyond prereq (not incl senior project)

**Specific courses required** CPSC 201, 202, 223, 323, 365; PSYC 200

**Distribution of courses** 8 courses in Comp Sci, with 3 advanced AI courses; 6 courses in Psych, with at least 1 from PSYC 210–299, at least 2 from social science point of view, and at least 1 in cognitive psych or cognitive science listed in Psych

**Substitution permitted** For CPSC 202, MATH 244; for 1 course in AI, 1 addtl course in cognitive psych or cognitive science; for PSYC 200, 1 addtl course in Psych and exam arranged with instructor

**Senior requirement** CPSC 490 or PSYC 492 or 493 with project approved by DUS in each dept
Computing and the Arts

Director of undergraduate studies: Julie Dorsey (Computer Science), 507 AKW, 432-4249, julie.dorsey@yale.edu

Computing and the Arts is an interdepartmental major designed for students who wish to integrate work in computing with work in one of the arts disciplines: Art, History of Art, Music, or Theater Studies.

For students with a computing perspective, issues in these disciplines present interesting and substantive problems: how musicians use computers to compose; the limitations of current software tools used by artists; the types of analyses done by art historians; challenges in designing and using virtual sets in the theater; ways that virtual worlds might help to envision new forms of artistic expression; lessons that can be learned from trying to create a robotic conductor or performer.

For students with an artistic perspective, computing methods offer a systematic approach to achieving their vision. A foundation in computer science allows artists to understand existing computing tools more comprehensively and to use them more effectively. Furthermore, it gives them insight into what fundamentally can and cannot be done with computers, so they can anticipate the future development of new tools for computing in their field.

Prerequisites The prerequisite for all students in the major is CPSC 112, which should be taken during the freshman year. Additional prerequisites for the Art track are ART 111 and 114. There are no additional prerequisites for the History of Art track. An additional prerequisite for the Music track is MUSI 210, as determined by the music theory placement test. (Students who do not place into or out of MUSI 210 may need to take a lower-level course first.) Additional prerequisites for the Theater Studies track are THST 110 and 111. 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 the two-term senior project. Six of the courses must be in Computer Science, including CPSC 201, 202, and 223. Students are advised to complete CPSC 202 and 223 by the end of the sophomore year. MATH 244 may be substituted for CPSC 202.

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) two 100-level courses beyond ART 111 and 114, such as ART 132, 138, or 145; (2) two courses in Art at the 200 or 300 level; (3) ART 395; (4) one course in Art at the 400 level; (5) two courses selected from CPSC 475, 478, and 479; (6) one additional intermediate or advanced Computer Science course (excluding CPSC 490).

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 112, 142, or 143; (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 401; (5) one 400-level seminar in History of Art; (6) two courses selected from CPSC 437, 475, 478, or 479, one of which must be CPSC 478 or 479; (7) one additional intermediate or advanced Computer Science course (excluding CPSC 490).

The Music track requires the following courses in addition to the Computer Science courses listed above: (1) MUSI 325; (2) five term courses chosen from MUSI 312, 313, 343, 412, 413, 471, and 472; (3) CPSC 431; (4) CPSC 432; (5) one additional intermediate or advanced Computer Science course (excluding CPSC 490).

The Theater Studies track requires the following courses in addition to the Computer Science courses listed above: (1) THST 210; (2) three courses in dramatic literature or theater history; (3) two upper-level Theater Studies production seminars in design, directing, or playwriting; (4) CPSC 431 or 432; (5) CPSC 478 or 479; (6) one additional intermediate or advanced Computer Science course (excluding CPSC 490).

**Senior requirement** The senior project requires two terms: one term of CPAR 491, and one term of ART 495, HSAR 499, MUSI 490 or 491, or THST 491, 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).

**Approval of program** 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 112; Art track—ART 111, 114; Music track—MUSI 210; Theater Studies track—THST 110, 111

**Number of courses** 12 term courses beyond prereqs (not incl senior project)

**Specific courses required** All tracks—CPSC 201, 202, 223; Art track—ART 395, 2 from CPSC 475, 478, 479; History of Art track—2 from CPSC 437, 475, 478, 479, including 1 of CPSC 478, 479; 1 from HSAR 112, 142, 143; HSAR 401; Music track—CPSC 431, 432; MUSI 325; Theater Studies track—CPSC 431 or 432; CPSC 478 or 479; THST 210

**Distribution of courses** All tracks—6 courses in Comp Sci, incl 1 addtl intermediate or advanced course beyond specific reqs (excluding CPSC 490); Art track—2 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 courses from MUSI 312, 313, 343, 412, 413, 471, 472; Theater Studies track—3 courses in dramatic lit or theater history; 2 production sems, as specified

**Substitution permitted** MATH 244 for CPSC 202

**Senior requirement** All tracks—Two-term senior project approved by DUS; Art track—Senior project completed in CPAR 491 and ART 495; History of Art track—Senior project completed in CPAR 491 and HSAR 499; Music track—Senior project completed in CPAR 491 and MUSI 490 or 491; Theater Studies track—Senior project completed in CPAR 491 and THST 491
Courses

*CPAR 291a or b, Special Projects  Julie Dorsey
Individual research project in computing and the arts. Requires a faculty supervisor and permission of the director of undergraduate studies. May be taken more than once for credit.

*CPAR 491a or b, Senior Project in Computing and the Arts  Julie Dorsey
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.

Directed Studies

Director of undergraduate studies: Kathryn Slanski, Rm. 321, 53 Wall St., 432-6630, kathryn.slanski@yale.edu; chair of Humanities: R. Howard Bloch, Rm. 212, 53 Wall St., 432-1313, howard.bloch@yale.edu; directedstudies.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. The Literature, Philosophy, and History and Politics tracks of Directed Studies together comprise one coherent program of study, and students must enroll in all three tracks simultaneously. Successful completion of the fall-term Directed Studies courses is a prerequisite to enrolling in the spring-term courses.

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 the use of the humanities, the Christian reception of Aristotle, and ancient art and property rights. 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.

Courses

*DRST 001a and DRST 002b, Directed Studies: Literature  Joshua Billings and staff
An examination of major literary works with an aim of understanding how a tradition develops. In the fall term, works and authors include Homer, Aeschylus, Sophocles, Virgil, the Bible, and Dante. In the spring term, authors vary somewhat from year to year and include Petrarch, Cervantes, Shakespeare, Milton, Wordsworth, Goethe, Tolstoy, Proust, and Eliot.  WR, HU
East Asian Languages and Literatures

Director of undergraduate studies: Edward Kamens, 310 HGS, 432-2862, edward.kamens@yale.edu [F]; William Fleming, Rm. 205, 220 York St., 436-4885, william.fleming@yale.edu [Sp]; associate director of undergraduate studies and language director: Seungja Choi, Rm. 101, 432-434 Temple St., 432-2866, seungja.choi@yale.edu; call.yale.edu

FACULTY OF THE DEPARTMENT OF EAST ASIAN LANGUAGES AND LITERATURES

Professors Kang-i Sun Chang, Aaron Gerow, Edward Kamens, Tina Lu (Chair), John Treat, Jing Tsu

Assistant Professors William Fleming, Michael Hunter, Seth Jacobowitz, Chloe Starr

Senior Lecturers Pauline Lin, Koichi Shinohara

Senior Lectors II Seungja Choi, Ling Mu

Senior Lectors Hsiu-hsien Chan, Min Chen, Koichi Hiroe, Angela Lee-Smith, Rongzhen Li, Ninghui Liang, Fan Liu, Yoshiko Maruyama, Michiaki Murata, Hiroyo Nishimura, Yu-lin Wang Saussy, Masahiko Seto, Jianhua Shen, Mari Stever, Wei Su, Haiwen Wang, Peisong Xu, William Zhou

Lectors Aoi Saito, Chuanmei Sun, Shucheng Zhang

The major in East Asian Languages and Literatures provides an intellectually focused and rigorous immersion in the East Asian humanities. The department’s courses reflect the breadth, depth, and variety of East Asian textual traditions, premodern through modern, including film and theater. The major is focused on the analysis of literature, culture, and thought, and is built on a solid foundation of language study. Students elect either the Chinese or the Japanese track, but are encouraged to take courses in both tracks and to become familiar with aspects of East Asian literary culture that transcend geographic parameters.

Course numbering Language courses use the subject codes CHNS, JAPN, or KREN. Courses with the subject code EALL are content courses whose focus is critical and humanistic; those numbered 200 to 299 are introductory, and those numbered 300 to
399 are advanced. Courses numbered EALL 001 to 099 are freshman seminars on East Asian literature, film, and humanities.

**Courses for nonmajors** All courses offered by the Department of East Asian Languages and Literatures are open to nonmajors.

**Prerequisite** Candidates for the major must complete CHNS 140 or JAPN 140 or the equivalent.

**The major for the Class of 2015 and previous classes** Students in the Class of 2015 and previous classes may fulfill the requirements of the major in Chinese or the major in Japanese that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS). Alternatively, they may fulfill the requirements of the major in East Asian Languages and Literatures, as described below for the Class of 2016 and subsequent classes.

**Requirements of the major for the Class of 2016 and subsequent classes** The major consists of at least eleven term courses beyond the prerequisite. Students must take two terms of advanced modern Chinese (CHNS 150 and 151 or equivalents) or advanced Japanese (JAPN 150 and 151 or equivalents), as well as two terms of literary Chinese or Japanese (CHNS 170 and 171, or JAPN 170 and 171). Students also take a survey course in Chinese, Japanese, or East Asian history and culture, preferably early in their studies. Three courses are required in literature in translation, taught in English, selected from EALL 200–399; one must be focused primarily on premodern content. These three may include courses on theater and film. In addition, two advanced courses with readings in literary or modern Chinese and/or Japanese are required.

**Senior requirement** Students prepare a one-term senior essay in EALL 491 or a yearlong senior essay in EALL 492 and 493. Those who elect a yearlong essay effectively commit to taking twelve term courses in the major, because the second term of the essay may not be substituted for any of the eleven required courses.

**Credit/D/Fail option** 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.

**Placement examination** Students who enroll in the department’s language courses 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 academic year. The times and places of the examinations are listed on the departmental Web site (http://eall.yale.edu/academics/language-programs) in August. The Chinese and Japanese examinations have online components accessed through the same site. Students of Japanese, Chinese, and Korean returning from programs abroad must take a placement examination unless the coursework was completed at an institution preapproved by the Richard U. Light Fellowship program. For questions, consult with the associate director of undergraduate studies.

**Study abroad** Students are encouraged to study abroad. Interested students should consult with the director of undergraduate studies and with the office of the Richard U.
Light Fellowship (http://www.yale.edu/iefp/light/overview.html) to apply for support for programs in China, Japan, and Korea.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite**  CHNS 140 or JAPN 140 or equivalent  

**Number of courses**  11 courses (incl one-term senior essay) or 12 courses (incl yearlong senior essay) beyond prereq  

**Specific courses required**  *Chinese track*—CHNS 150, 151, 170, 171, or equivalents;  

*Japanese track*—JAPN 150, 151, 170, 171, or equivalents  

**Distribution of courses**  1 course in Chinese, Japanese, or East Asian hist and culture;  

3 courses in lit in translation numbered EALL 200–399, one of them premodern; 2 adv courses with readings in Chinese and/or Japanese  

**Senior requirement**  One-term (EALL 491) or yearlong (EALL 492, 493) senior essay

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**East Asian Humanities**

**EALL 200a, The Chinese Tradition**  Tina Lu and Michael Hunter  

An introduction to the literature, culture, and thought of premodern China, from the beginnings of the written record to the turn of the twentieth century. Close study of textual and visual primary sources, with attention to their historical and cultural backdrops. No knowledge of Chinese required.  

**HU**

*EALL 206a* / HUMS 431a / LITR 175a, Japan’s Classics in Text and Image  

Edward Kamens  

Fiction, poetry, and plays from the eighth century through the nineteenth, studied alongside related works of art and illustrated books housed in collections at Yale. An introduction to the Japanese classics as well as an example of interdisciplinary study in the humanities. No knowledge of Japanese required. Formerly JAPN 200.  

**WR, HU**  

*EALL 210a* / LITR 172a, Man and Nature in Chinese Literature  

Kang-i Sun Chang  

An exploration of man and nature in traditional Chinese literature, with special attention to aesthetic and cultural meanings. Topics include the concept of nature and literature; neo-Taoist self-cultivation; poetry and Zen (Chan) Buddhism; travel in literature; loss, lament, and self-reflection in song lyrics; nature and the supernatural in classical tales; love and allusions to nature; religious pilgrimage and allegory. All readings in translation; no knowledge of Chinese required. Some Chinese texts provided for students who read Chinese. Formerly CHNS 200.  

**HU**  

*EALL 216a*, Classical Tales from Tang to Qing  

Tina Lu  

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. Prerequisite: CHNS 171 or equivalent. Formerly CHNS 180.  

**HU**

*EALL 222b* / THST 289b, Kabuki Theater from Its Origins to the Present  

William Fleming  

The conventions, repertoire, and historical development of kabuki theater since its origins in the early seventeenth century. The significance of the popular stage in
early modern society; kabuki’s influence on popular literature and adaptation into other media; the role of censorship and politics. No knowledge of Japanese required. Formerly JAPN 290. **HU**

**EALL 241a / HUMS 418a / RLST 130a / SAST 367a, Traditional Literature of India, China, and Japan** Koichi Shinohara and Phyllis Granoff
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. **HU Tr**

**EALL 252aG / FILM 446a / LITTR 384a, Japanese Cinema before 1960** Aaron Gerow
The history of Japanese cinema to 1960, including the social, cultural, and industrial backgrounds to its development. Periods covered include the silent era, the coming of sound and the wartime period, the occupation era, the golden age of the 1950s, and the new modernism of the late 1950s. No knowledge of Japanese required. Formerly JAPN 270. **HU Tr**

**EALL 254aG, The Atomic Bombings of Japan in World Culture** John Treat
Survey of literary, artistic, and intellectual responses to the nuclear destruction of Hiroshima and Nagasaki. Focus on works from Japan, with some attention to literary and visual arts worldwide. Genres include fiction, poetry, theater, and film. Enrollment limited. No knowledge of Japanese required. **HU**

**EALL 283b / EAST 426b / HIST 380Jb, Hiroshima and Global Memory**
Ran Zwigenberg
The creation of local and transnational collective memories of World War II and its aftermath. Focus on three major traumatic events of the period: the Holocaust, the atomic bombing of Hiroshima and Nagasaki, and decolonization. Ways in which various societies have remembered, understood, and commemorated these events; the influences that different communities’ memories and histories have on each other. **HU**

**EALL 285a / EAST 428a / FILM 382a, Home and Country in Chinese Cinema**
Mia Liu
Visions and representations of home and nation in Chinese film from the 1930s to the present. The construction of utopian or monumental visions; representations of the destruction of an ideal, often manifested as sites of ruins or as memorials of loss, erasure, and eclipse. Relations between Chinese cinema and modern Chinese history. **HU Tr**

**EALL 286aG / PORT 360a, The Modern Novel in Brazil and Japan** Seth Jacobowitz
Brazilian and Japanese novels from the late nineteenth century to the present. Representative texts from major authors are read in pairs to explore their commonalities and divergences. Topics include nineteenth-century realism and naturalism, the rise of mass culture and the avant-garde, and existentialism and postmodernism. No knowledge of Portuguese or Japanese required. **HU Tr**

**EALL 300bG, Sinological Methods** Pauline Lin
An introduction to essential classical, modern, and electronic resources as preparation for in-depth research on China. The history of Chinese book collections, imperial and private. Bibliographies and bibliophiles; dictionaries; biographical, geographical, and religious sources; and literary, visual, and historical databases. The role of private
libraries and research in the twenty-first century. Prerequisite: CHNS 171 or equivalent. Formerly CHNS 202. HU

*EALL 302G, Readings in Classical Chinese Prose  Kang-i Sun Chang
Close reading of texts from the classical Chinese canon, with modern baihua translations provided. Readings vary from year to year; topics include relationships between literature and politics, literary originality and influences, canonization and readership, and premodern Chinese culture. Readings and discussion in English. Recommended preparation: a course in Chinese literature. Formerly CHNS 302. HU Tr

*EALL 303G, Readings in Classical Chinese Poetry  Kang-i Sun Chang
Fundamentals of classical Chinese poetry and poetics. Readings vary from year to year; topics include poetry and history, intertextuality, and poetic reception. Readings and discussion in English. Formerly CHNS 303. HU Tr

*EALL 308bG / HUMS 305b / PHIL 410b, Sages of the Ancient World
Michael Hunter
Comparative survey of ancient discourses about wisdom from China, India, the Near East, Egypt, Greece, and Rome. Topics include teaching, scheming, and dying. HU

*EALL 317G, The Plum in the Golden Vase  Tina Lu
Close reading of the late-sixteenth-century erotic novel The Plum in the Golden Vase in translation. The novel as a window on sixteenth-century Chinese society. Discussion of sexuality, commerce, and material culture. No knowledge of Chinese required. Formerly CHNS 217. HU Tr

*EALL 357aG, Meiji Literature and Visual Culture  Seth Jacobowitz
Introduction to the literature and visual culture of Meiji Japan (1868–1912), including novels, poetry, calligraphy, woodblock prints, painting, photography, and cinema. The relationship between theories and practices of fine art and literature; changes in word and image relations; transformations from woodblock to movable-type print culture; the invention of photography and early forms of cinematic practice. No knowledge of Japanese required. HU Tr

*EALL 365bG / WGSS 402bG, Homosexual Desire in East Asian Literatures
John Treat
Survey of homosexual themes in traditional and modern Chinese, Japanese, and Korean literature. Prerequisite: WGSS 296. Formerly EALL 330. HU Tr

*EALL 470a and EALL 471b, Independent Tutorial  Tina Lu and Seungja Choi
For students with advanced Chinese, Japanese, or Korean 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.

*EALL 491a or b, Senior Essay  Tina Lu
Preparation of a one-term senior essay under faculty supervision.
*EALL 492a and EALL 493b, Yearlong Senior Essay*  
Edward Kamens and Tina Lu  
Preparation of a two-term senior essay under faculty supervision. Credit for EALL 492 only on completion of EALL 493.

**Chinese**

*CHNS 110a, Elementary Modern Chinese I*  
Jianhua Shen and staff  
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. Credit only on completion of CHNS 120.  
L1  
RP  
1/2 Course cr

*CHNS 120b, Elementary Modern Chinese II*  
Jianhua Shen and staff  
Continuation of CHNS 110. After CHNS 110 or equivalent.  
L2  
RP  
1/2 Course cr

*CHNS 130a, Intermediate Modern Chinese I*  
Ling Mu and staff  
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. After CHNS 120 or equivalent.  
L3  
RP  
1/2 Course cr

*CHNS 132a, Elementary Modern Chinese for Advanced Learners I*  
Fan Liu  
First level of the advanced learner sequence, intended for students with some aural proficiency but limited ability in reading and writing Chinese. Training in listening and speaking, with emphasis on reading and writing. Placement confirmed by placement test and by instructor.  
L3  
RP  
1/2 Course cr

*CHNS 140b, Intermediate Modern Chinese II*  
Ling Mu and staff  
Continuation of CHNS 130. To be followed by CHNS 150. After CHNS 130 or equivalent.  
L4  
RP  
1/2 Course cr

*CHNS 142b, Elementary Modern Chinese for Advanced Learners II*  
Fan Liu  
Continuation of CHNS 132. After CHNS 132 or equivalent.  
L4  
RP  
1/2 Course cr

*CHNS 150a, Advanced Modern Chinese I*  
Haiwen Wang and staff  
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 140 or equivalent.  
L5  
1/2 Course cr

*CHNS 151b, Advanced Modern Chinese II*  
Haiwen Wang and staff  
Continuation of CHNS 150. After CHNS 150 or equivalent.  
L5  
1/2 Course cr

*CHNS 152a and CHNS 153b, Intermediate Modern Chinese for Advanced Learners*  
Peisong Xu  
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. After CHNS 142 or equivalent.  
L5  
RP  
1/2 Course cr per term
*CHNS 154a, Advanced Modern Chinese III  William Zhou
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. After CHNS 151 or equivalent.  L5

*CHNS 155b, Advanced Modern Chinese IV  William Zhou
Continuation of CHNS 154. After CHNS 154 or equivalent.  L5

*CHNS 156b, Chinese through Film  Chuanmei Sun
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. After CHNS 151 or equivalent.  L5

*CHNS 162a and CHNS 163b, Advanced Modern Chinese for Advanced Learners  Wei Su
Third level of the advanced learner sequence in Chinese. Intended for students with advanced speaking and listening skills (able to conduct conversations fluently) 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. After CHNS 153 or equivalent.  L5

*CHNS 164a, Readings in Contemporary Chinese Fiction  Wei Su
Selected readings in Chinese fiction of the 1980s and 1990s. Development of advanced language skills in reading, speaking, and writing for students with an interest in literature and literary criticism. After CHNS 154 or equivalent.  L5

*CHNS 165b, Readings in Modern Chinese Fiction  Wei Su
Reading and discussion of modern short stories, most written prior to 1949. Development of advanced language skills in reading, speaking, and writing for students with an interest in literature and literary criticism. After CHNS 154 or equivalent.  L5

*CHNS 166a and CHNS 167b, Chinese Media and Society  William Zhou
Advanced language course with a focus on speaking and writing skills. Issues in contemporary Chinese society explored through media forms such as newspapers, radio, television, and Internet blogs. After CHNS 155, 163, or equivalent.  L5  RP

*CHNS 168a and CHNS 169b, Chinese for Global Enterprises  Shucheng Zhang
Advanced language course with a focus on Chinese business terminology and discourse. Discussion of China’s economic and management reforms, marketing, economic laws, business culture and customs, and economic relations with other countries. Case studies from international enterprises that have successfully entered the Chinese market. After CHNS 155, 163, or equivalent.  L5  RP
CHNS 170a\(^6\) and CHNS 171b\(^6\), Introduction to Literary Chinese  Pauline Lin and Michael Hunter
Reading and interpretation of texts in various styles of literary Chinese (wenyan), with attention to basic problems of syntax and literary style. After CHNS 151, 153, or equivalent. L5 RP

Japanese

\*JAPN 110a, Elementary Japanese I  Hiroyo Nishimura and staff
An introductory language course for students with no previous background in Japanese. Development of proficiency in listening, speaking, reading, and writing, including characters of 50 hiragana, 50 katakana, and 75 kanji. Introduction of cultural aspects such as levels of politeness. In-class drills in pronunciation and conversation. Individual tutorial sessions improve conversational skills. Credit only on completion of JAPN 120. L1 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 120b, Elementary Japanese II  Hiroyo Nishimura and staff
Continuation of JAPN 110, with supplementary materials such as excerpts from television shows, anime, and songs. Introduction of 150 additional kanji. After JAPN 110 or equivalent. L2 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 130a, Intermediate Japanese I  Yoshiko Maruyama and staff
Continued development in both written and spoken Japanese. Introduction to aspects of Japanese culture such as history, art, religion, and cuisine through text, film, and animation. Web-based audio and visual aids facilitate learning. Individual tutorial sessions improve conversational skills. After JAPN 120 or equivalent. L3 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 140b, Intermediate Japanese II  Yoshiko Maruyama and staff
Continuation of JAPN 130. After JAPN 130 or equivalent. L4 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 150a, Advanced Japanese I  Mari Stever and staff
Advanced language course that further develops proficiency in reading, writing, speaking, and listening. Japanese anime and television dramas are used to enhance listening and speaking skills. Writing of essays, letters, and criticism solidifies grammar and style. Individual tutorial sessions improve conversational skills. After JAPN 140 or equivalent. L5 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 151b, Advanced Japanese II  Mari Stever and staff
Continuation of JAPN 150. After JAPN 150 or equivalent. L5 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 156a, Advanced Japanese III  Koichi Hiroe and staff
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 151 or equivalent. L5 RP 1\(\frac{1}{2}\) Course cr

\*JAPN 157b, Advanced Japanese IV  Koichi Hiroe and staff
Continuation of JAPN 156. After JAPN 156 or equivalent. L5 1\(\frac{1}{2}\) Course cr

\*JAPN 162a, Reading Academic Japanese I  Masahiko Seto
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 157 or equivalent; recommended to be taken after or concurrently with JAPN 170.  L5

*JAPN 163b, Reading Academic Japanese II  Masahiko Seto
Continuation of JAPN 162. After JAPN 162 or equivalent; recommended to be taken after JAPN 170.  L5

*JAPN 164a and JAPN 165b, Academic and Professional Spoken Japanese  Koichi Hiroe
Advanced language course with a focus on the speaking skills necessary in academic and professional settings. Includes online interviews, discussions, and debates with native Japanese students and scholars on contemporary topics such as globalization, environment, technology, human rights, and cultural studies. Individual tutorial sessions improve conversational skills. After JAPN 157 or equivalent.  L5

*JAPN 169a, Literature and the Humanities  John Treat
Canonical Japanese short stories and essays read in line-by-line translation. Use of reference works and the Internet to research structures and vocabulary. Designed to help students at the fourth-year level of modern Japanese prepare for either graduate-level courses in Japanese literature or independent study of written Japanese. After JAPN 151 or equivalent.  L5

JAPN 170a, Introduction to Literary Japanese  Edward Kamens
Introduction to the grammar and style of the premodern literary language (bungotai) through a variety of texts. After JAPN 151 or equivalent.  L5

*JAPN 171b, Readings in Literary Japanese  William Fleming
Close analytical reading of a selection of texts from the Nara through the Tokugawa periods: prose, poetry, and various genres. Introduction to kanbun. After JAPN 170 or equivalent.  L5

Korean

*KREN 110a, Elementary Korean I  Angela Lee-Smith
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 120.  L1  RP  1½ Course cr

*KREN 120b, Elementary Korean II  Angela Lee-Smith
Continuation of KREN 110. After KREN 110 or equivalent.  L2  RP  1½ Course cr

*KREN 130a, Intermediate Korean I  Angela Lee-Smith and staff
Continued development of skills in modern Korean, spoken and written, leading to intermediate-level proficiency. After KREN 120 or equivalent.  L3  RP  1½ Course cr

*KREN 132a, Intermediate Korean for Advanced Learners I  Angela Lee-Smith
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.  L3  RP  1½ Course cr

*KREN 140b, Intermediate Korean II  Angela Lee-Smith and staff
Continuation of KREN 130. After KREN 130 or equivalent.  L4  RP  1½ Course cr
*KREN 142b, Intermediate Korean for Advanced Learners II  Angela Lee-Smith
Continuation of KREN 132. After KREN 132 or equivalent.  L4  RP  1½ Course cr

KREN 150a, Advanced Korean I  Angela Lee-Smith
An advanced language course with emphasis on development of vocabulary and grammar, practice in reading comprehension, speaking on a variety of topics, and writing in both formal and informal styles. Use of storytelling, discussion, peer group activities, audio and written journals, oral presentations, and supplemental audiovisual materials and texts. Intended for nonheritage speakers. After KREN 140 or equivalent.  L5  RP  1½ Course cr

KREN 151b, Advanced Korean II  Angela Lee-Smith
Continuation of KREN 150. After KREN 150 or equivalent.  L5  RP  1½ Course cr

*KREN 152a and KREN 153b, Advanced Korean for Advanced Learners  Seungja Choi
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. After KREN 142 or 151, or with permission of instructor.  L5  1½ Course cr per term

*KREN 154b, Advanced Korean III  Seungja Choi
An advanced language course designed to develop reading and writing skills using Web-based texts in a variety of genres. Students read texts independently and complete comprehension and vocabulary exercises through the Web. Discussions, tests, and intensive writing training in class. After KREN 151 or equivalent.  L5

East Asian Studies

Director of undergraduate studies: Valerie Hansen, 227 HGS, 432-0480, valerie.hansen@yale.edu, eastasianstudies.research.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF EAST ASIAN STUDIES

Professors  Daniel Botsman (History), Kang-i Sun Chang (East Asian Languages & Literatures), Deborah Davis (Sociology), Aaron Gerow (East Asian Languages & Literatures, Film Studies), Valerie Hansen (History), Edward Kamens (East Asian Languages & Literatures), William Kelly (Anthropology), Tina Lu (East Asian Languages & Literatures), Peter Perdue (History), Frances Rosenbluth (Political Science), Helen Siu (Anthropology), William Summers (History of Medicine), John Treat (East Asian Languages & Literatures), Jing Tsu (East Asian Languages & Literatures), Anne Underhill (Anthropology), Mimi Yiengpruksawan (History of Art)

Associate Professor  Karen Nakamura (Anthropology)

Assistant Professors  Seok-ju Cho (Political Science), Fabian Drixler (History), William Fleming (East Asian Languages & Literatures), William Honeychurch (Anthropology), Michael Hunter (East Asian Languages & Literatures), Seth Jacobowitz (East Asian Languages & Literatures), Youn-mi Kim (History of Art), Andrew Quintman (Religious Studies), Chloë Starr (Divinity School), Jeremy Wallace (Visiting), Eric Weese (Economics), Jessica Weiss (Political Science)

Senior Lecturers  Annping Chin (History), Pauline Lin (East Asian Languages & Literatures), Koichi Shinohara (Religious Studies, East Asian Languages & Literatures)
Lecturers  Nathan Hopson, Hyung-Wook Kim, Kwangmin Kim, Se-Woong Koo, Amy Lelyveld, Mia Liu, Ran Zwigenberg

Senior Lectors II  Seungja Choi, Ling Mu

Senior Lectors  Hsiu-hsien Chan, Min Chen, Koichi Hiroe, Angela Lee-Smith, Rongzhen Li, Ninghui Liang, Fan Liu, Yoshiko Maruyama, Michiaki Murata, Hiroyo Nishimura, Yu-lin Wang Saussy, Masahiko Seto, Jianhua Shen, Mari Stever, Wei Su, Haiwen Wang, Peisong Xu, William Zhou

Lectors  Aoi Saito, Chuanmei Sun, Shucheng Zhang

In the East Asian Studies major, students focus on a country or an area within East Asia and concentrate their work in the humanities or the social sciences. The major offers a liberal education that 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 academic fields. The proposed course of study must be approved by the director of undergraduate studies.

The prerequisite to the major is completion of study at the L2 level of an East Asian language taught at Yale. Beyond this prerequisite, the major consists of thirteen course credits, which may include up to six taken in a preapproved program of study abroad. Six course credits must be taken in East Asian language courses, including a course at the L4 level and one year of advanced study (L5) with readings in the East Asian language.

Beyond the language requirement, the major includes seven course credits, six in the country or area of concentration and one outside it. Of the course credits in the area 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 two-term 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.

Credit/D/Fail courses  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 a seminar in the country or area 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 480 or a one-credit, two-term senior research project in EAST 491, 492 culminating in an essay.

Selection of courses  Upon entering the major, students are expected to draw up an intellectually coherent sequence 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 their area of specialization. As a multidisciplinary program, East
Asian Studies 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, 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 the East Asian Studies Council Web site (http://eastasianstudies.research.yale.edu). Students are also encouraged to visit the IplanYale Web site (http://iplanyale.yale.edu) for help in planning the major.

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 or the dean or registrar of the professional school.

Combined B.A./M.A. degree program Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See ”Simultaneous Award of the Bachelor’s and Master’s Degrees” under ”Special Arrangements” in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for speciﬁc requirements in East Asian Studies.

REQUIREMENTS OF THE MAJOR

Prerequisite L2 level of an East Asian lang taught at Yale

Number of courses 13 course credits beyond prereq (incl senior req); up to 6 may be in preapproved study abroad

Distribution of courses 6 course credits in East Asian lang courses, incl 1 L4 course and 1 year at L5 level with readings in the lang; 6 addl course credits in country or area of concentration, incl 1 in premodern era and 2 sems; 1 course credit on East Asia outside country or area of concentration

Senior requirement Senior sem culminating in a senior thesis, or one-term senior essay in EAST 480, or one-credit, two-term senior research project in EAST 491, 492

*EAST 013b / RLST 013b / SAST 056b, The Dalai Lama Andrew Quintman

The institution of the Dalai Lama and the individuals who have ﬁlled that role from ﬁfteenth-century Tibet to twenty-ﬁrst-century exile in India. Survey of the most important Dalai Lamas; regional histories of Buddhism; the Tibetan tradition of recognized reincarnations and the Buddhist philosophical principles that support it; activities of the current Dalai Lama as interpreted by Chinese government media, Indian exile communities, and the modern West. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*EAST 030b / HIST 030b / HUMS 083b, Tokyo Fabian Drixler

Four centuries of Japan’s history explored through the many incarnations, destructions, and rebirths of its foremost city. Focus on the solutions found by Tokyo’s residents to the material and social challenges of concentrating such a large population in one place. Tensions between continuity and impermanence, authenticity and modernity, and social order and the culture of play. WR, HU
EAST 219b / PLSC 179b, China in World Politics  Jessica Weiss
China’s rise to prominence and its foreign relations from 1949 to the present, focusing on the post-Mao period.  SO

*EAST 221a / HUMS 382a, Chinese Political Thought  Loubna Amine
Classical works of Chinese political thought, their historical importance for the Chinese tradition, and their use in current academic and political debates. Readings from Confucianism, Mohism, and Taoism, as well as writings on statecraft and the art of war. Contemporary debates on the compatibility of Confucianism and democracy and on the East Asian challenge to the idea of human rights.  HU

EAST 301a / HIST 307a, The Making of Japan’s Great Peace, 1550–1850  Fabian Drixler
Examination of how, after centuries of war in Japan and overseas, the Tokugawa shogunate built a peace that lasted more than 200 years. Japan’s urban revolution, the eradication of Christianity, the Japanese discovery of Europe, and the question of whether Tokugawa Japan is a rare example of a complex and populous society that achieved ecological sustainability.  HU

EAST 320b / HIST 316b, History of China, 1550 to the Present  Peter Perdue
Fall of the Ming and rise of the Qing dynasty. Political, economic, and cultural changes in China compared to those in East Asia and the rest of the world. China’s first Republic and the impact of foreign imperialism and communism. The People’s Republic of China under Mao Zedong and Deng Xiaoping; Taiwan from Chiang Kai-shek to the independence movement. Globalization, environmental stress, and human rights issues in historical perspective.  HU

*EAST 321b / HIST 327Jb, Navigating Life in Nineteenth-Century Japan  Fabian Drixler
A study of the joys and sorrows of life in nineteenth-century Japan. Topics include finding a mate, becoming a parent, making and keeping friends, seeing the world, and coping with bereavement.  WR, HU

EAST 338a / ECON 338a / GLBL 318a, The Next China  Stephen Roach
Economic development in China since the late 1970s. Emphasis on factors pushing China toward a transition from its modern export- and investment-led development model to a pro-consumption model. The possibility of a resulting identity crisis, underscored by China’s need to embrace political reform and by the West’s long-standing misperceptions of China. Prerequisite: introductory macroeconomics.  SO

*EAST 357aG / PLSC 390a, State and Society in Post-Mao China  Jessica Weiss
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.  SO

*EAST 359b / ANTH 349b, Humanitarianism across Asia  Chika Watanabe
Introduction to international humanitarianism, with a focus on aid across Asia and by Asian actors. Theories of humanitarian morals, charity, paradoxes, and politics. Ways in which analyses of inter-Asian connections can be developed through the study of humanitarian problems, ideologies, and actions.  SO
*EAST 363a / ANTH 317a / HSAR 479a or b / SAST 363a, Himalayan Collections at Yale Mark Turin
Online tools and new digital media are used to explore links between four library and museum collections at Yale that are from and about the Himalayan region: Bubriski’s black-and-white photographs of Nepal; Buddhist scrolls and fabric temple banners; Christian missionary archives; documents on the political history of Nepal. Collective cataloguing of materials in the collections. HU

*EAST 408a / EP&E 269a / SOCY 395aG, Wealth and Poverty in Modern China Deborah Davis
The underlying causes and consequences of the changing distribution of income, material assets, and political power in contemporary China. Substantive focus on inequality and stratification. Instruction in the use of online Chinese resources relevant to research. Optional weekly Chinese language discussions. Prerequisite: a previous course on China since 1949. SO

*EAST 410b / SOCY 310bG, Civil Society, Public Sphere, and Civic Life in Contemporary China Deborah Davis
The changing character of civil society and the public sphere under various political conditions in modern China. Key themes are the possibilities for civic action, citizenship, and state-society relations. Prerequisite: a previous course on modern China or extended residence in Taiwan, Hong Kong, or the People’s Republic of China. Preference to majors in Sociology or East Asian Studies in their junior and senior years. SO

*EAST 421b / PLSC 440b, Politics of China Jeremy Wallace
Introduction to Chinese political history of the twentieth and twenty-first centuries, with emphasis on the past thirty years. Factionalism and elite politics, economic reforms, contemporary social movements, development, international relations, and inequality. Methods and approaches used by scholars to explore Chinese politics. SO RP

*EAST 422b / HIST 311Jb, History and Nationalism in East Asia Hyung-Wook Kim
Modern conflicts among East Asian countries over the temporal and spatial boundaries and the ownership of the region’s ancient kingdoms. The role of such conflicts in contemporary territorial disputes; issues surrounding historical fact and interpretation; the presentation of sovereignty in early national histories; relations between nationalism, collective memory, and public commemoration. HU

*EAST 424b / RLST 384b, Religion and National Identity in Modern Korea Se-woong Koo
Religion in modern Korea and its relation to the development of Korean national identity since c. 1900. Introduction of the modern concepts of religion and the nation-state in Korean culture. Ways in which various religious systems have been defined, categorized, managed, rewarded, and punished toward political ends. Both religion and nation as fundamental to Koreans’ overall conception of their collective identity.

*EAST 425a / EVST 420a / HIST 313Ja, Asian Environments and Frontiers Peter Perdue and Kwangmin Kim
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.    WR, HU

*EAST 426b / EALL 283b / HIST 380Jb, Hiroshima and Global Memory
    Ran Zwigenberg
    The creation of local and transnational collective memories of World War II and its
    aftermath. Focus on three major traumatic events of the period: the Holocaust, the
    atomic bombing of Hiroshima and Nagasaki, and decolonization. Ways in which
    various societies have remembered, understood, and commemorated these events; the
    influences that different communities’ memories and histories have on each other.    HU

*EAST 428a / EALL 285a / FILM 382a, Home and Country in Chinese Cinema
    Mia Liu
    Visions and representations of home and nation in Chinese film from the 1930s to
    the present. The construction of utopian or monumental visions; representations of
    the destruction of an ideal, often manifested as sites of ruins or as memorials of loss,
    erasure, and eclipse. Relations between Chinese cinema and modern Chinese history.    HU
    Tr

*EAST 430a / HIST 312Ja, Japanese Nationalism in Global Context
    Nathan Hopson
    The history and global context of modern nationalism; related questions regarding
    cultural identity in modern political contexts. Focus on Japan as a case study. The
    intersections of intellectual and cultural history with the complex politics of the modern
    world.    HU

*EAST 454b / ECON 474b / GLBL 312b, Economic and Policy Lessons from Japan
    Stephen Roach
    An evaluation of Japan’s continuing economic problems and of the possibility that
    these problems might spread to other economies. Currency pressures, policy blunders,
    bubbles, denial, and Japan’s role in the global economic crisis of 2008; comparison
    between Japan’s economy and other major economies; dangers to the global economy
    from a protracted postcrisis recovery period. Focus on policy remedies to avert similar
    problems in other countries. Prerequisite: a course in macroeconomics.    SO

*EAST 474b / HSAR 484b, Japanese Screens
    Mimi Yiengpruksawan
    and Sadako Ohki
    The screen-painting tradition in Japan, particularly as it emerged in the sixteenth
    and seventeenth centuries. The format, techniques, and functions of screen painting;
    poetic and literary connections, as well as studio practices and politics, of the principal
    lineages of painters; aesthetics and styles associated with varying classes of patronage,
    from the shoguns to Buddhist monks to the Japanese court. Includes site visits in Tokyo
    and Kyoto during the spring recess.    HU

*EAST 480a or b, One-Term Senior Essay
    Valerie Hansen
    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 EAST 492b, Senior Research Project
    Valerie Hansen
    Two-term directed research project under the supervision of a ladder faculty member.
    Students should write essays using materials in East Asian languages when possible.
    Essays should be based on primary material, whether in an East Asian language or
English. Summary of secondary material is not acceptable. Credit for EAST 491 only on completion of EAST 492. ½ Course cr per term

Electives within the Major

PREMODERN PERIOD

CHNS 170a and CHNS 171b, Introduction to Literary Chinese  Pauline Lin
and Michael Hunter
Reading and interpretation of texts in various styles of literary Chinese (wenyan),
with attention to basic problems of syntax and literary style. After CHNS 151, 153, or
equivalent. L5 RP

EALL 200a, The Chinese Tradition  Tina Lu and Michael Hunter
An introduction to the literature, culture, and thought of premodern China, from
the beginnings of the written record to the turn of the twentieth century. Close study
of textual and visual primary sources, with attention to their historical and cultural
backdrops. No knowledge of Chinese required.  HU

*EALL 206a / HUMS 431a / LITR 175a, Japan’s Classics in Text and Image
Edward Kamens
Fiction, poetry, and plays from the eighth century through the nineteenth, studied
alongside related works of art and illustrated books housed in collections at Yale. An
introduction to the Japanese classics as well as an example of interdisciplinary study in
the humanities. No knowledge of Japanese required. Formerly JAPN 200.  WR, HU Tr

*EALL 210a / LITR 172a, Man and Nature in Chinese Literature  Kang-i Sun Chang
An exploration of man and nature in traditional Chinese literature, with special
attention to aesthetic and cultural meanings. Topics include the concept of nature and
literature; neo-Taoist self-cultivation; poetry and Zen (Chan) Buddhism; travel in
literature; loss, lament, and self-reflection in song lyrics; nature and the supernatural
in classical tales; love and allusions to nature; religious pilgrimage and allegory.
All readings in translation; no knowledge of Chinese required. Some Chinese texts
provided for students who read Chinese. Formerly CHNS 200.  HU Tr

*EALL 216a, Classical Tales from Tang to Qing  Tina Lu
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. Prerequisite: CHNS 171 or
equivalent. Formerly CHNS 180.  HU

*EALL 222b / THST 289b, Kabuki Theater from Its Origins to the Present
William Fleming
The conventions, repertoire, and historical development of kabuki theater since its
origins in the early seventeenth century. The significance of the popular stage in
early modern society; kabuki’s influence on popular literature and adaptation into
other media; the role of censorship and politics. No knowledge of Japanese required.
Formerly JAPN 290.  HU
**EALL 302b**, *Readings in Classical Chinese Prose*  Kang-i Sun Chang
Close reading of texts from the classical Chinese canon, with modern baihua translations provided. Readings vary from year to year; topics include relationships between literature and politics, literary originality and influences, canonization and readership, and premodern Chinese culture. Readings and discussion in English. Recommended preparation: a course in Chinese literature. Formerly CHNS 302.  HU Tr

**EALL 303a**, *Readings in Classical Chinese Poetry*  Kang-i Sun Chang
Fundamentals of classical Chinese poetry and poetics. Readings vary from year to year; topics include poetry and history, intertextuality, and poetic reception. Readings and discussion in English. Formerly CHNS 303.  HU Tr

**EALL 308b** / **HUMS 305b** / **PHIL 410b**, *Sages of the Ancient World*  Michael Hunter
Comparative survey of ancient discourses about wisdom from China, India, the Near East, Egypt, Greece, and Rome. Topics include teaching, scheming, and dying.  HU

**EALL 317b**, *The Plum in the Golden Vase*  Tina Lu
Close reading of the late-sixteenth-century erotic novel *The Plum in the Golden Vase* in translation. The novel as a window on sixteenth-century Chinese society. Discussion of sexuality, commerce, and material culture. No knowledge of Chinese required. Formerly CHNS 217.  HU Tr

**HIST 314a** / **HUMS 426a**, *Early Sources in Chinese Intellectual Traditions*  Anmping Chin
Readings in translation of the basic texts of Confucianism, Taoism, and legalism. Examination of what the early Chinese thought about the world and themselves, how they articulated what they thought and organized what they knew, and how they explored the irrational and issues such as fairness and moral appropriateness.  HU History: Preindustrial

**HIST 320Jb**, *Non-Chinese Dynasties’ Defeat of China, 1004–1911*  Valerie Hansen
Study of four dynasties whose emperors were ethnically non-Chinese: the Kitan, the Jurchen, the Mongols, and the Manchu. Ways in which they shaped the last 1000 years of China’s dynastic history. Focus on techniques used by these dynasties to exploit traditional China’s weaknesses, including military strategy, the use of Chinese collaborators and technologies, and cultural adaptivity.  HU History: Preindustrial

**HIST 379Ja** / **HSHM 447a**, *History of Chinese Science*  William Summers
Major themes in Chinese scientific thinking from antiquity to the twentieth century. Non-Western concepts of nature and the development of science in China; East-West scientific exchanges; and China’s role in modern science.  WR, HU RP

**HIST 470a**, *World Finance, Mesopotamia to the Present*  Valerie Hansen and William Goetzmann
The history of finance from its earliest beginnings to the modern era, with particular attention to Mesopotamia, China, and Europe. The time value of money, including loans and interest; the negotiability of claims within a legal structure that handles
claims; the ability to contract on future outcomes through life insurance and derivatives; corporations; causes and outcomes of economic bubbles.  

**HSAR 142a / RLST 187a / SAST 265a, Introduction to the History of Art: The Classical Buddhist World**  Mimi Yiengpruksawan
Buddhist art and architecture of India, Pakistan, Afghanistan, and central Asia from earliest beginnings to the tenth century, and including Greco-Roman, Persian, and Islamic contact.  

**HSAR 143b / RLST 188b / SAST 266b, Introduction to the History of Art: Buddhist Art and Architecture, 900 to 1600**  Mimi Yiengpruksawan
Buddhist art and architecture of East Asia, Southeast Asia, and Tibet from the tenth century to the early modern period. Emphasis on cross-regional engagements including the impact of Islam.  

**HSAR 333a, Korean Art and Culture**  Youn-mi Kim and Se-woong Koo
The history of Korea from ancient times to the present, with a focus on art and culture. Intersections of art, religion, and politics, as well as interaction with Chinese and Japanese cultures. The transmission of Buddhism and the formation of early Korean kingdoms; controversies regarding national identity; the premodern porcelain industry; Buddhism and Confucianism in politics and aesthetics; religion and art of the Japanese colonial period; contemporary popular culture. Includes a visit to the Metropolitan Museum of Art in New York.  

* **HSAR 480a, The Arts of Nomads in China, 900–1400**  Youn-mi Kim
Visual culture of the nomadic Kitans and Mongols, ranging from gold death masks and murals excavated from tombs to religious artworks that reflect hybrid and diverse religious practices. Arts produced during the empires founded by the Liao (907–1125) and Yuan (1279–1368) located in a broad transregional context, including their role in the cultural and political landscapes of East, Central, and South Asia from the tenth century to the fifteenth.  

* **HUMS 418a / EALL 241a / RLST 130a / SAST 367a, Traditional Literature of India, China, and Japan**  Koichi Shinohara and Phyllis Granoff
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.  

* **JAPN 171bG, Readings in Literary Japanese**  William Fleming
Close analytical reading of a selection of texts from the Nara through the Tokugawa periods: prose, poetry, and various genres. Introduction to kanbun. After JAPN 170 or equivalent.  

* **RLST 383bG / SAST 467b, Biography in Asian Religions**  Andrew Quintman
The significance of life writing in the religious traditions of Asia. Readings both from primary texts in translation and from theoretical works on biography and autobiography.  

**MODERN PERIOD**

**ANTH 170a, Chinese Culture, Society, and History**  Helen Siu
Anthropological explorations of basic institutions in traditional and contemporary Chinese society. Topics include kinship and marriage, religion and ritual, economy and social stratification, state culture, socialist revolution, and market reform.
Anthropology: Sociocultural

*ANTH 234a / WGSS 234a, Disability and Culture*  Karen Nakamura
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.  SO  RP

Anthropology: Sociocultural

ANTH 254b, Japan: Culture, Society, Modernity  William Kelly and Karen Nakamura
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.  WR, SO

Anthropology: Sociocultural

*ARCH 341aG / LAST 318a, Globalization Space*  Keller Easterling
Infrastructure space as a primary medium of change in global polity. Networks of trade, energy, communication, transportation, spatial products, finance, management, and labor, as well as new strains of political opportunity that reside within their spatial disposition. Case studies include free zones and automated ports around the world, satellite urbanism in South Asia, high-speed rail in Japan and the Middle East, agri-roles in southern Spain, fiber optic submarine cable in East Africa, spatial products of tourism in North Korea, and management platforms of the International Organization for Standardization.  HU

*EALL 252aG / FILM 446a / LITR 384a, Japanese Cinema before 1960*  Aaron Gerow
The history of Japanese cinema to 1960, including the social, cultural, and industrial backgrounds to its development. Periods covered include the silent era, the coming of sound and the wartime period, the occupation era, the golden age of the 1950s, and the new modernism of the late 1950s. No knowledge of Japanese required. Formerly JAPN 270.  HU  Tr

*EALL 254aG, The Atomic Bombings of Japan in World Culture*  John Treat
Survey of literary, artistic, and intellectual responses to the nuclear destruction of Hiroshima and Nagasaki. Focus on works from Japan, with some attention to literary and visual arts worldwide. Genres include fiction, poetry, theater, and film. Enrollment limited. No knowledge of Japanese required.  HU

*EALL 300bG, Sinological Methods*  Pauline Lin
An introduction to essential classical, modern, and electronic resources as preparation for in-depth research on China. The history of Chinese book collections, imperial and private. Bibliographies and bibliophiles; dictionaries; biographical, geographical, and religious sources; and literary, visual, and historical databases. The role of private libraries and research in the twenty-first century. Prerequisite: CHNS 171 or equivalent. Formerly CHNS 202.  HU

*EALL 365bG / WGSS 402bG, Homosexual Desire in East Asian Literatures*  John Treat
Survey of homosexual themes in traditional and modern Chinese, Japanese, and Korean literature. Prerequisite: WGSS 296. Formerly EALL 330.  HU  Tr
*EVST 346b / SAST 378b, Urbanization and the Environment in China and India  
Karen Seto and Angel Hsu  
Study of contemporary urbanization processes in China and India, with a focus on environmental challenges and sustainable development. Energy, food, water, and land-use systems; manufacturing, industry, and technology; cultures and lifestyles.  
Introduction to conceptual and analytical tools for assessing the effects of urbanization.  
SO

HIST 303b, Japan’s Modern Revolution  Daniel Botsman  
A survey of Japan’s transformation over the course of the nineteenth century from an isolated, traditional society on the edge of northeast Asia to a modern imperial power.  
Aspects of political, social, and cultural history.  
HU

HSAR 354b / HUMS 451b, East-West Encounters in Chinese Art  Youn-mi Kim  
Cultural exchanges between Europe, North America, and Asia from the seventeenth to twenty-first centuries, with a focus on Chinese arts and crafts. The influence of Chinese porcelain, decorative art, and architecture on interior and garden design in Europe; the role of Japanese woodblock prints in European and American art; Chinese artists, the Western oil painting tradition, and the tension between tradition and modernization; contemporary works that evoke the past.  
HU

*HSAR 475bG, Chinese Painting in the Seventeenth Century  David Sensabaugh  
Chinese painting from the masters of the late Ming period to the individualist and orthodox masters of the early Qing dynasty. Issues of art based on either art or nature.  
Attention to paintings from the period in the Yale University Art Gallery collection.  
HU

*JAPN 169aG, Literature and the Humanities  John Treat  
Canonical Japanese short stories and essays read in line-by-line translation. Use of reference works and the Internet to research structures and vocabulary. Designed to help students at the fourth-year level of modern Japanese prepare for either graduate-level courses in Japanese literature or independent study of written Japanese. After JAPN 151 or equivalent.  
L5

*PLSC 132aG / GLBL 379a, China’s International Relations  Jessica Weiss  
Analysis of contemporary Chinese diplomacy, including China’s increasing regional and global influence. Mainstream concepts and theories in international relations applied to current events and policy debates. Priority to majors in Political Science and in Global Affairs.  
SO

*SOCY 086a, Chinese Society since Mao  Deborah Davis  
An overview of the major social institutions in contemporary China, with a focus on the changing relationship between individual and society. Use of print and visual sources to explore the social consequences of China’s recent retreat from socialism and its rapid integration into the global economy. May count toward the Sociology major as an intermediate course. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
SO
Ecology and Evolutionary Biology

Director of undergraduate studies: Thomas Near, 370A ESC, 432-3002, karen.broderick@yale.edu, www.eeb.yale.edu

FACULTY OF THE DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Professors  Leo Buss, †Peter Crane, Michael Donoghue, †Vivian Irish, †Kenneth Kidd, Nancy Moran, Howard Ochman, Jeffrey Powell, Richard Prum, †Eric Sargis, †Oswald Schmitz, †David Skelly, Stephen Stearns, Paul Turner (Chair), J. Rimas Vaišnys, Günter Wagner

Associate Professors  Suzanne Alonzo, Walter Jetz, Thomas Near, David Post

Assistant Professors  Jeffrey Townsend, David Vasseur

Senior Lecturer  Marta Martínez Wells

Lecturers  Gisella Caccone, Mary Beth Decker

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

The Department of Ecology and Evolutionary Biology (EEB) offers broad education in the biological sciences. The subject matter includes molecules, cells, organs, organisms, and ecosystems and the evolutionary processes that shape them. The department offers a B.A. and a B.S. degree. The B.A. program is intended for students who are interested in ecology, evolution, and organismal diversity as part of a liberal education but do not intend to pursue graduate work in the discipline. The B.S. program is designed for students planning to attend medical or veterinary school or to pursue graduate study in ecology and evolutionary biology, other biological disciplines, or the environmental sciences. The two programs share the same prerequisite and core requirements but differ in elective and senior requirements.

Students majoring in EEB select one of two tracks. The requirements for Track 1 emphasize courses appropriate for careers in ecology, evolutionary biology, and environmental science; Track 2 is most appropriate for premedical and preveterinary students because it allows them to use as electives many courses required by medical schools. The EEB major offers opportunities for independent research in both laboratory and field.

Courses for nonmajors  Several EEB courses have no college-level prerequisites and are suitable for nonmajors. These include all 100-level offerings as well as 200-level courses that deal with particular organism groups such as fish, mammals, birds, or insects.

Prerequisites  The prerequisites for the major are intended to provide core scientific literacy; they include courses in biology, chemistry, physics, and mathematics. The introductory biology sequence BIOL 101, 102, 103, and 104 is required. Also required are CHEM 112, 113, or 114, 115, or 118, taken with their associated laboratories, and one term of organic chemistry with laboratory. CHEM 124, 125, with 222L, 223L, satisfies both chemistry requirements. Two terms of physics are required, PHYS 170, 171 or higher, and one term of mathematics, MATH 115 or higher or STAT 101–106. A different
statistics course approved by the director of undergraduate studies may be substituted for the mathematics prerequisite.

Acceleration credit awarded in chemistry, mathematics, and physics, or completion of advanced courses in those departments, is accepted in place of the corresponding prerequisites for the EEB major. Students who have mathematics preparation equivalent to MATH 115 or higher are encouraged to take a statistics course (most often STAT 101–106) and/or additional mathematics courses such as MATH 120, 121, 222, or 225. Because chemistry courses are prerequisite to several EEB 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 flexible program in later years.

**Placement** Students can place out of the introductory biology sequence (BIOL 101, 102, 103, 104) only by means of the biology placement examination administered jointly by the biological science departments, EEB, MB&B, and MCDB. See the EEB departmental Web site (http://www.eeb.yale.edu) for information about the placement examination.

Potential EEB majors are expected to take the mathematics placement test. Those who place above the level of MATH 112 may proceed to prerequisite courses for the EEB major; those who place into MATH 112 must take calculus before other prerequisites. The Chemistry department arranges placement in chemistry courses.

**Requirements of the major** Beyond the prerequisites, the B.A. requires three lecture courses and one laboratory, for three and one-half course credits, and the senior requirement. In Track 1, the required courses are E&EB 220, General Ecology; E&EB 225, Evolutionary Biology; and a lecture course on organismal diversity chosen from E&EB 246–272, along with its associated laboratory. Required courses in Track 2 include E&EB 290 and 291L, Comparative Anatomy and laboratory; E&EB 295, Comparative Physiology, (scheduled for fall 2014) or BENG 350, Physiological Systems; and MCDB 300, Biochemistry.

The B.S. requirements are the same as those for the B.A., with the addition of at least two electives, for two course credits, in either Track 1 or Track 2. At least one of the electives must be a lecture or a seminar. Most EEB, MCDB, or MB&B courses numbered 200 or above qualify as electives, as do most research courses and laboratories in a biological sciences department or in the Medical School. Courses from other departments may qualify with permission of the director of undergraduate studies.

**Substitutions permitted** Two upper-level courses in Geology and Geophysics (excluding G&G 315), Mathematics, Computer Science, or Engineering and Applied Science can be substituted for the required term of organic chemistry and laboratory. The second term of organic chemistry and laboratory and up to two terms of physics laboratories are allowed as electives. Courses from other departments may also be suitable as electives. All substitutions require the permission of the director of undergraduate studies. College seminars may not be counted toward the requirements of the major.
III. Subjects of Instruction

Senior requirement Students in the B.A. degree program fulfill the senior requirement either by completing one term of independent study in E&EB 470 during the senior year or by writing a senior essay. 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. Students intending to write a senior essay must obtain an approval form from the office of the director of undergraduate studies and have it signed by the essay adviser before the end of the course selection period. Essays must be submitted to the director of undergraduate studies by the last day of classes.

Students in the B.S. degree program fulfill the senior requirement by completing one term of original research in E&EB 475 or 495 in the senior year. Additional research courses may be taken as electives and may be taken before the senior year, but any research course intended to satisfy the senior requirement must be taken during the senior year.

Credit/D/Fail No course taken Credit/D/Fail may be counted toward the EEB major, including prerequisites.

Limit on research courses While independent research courses may be taken multiple times for credit, there are restrictions on the number of such courses that can be included in a student’s curriculum. See "Course Credits and Course Loads" in the Academic Regulations.

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 online bulletin of the Graduate School, and many are posted on the Biological and Biomedical Sciences Web site (http://bbs.yale.edu). Additional information is available from the director of undergraduate studies and the director of graduate studies. Undergraduates with an appropriate background may enroll with the permission of the director of graduate studies and the instructor.

Advising Freshmen considering a major in Ecology and Evolutionary Biology are invited to consult with the director of undergraduate studies. After the freshman year, students should choose an adviser from the department faculty who has interests comparable to their own and/or is a fellow of their residential college. For additional information, visit the EEB departmental Web site (http://www.eeb.yale.edu). The course schedules of all EEB majors (including sophomores intending to major in EEB) must be signed by a faculty member in EEB; 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.

Study abroad Participation in study abroad field programs is encouraged. Credit for such programs may apply toward the major; interested students should consult the director of undergraduate studies prior to going abroad.

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. 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. The requirements are as follows:

1. Candidates must satisfy the Yale College requirements for the B.S. degree. In addition to the three lecture courses and one laboratory specified for the standard major, four courses are required, all of which must be graduate-level courses. One of these must be a graduate seminar selected with the approval of the director of undergraduate studies. Grades below B in graduate courses are not accepted.

2. In addition to the courses specified above, students must complete two graduate research courses for six course credits: (a) EEB 585, 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 the EEB faculty. 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) EEB 595, a four-credit, yearlong course that is similar to EEB 495, 496 and is taken during the senior year. In the first term of the course, the student gives an oral presentation describing the work. At the end of the course, the student submits a master’s thesis and gives an oral 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. Summer research between the junior and senior years is often required to obtain sufficient results for a credible master’s thesis.

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. To be considered for admission to the program, by the end of their fifth term of enrollment students must 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 the major, including prerequisites.

2. Students must apply in writing to the director of undergraduate studies and obtain departmental approval no later than the last day of classes in their fifth term of enrollment in Yale College. 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.

3. 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 department during their last four terms at Yale and at least two undergraduate courses during their last two terms.

4. Students must earn grades of A in at least two of their graduate-level term courses or in one year course.

For more information, see "Simultaneous Award of the Bachelor’s and Master’s Degrees" in section K of the Academic Regulations.
III. Subjects of Instruction

Requirements of the Major

Prerequisites  B I O L 1 0 1 , 1 0 2 , 1 0 3 , 1 0 4 ; C H E M 1 1 2 , 1 1 3 , or 1 1 4 , 1 1 5 , or 1 1 8 with labs; 1 term of organic chem with lab (C H E M 1 2 4 , 1 2 5 with 2 2 2 L , 2 2 3 L satisfies both chem requirements); P H Y S 1 7 0 , 1 7 1 or higher; M A T H 1 1 5 or higher or S T A T 1 0 1 – 1 0 6

Number of courses  B.A. – 3½ course credits (not incl senior req); B.S. – 5½ course credits (not incl senior req)

Specific courses required  Track 1 – E & E B 2 2 0 , 2 2 5 ; 1 from E & E B 2 4 6 – 2 7 2 , with lab; Track 2 – E & E B 2 9 0 , 2 9 1 L ; E & E B 2 9 5 or B E N G 3 5 0 ; M C D B 3 0 0

Distribution of courses  B.S. – 2 electives

Substitutions permitted

Senior requirement  B.A. – E & E B 4 7 0 taken in the senior year or senior essay; B.S. – E & E B 4 7 5 or 4 9 5 taken in senior year

Introductory Courses

E & E B 1 1 5 a / F & E S 3 1 5 a, Conservation Biology  Jeffrey Powell and Linda Puth
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. sc

*E & E B 1 2 5 b / G & G 1 2 5 b, History of Life  Derek Briggs and Nicholas Longrich
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. sc

E & E B 2 1 0 a / S T A T 1 0 1 a G , Introduction to Statistics: Life Sciences  Jonathan Reuning-Scherer and Walter Jetz
Statistical and probabilistic analysis of biological problems, presented with a unified foundation in basic statistical theory. Problems are drawn from genetics, ecology, epidemiology, and bioinformatics. QR

E & E B 2 4 6 a, Plant Diversity and Evolution  Michael Donoghue
Introduction to the major plant groups and their evolutionary relationships, with an emphasis on the diversification and global importance of flowering plants. To be taken concurrently with E & E B 2 4 7 L . Prerequisite: a general understanding of biology and evolution. sc

E & E B 2 4 7 L a, Laboratory for Plant Diversity and Evolution  Michael Donoghue
Hands-on experience with the plant groups examined in the accompanying lectures. Local field trips. To be taken concurrently with E & E B 2 4 6 . sc ½ Course cr

E & E B 2 5 0 a G , Biology of Terrestrial Arthropods  Marta Martinez Wells
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). sc
E&EB 251La, Laboratory for Biology of Terrestrial Arthropods
Marta Martínez Wells
Comparative anatomy, dissections, identification, and classification of terrestrial arthropods; specimen collection; field trips. Concurrently with or after E&EB 250. SC ½ Course cr

*E&EB 272b, Ornithology  Richard Prum
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. Enrollment limited to 50. SC

*E&EB 273Lb, Laboratory for Ornithology  Richard Prum
Laboratory and field studies of avian morphology, diversity, phylogeny, classification, identification, and behavior. Enrollment limited to 12. SC ½ Course cr

Intermediate and Advanced Courses
Prerequisites for all intermediate and advanced E&EB courses are BIOL 101, 102, 103, and 104, or permission of the instructor.

E&EB 220a / EVST 223a, General Ecology  David Vasseur and David Post
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 112 or equivalent. SC

*E&EB 223Lb, Evolution, Functional Traits, and the Tree of Life
Marta Martínez Wells
Study of evolutionary novelties, their functional morphology, and their role in the diversity of life. Introduction to techniques used for studying the diversity of animal body plans. Evolutionary innovations that have allowed groups of organisms to increase their diversity. SC ½ Course cr

E&EB 225b, Evolutionary Biology  Michael Donoghue and staff
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. SC Psychology: AdvSci NeuroTrk

E&EB 226Lb, Laboratory for Evolutionary Biology  Gisella Caccone
The companion laboratory to E&EB 225. 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 225 or with permission of instructor. SC ½ Course cr
**E&EB 230a / EVST 221a / F&ES 221a, Field Ecology**  Linda Puth
A field-based introduction to ecological research, using experimental and descriptive approaches, comparative analysis, and modeling for field and small-group projects. Weekly field trips explore local lake, salt marsh, rocky intertidal, traprock ridge, and upland forest ecosystems. Includes one Saturday field trip and a three-day trip during the October recess. Concurrently with or after E&EB 220 or with permission of instructor.  sc

**E&EB 240a, Animal Behavior**  Suzanne Alonzo
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. Enrollment limited to 15 per section.  wr, sc

*E&EB 275a\(^G\) and b\(^G\) / EVST 400a or b, Biological Oceanography*  Mary Beth Decker
Exploration of a range of coastal and pelagic ecosystems. Relationships between biological systems and the physical processes that control the movements of water and productivity of marine systems. Anthropogenic impacts on oceans, such as the effects of fishing and climate change. Includes three Friday field trips. Enrollment limited to 15.  sc

*E&EB 280a / ANTH 310a\(^G\), Mammalogy*  Eric Sargs
The evolution and diversity of mammals, including primates. Origins, evolutionary history, systematics, morphology, biogeography, physiology, behavior, and ecology of major mammalian lineages. Accompanying laboratories focus on diagnostic morphological features of mammalian groups through examination of specimens from the Peabody Museum.  sc

**E&EB 290b, Comparative Anatomy**  Günter Wagner
A survey of the structure, variation, and evolution of major vertebrate groups. Topics include the microanatomy of major organ systems, the embryology of the vertebrate body plan, and the structure and evolution of the major organ systems such as the locomotory system, sensory organs, digestive tract, reproductive tract, and nervous system.  sc

*E&EB 291Lb, Comparative Anatomy Laboratory*  Günter Wagner
Microscopic examination of histological and embryological preparations. Dissection of selected vertebrate species including shark, bony fish, frog, lizard, and rat. To be taken with E&EB 290.  sc  ½ Course cr

*E&EB 320b, Conservation Genetics*  Gisella Caccone
An introduction to conservation genetics for advanced undergraduates and graduate students. The importance of genetic diversity and the means for preserving it. After E&EB 225 and MCDB 200, or with permission of instructor.  sc

*E&EB 335b\(^G\), Probabilistic Modeling in Ecology, Evolution, and Disease*  Jeffrey Townsend and Alison Galvani
Ways in which probabilistic, mathematical, and computational modeling can be used to explore questions about ecology, evolution, and the epidemiology of infectious diseases. How probabilistic modeling is performed in the context of modern research.  qr, sc
**E&EB 342b**, Primate Diversity and Evolution  Eric Sargis
The diversity and evolutionary history of living and extinct primates. Focus on major controversies in primate systematics and evolution, including the origins and relationships of several groups. Consideration of both morphological and molecular studies. Morphological diversity and adaptations explored through museum specimens and fossil casts. Recommended preparation: ANTH 116.  SC

**E&EB 426a, Phylogenetics and Macroevolution**  Thomas Near
Theory and methodology of phylogenetics and the application of phylogenetic trees to the comparative study of biological variation observed in living and fossil organisms. Topics include biogeography, speciation, adaptive radiation, estimation of divergence times and "molecular clock" methods, rates of lineage diversification, and phylogeny of genes, species, and higher taxa. Prerequisite: E&EB 225 or permission of instructor.  SC

**E&EB 427La, Phylogenetics Laboratory**  Thomas Near
Introduction to methods of phylogeny reconstruction and evolutionary comparative analysis. Computer lab-based exercises and lessons in obtaining genetic data from Internet resources and building phylogenetic trees. Additional topics and methods include biogeographic analyses, estimating divergence times with molecular data, and independent contrast analysis. Prerequisite: E&EB 225 or permission of instructor.  SC  

**E&EB 460b**, Studies in Evolutionary Medicine I  Stephen Stearns and staff
Principles of evolutionary biology applied to issues in medical research and practice. 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; 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 (http://www.eeb.yale.edu).  SC

**E&EB 461a**, Studies in Evolutionary Medicine II  Paul Turner and Stephen Stearns
Continuation of E&EB 460. Prerequisite: E&EB 460 or permission of instructor.  SC

**E&EB 470a or b, Tutorial**  Marta Martinez 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 Friday, September 6, for the fall term and Tuesday, January 21, for the spring term. The final paper is due in the hands of the director of undergraduate studies by Friday, December 6, for the fall term and Friday, April 25, for the spring term. In special cases, with approval of the director of undergraduate studies, this course may be elected for more than one term, but only one term will count as an elective for the major. Normally, faculty sponsors must be members of the EEB department. Fulfills the senior requirement for the B.A. degree if taken in the senior year.
III. Subjects of Instruction

*E&EB 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 Friday, September 6, for the fall term and Tuesday, January 21, for the spring term. The final research paper is due in the hands of the director of undergraduate studies by Friday, December 6, for the fall term and Friday, April 25, for the spring term. Fulfills the senior requirement for the B.S. degree if taken in the senior year.

*E&EB 495a and E&EB 496b, Intensive Senior Research  Marta Martínez Wells
One term of intensive original research during the senior year under the sponsorship of a Yale faculty member. Similar to other research courses except that a more substantial portion of a student’s time and effort should be spent on the research project (a minimum average of twenty hours per week). A research proposal approved by the sponsoring faculty member must be submitted to the instructor; forms are available from the office of undergraduate studies or from the instructor. For the fall term, approval is encouraged during the the spring term of the junior year and must be done by Friday, September 6; for the spring term, submission of the research proposal is encouraged during the fall term and must be done by Tuesday, January 21. Students who wish to take both E&EB 495 and 496 under the sponsorship of the same faculty member may submit a single proposal by the fall deadline; in this case, the grade assigned at the end of the spring term applies to all four credits. Students who take 495 and 496 under the sponsorship of different faculty members complete an interim oral report and submit a final paper in each term; a separate grade is assigned in each term. The due date for papers in E&EB 495 is Friday, December 6; the due date for E&EB 496 only or for 495 and 496 is Friday, April 25. One term fulfills the senior requirement for the B.S. degree. 2 Course cr per term

Economics

Director of undergraduate studies: Samuel Kotum, Rm. 6, 37 Hillhouse Ave., 432–6217 or 432–3574, qazi.azam@yale.edu, www.econ.yale.edu/undergrad/ugrad.htm

FACULTY OF THE DEPARTMENT OF ECONOMICS

Professors  Joseph Altonji, Donald Andrews, Dirk Bergemann, Steven Berry, Truman Bewley, †Richard Brooks, Donald Brown, Xiaohong Chen, †Judith Chevalier, Pradeep Dubey (Visiting), Eduardo Engel (Visiting), Ray Fair, †Joan Feigenbaum, †Howard Forman, John Geanakoplos, †William Goetzmann, Pinelopi Goldberg, Timothy Guinnane, Philip Haile, Johannes Horner, Gerald Jaynes, Dean Karlan, Yuichi Kitamura, Alvin Klevorick, Samuel Kotum, Naomi Lamoreaux, Richard Levin, Giovanni Maggi, Konstantinos Meghir, †Robert Mendelsohn, Giuseppe Moscarini, †Barry Nalebuff, Zvika Neeman (Visiting), William Nordhaus, Peter
Phillips, Benjamin Polak, Miguel Ramirez (Visiting), †John Roemer, Mark Rosenzweig, Larry Samuelson, †Peter Schott, Robert Shiller, †Jody Sindelar, Anthony Smith, †Shyam Sunder, Aleh Tsyvinski, Christopher Udry, John Wallis (Visiting), Ebonya Washington, †Ernesto Zedillo

Associate Professors  Costas Arkolakis, †Sheila Olmstead

Assistant Professors  David Atkin, Timothy Armstrong, Ruben Durante (Visiting), Eduardo Faingold, Mitsuori Iogami, Daniel Keniston, Amanda Kowalski, Nancy Qian, Kareen Rozen, Anja Sautmann (Visiting), Eric Weese

Senior Lecturers  Cheryl Doss, Tolga Koker

Lecturers  Iraesma Alonso, Michael Boozer, Douglas McKee, Nicholas Perna, Stephen Roach, Michael Schmertzler, Katerina Simons, 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 (ECON 121 or 125); one term of intermediate macroeconomics (ECON 122 or 126); one term of econometrics (ECON 131, 132, or 136); and one Yale mathematics course, usually selected from MATH 112, 115, 118, or 120. 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 should be completed prior to the senior year. Majors must also take two courses numbered ECON 400–491, at least one of which must be taken in the senior year.

Subject to approval by the director of undergraduate studies, students may count toward the major one course related to economics but taught in another field, in addition to the required course in mathematics.

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 outside Yale may not be counted toward the major requirements in intermediate microeconomics, intermediate macroeconomics, or econometrics.

Courses taken Credit/D/Fail and residential college seminars may not be counted toward the requirements of the major.
**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 115 and 116, lecture courses with a discussion section. ECON 115 is concerned with microeconomics and includes such topics as markets, prices, production, distribution, and the allocation of resources. ECON 116 covers such macroeconomic issues as unemployment, inflation, growth, and international economics; it has a microeconomics prerequisite.

ECON 110 and 111 are limited-enrollment alternatives to ECON 115 and 116; they are open only to freshmen selected from those who preregister. ECON 108 also covers microeconomics, but with a greater emphasis on quantitative methods and examples. It is intended for, but not restricted to, freshmen with little or no experience with calculus. Enrollment is limited, and preregistration is required. ECON 108, 110, and 115 are similar in substance, and ECON 111 and 116 are similar in substance as well. A student may receive credit for only one course each in introductory microeconomics and introductory macroeconomics.

The department recommends that students 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 introductory macroeconomics 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 115 or 120 and then petition the director of undergraduate studies to place out of introductory microeconomics and 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 questions, consult the departmental Web site (http://www.econ.yale.edu/undergrad/ugrad.htm).

**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 118 or complete two term courses including MATH 120 and either 222 or 225. The latter two-term sequence is preferable for students who wish to take further mathematics courses or who plan to pursue a graduate degree 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 131 followed by 132. Students with a stronger mathematics background or who plan to pursue a graduate degree in economics are encouraged to take either ECON 135 or STAT 241 and 242, followed by ECON 136. 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 microeconomics and macroeconomics. The standard intermediate courses are ECON 121 and 122. Students with a stronger mathematics background are encouraged to take ECON 125 and 126 instead. The intermediate courses need not be taken in sequence: in particular, ECON 125 is not required for 126.

**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.

**Advanced lecture courses** Advanced lecture courses, numbered ECON 400–449, are limited-enrollment courses that cover relatively advanced material in more depth than regular field courses. Prerequisites usually include two of intermediate microeconomics, intermediate macroeconomics, and econometrics or a mathematics course such as MATH 120. Advanced lecture courses may be applied toward the senior requirement. While these courses vary in approach, they share features of other Economics courses: like field courses, they devote some time to traditional lecturing, and like seminars, they emphasize class interaction, the writing of papers, and the reading of journal articles.

**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 through their earlier coursework.

Enrollment in seminars and advanced lecture courses is limited. Senior Economics majors who have not yet completed the senior requirement for the major are given priority for these courses and may preregister; see the departmental Web site (http://www.econ.yale.edu/undergrad/ugrad.htm) for instructions. Students must take two of three core courses in intermediate microeconomics, intermediate macroeconomics, and econometrics before enrolling in a seminar. Underclassmen in the major and nonmajors may also enroll in Economics seminars and advanced lecture courses as space permits, but they do not preregister.

**Senior requirement** Majors are required to take two departmental courses numbered ECON 400–491, at least one of which must be taken in the senior year. The senior requirement must be met by Yale Economics courses; courses in other departments or taken elsewhere do not suffice.

**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 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 491); (2) 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 491 and 492); or (3) students may write a one-term essay in an advanced departmental course (numbered 400–489) taken during
the fall term of the senior year, with the option of completing the essay in the spring of the senior year as an independent project under the close and regular supervision of a faculty adviser (ECON 492); under this option the instructor of the advanced departmental course taken in the fall term typically serves as the faculty adviser.

Note that the essay 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.

Meetings for seniors to discuss the senior essay will be held on Wednesday, August 28, at 4:30 p.m. and Thursday, August 29, 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, September 30, 2013.

**Distinction in the Major**  To be considered for Distinction, students must meet the appropriate grade standards (see the Undergraduate Curriculum section) and submit a senior essay to the Economics department. Students who fail to submit an essay will not be considered for Distinction in the Major. Grade computation for Distinction does not include the introductory economics courses, the required mathematics course, or courses taken outside Yale.

**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. Descriptions of courses are available in the Economics department office.

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.

**Faculty representatives**  The Economics department has faculty representatives associated with each residential college. Students majoring in Economics should secure written approval of their course selection from one of their college representatives. Changes in their major program must be approved by a representative. Questions concerning the major or programs of study should be directed to a college representative. For 2013–2014 the college representatives are as follows:

<table>
<thead>
<tr>
<th>BK</th>
<th>S. Berry, T. Guinnane</th>
<th>BR</th>
<th>K. Meghir, E. Washington</th>
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<tr>
<td>CC</td>
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<td>DC</td>
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<td>ES</td>
<td>J. Geanakoplos, G. Maggi</td>
<td>TC</td>
<td>P. Haile, L. Samuelson</td>
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REQUIREMENTS OF THE MAJOR

Prerequisites  None
Number of courses  12 term courses (incl senior req)
Distribution of courses  1 intro course in microeconomics, 1 in macroeconomics (or equivalents with DUS permission); 1 math course, as specified
Specific courses required  ECON 121 or 125; ECON 122 or 126; ECON 131, 132, or 136
Substitution permitted  1 related course in another dept, with DUS approval
Senior requirement  2 courses numbered ECON 400–491, at least 1 in senior year

Introductory Courses

*ECON 108a or b, Quantitative Foundations of Microeconomics  Tolga Koker [F] and Katerina Simons [Sp]
Introductory microeconomics with a special emphasis on quantitative methods and examples. Intended for students with limited or no experience with calculus. Enrollment limited. Online preregistration is required on Tuesday, August 27; visit www.econ.yale.edu/undergrad/ugrad.htm for more information. May not be taken after ECON 110 or 115.  QR, SO

*ECON 110a, An Introduction to Microeconomic Analysis  Tolga Koker and staff
Similar to ECON 115, but taught as a lecture discussion with limited enrollment. Enrollment limited to freshmen. Online preregistration is required; visit www.econ.yale.edu/undergrad/ugrad.htm for more information. May not be taken after ECON 108 or 115.  QR, SO

*ECON 111b, An Introduction to Macroeconomic Analysis  Irasema Alonso and staff
Similar to ECON 116, but taught as a lecture discussion with limited enrollment. Enrollment limited to freshmen. Online preregistration is required; visit www.econ.yale.edu/undergrad/ugrad.htm for more information. May not be taken after ECON 116. Prerequisite: ECON 108, 110, or 115.  SO

ECON 115a or b, Introductory Microeconomics  Christopher Udry [F] and Steven Berry [Sp]
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 108 or 110.  QR, SO

ECON 116a or b, Introductory Macroeconomics  Ray Fair [F] and Robert Shiller [Sp]
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 111. Prerequisite: ECON 108, 110, or 115.  SO

Intermediate Courses

ECON 121a or b, Intermediate Microeconomics  Larry Samuelson and staff
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 125. QR, SO

*ECON 122a or b, Intermediate Macroeconomics  William Nordhaus [F] and Giuseppe Moscarini [Sp]
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 the fall term. After two terms of introductory economics and completion of the mathematics requirement for the major or its equivalent. May not be taken after ECON 126. QR, SO

ECON 125a, Microeconomic Theory  Zvika Neeman
Similar to ECON 121 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. Recommended for students considering graduate study in economics. After introductory economics, and MATH 118 or 120 or equivalent. May not be taken after ECON 121. QR, SO

[ ECON 126, Macroeconomic Theory ]

Econometrics and Statistics Courses

ECON 131a or b, Econometrics and Data Analysis I  David Atkin [F] and Nancy Qian [Sp]
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 112 or equivalent. QR, SO

ECON 132a or b, Econometrics and Data Analysis II  Konstantinos Meghir [F] and Joseph Altonji [Sp]
Continuation of ECON 131, 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 131 or 135 or a course in the STAT 101–106 series. QR, SO

ECON 135a, Introduction to Probability and Statistics  Timothy Armstrong
Foundations of mathematical statistics: probability theory, distribution theory, parameter estimation, hypothesis testing, regression, and computer programming. Recommended for students considering graduate study in economics. After introductory microeconomics and either (1) MATH 118; or (2) MATH 120 and either MATH 222 or MATH 225. QR, SO

ECON 136b, Econometrics  Yuichi Kitamura
Continuation of ECON 135 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. Recommended for students considering graduate study in economics. After ECON 135 or STAT 241 and 242. QR, SO

Field Courses

ECON 159b, Game Theory  Barry Nalebuff
An introduction to game theory and strategic thinking. Ideas such as dominance, backward induction, Nash equilibrium, evolutionary stability, commitment, credibility, asymmetric information, adverse selection, and signaling are applied to games played in class and to examples drawn from economics, politics, the movies, and elsewhere. After introductory microeconomics. No prior knowledge of game theory assumed. QR, SO

ECON 170a, Health Economics and Public Policy  Howard Forman
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. SO

ECON 182b / HIST 135b, American Economic History  Staff
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 introductory microeconomics. WR, SO

ECON 184b / GLBL 234b, International Economics  Peter Schott
Introduction to conceptual tools useful for understanding the strategic choices made by countries, firms, and unions in a globalized world. After two terms of introductory economics. SO

ECON 185a / GLBL 237a, Debates in Macroeconomics  Stephen Roach
and Aleh Tsivinski
Introduction to current theoretical and practical debates in macroeconomics. In-class debates between the instructors on topics such as economic crises, fiscal and monetary policy, inflation, debt, and financial regulations. Prerequisites: introductory microeconomics and macroeconomics. SO

ECON 186a, European Economic History, 1700–1815  Timothy Guinnane
European economic growth and development from the late seventeenth century through the first stages of the British industrial revolution. The role of institutional development, trade and imperialism, agricultural improvements, and industrialization. Particular attention to comparisons between Britain and other parts of Europe. After ECON 115 or 121, and ECON 116 or 122. SO

ECON 251b, Financial Theory  John Geanakoplos
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. QR, SO

ECON 275b / PLSC 218b, Public Economics  Ebonya Washington
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, Economics and Comparative Private Law  Richard Brooks
Study of economic relationships organized through written contracts and other private legal structures. The body of law and institutions that govern the organization of economic exchange and influence its efficiency. Comparative legal and institutional approach. Prerequisites: ECON 115 and MATH 112 or equivalents.

ECON 325b, Economics of Developing Countries  Nancy Qian
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 327b / GLBL 184b, The Economics of Poverty Alleviation  Staff
Measures that succeed and fail—and why—in the fight against poverty in developing countries. Fundamentals of behavioral economics and their application to policy and program design. When and how to use experimental methods to evaluate ideas and programs. Interventions and policies that apply to households, small firms, and communities, with particular attention to microfinance, health, and education. After introductory microeconomics and econometrics.

ECON 330bG, Economics of Natural Resources  Robert Mendelsohn
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 338a / EAST 338a / GLBL 318a, The Next China  Stephen Roach
Economic development in China since the late 1970s. Emphasis on factors pushing China toward a transition from its modern export- and investment-led development model to a pro-consumption model. The possibility of a resulting identity crisis, underscored by China’s need to embrace political reform and by the West’s long-standing misperceptions of China. Prerequisite: introductory macroeconomics.

ECON 345a / EP&E 237a, Welfare Economics and Equity  Donald Brown
Efficiency in simple general equilibrium models of competitive markets and market failures in which the first and second welfare theorems do not hold. Externalities, public goods, and monopoly pricing. The relative merits of the Kaldor-Hicks compensation principle in partial equilibrium analysis and the Pareto principle in general equilibrium analysis. Prerequisites: ECON 121 or 125, and MATH 112 or equivalent.

ECON 350a, Mathematical Economics: General Equilibrium Theory  Truman Bewley
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. Recommended for students considering graduate study in economics. After MATH 118 or 120, and intermediate microeconomics. QR, SO

**ECON 351b, Mathematical Economics: Game Theory** Johannes Horner and staff
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. Recommended for students considering graduate study in economics. After MATH 118, 120, and intermediate microeconomics. QR, SO

**ECON 371b, Financial Time Series Econometrics** Xiaohong Chen
Survey of methods used to analyze financial time series data. Classic linear models; autocorrelation in error variances; methods that allow for nonlinearities; methods tailored to analysis of high-frequency data and modeling of value at risk; vector autoregressive models; factor models; the Kalman filter. Prerequisites: ECON 131 and 132, or ECON 135 and 136. SO

### Advanced Lecture Courses

Senior Economics majors may preregister for advanced lecture courses; see [www.econ.yale.edu/undergrad/ugrad.htm](http://www.econ.yale.edu/undergrad/ugrad.htm) for instructions. Other interested students may enroll with permission of the instructor during the course selection period.

**ECON 405b, Economics of Health and Health Care** Amanda Kowalski
Economic principles and empirical methods applied to issues in health economics. Discussion of policies to address market failures in health care markets. Consumer behavior in medical markets, valuing medical improvements, and evaluating health insurance reform. Prerequisites: intermediate microeconomics and econometrics. SO

**ECON 407b / GLBL 310b, International Finance** Costas Arkolakis
A study of how consumers and firms are affected by the globalization of the world economy. Topics include trade costs, the current account, exchange rate pass-through, international macroeconomic co-movement, multinational production, and gains from globalization. Prerequisite: intermediate macroeconomics or equivalent. SO

**ECON 408a, International Trade Policy** Giovanni Maggi
Analysis of issues concerning international trade policy and agreements, including recent academic research. Welfare analysis of trade policy; the political economy of trade policy; international trade agreements. Attention to both theoretical methods and empirical research. Prerequisites: intermediate microeconomics and ECON 184. SO

**ECON 410b, The Economics of Innovation** Mitsuru Igami
Study of forces that drive the process of innovation. Creativity and creative destruction; the innovator’s dilemma; incentives to innovate; competitive advantage; industry evolution; intellectual property. Use of both formal theoretical models and quantitative empirical studies, as well as descriptive studies from management strategy and economic history. Prerequisites: econometrics and intermediate microeconomics.
Seminars

Senior Economics majors may preregister for departmental seminars; see www.econ.yale.edu/undergrad/ugrad.htm for instructions. Other interested students may enroll with permission of the instructor during the course selection period.

*ECON 450a, Investment Analysis  David Swensen and Dean Takahashi
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.  SO

*ECON 452b / EP&E 300b / GLBL 302b, Contemporary Issues in Energy Policy
Ioannis Kessides
Overview of challenges in the global energy framework generated by concerns about energy security and climate change; public policies necessary for addressing these issues. Potential contributions and limitations of existing, improved or transitional, and advanced technologies.  SO

*ECON 453b, Antitrust Law and Economics  Alvin Klevorick
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.  SO

*ECON 456a, Private Equity Investing  Michael Schmertzler
A case-oriented study of principal issues and investment types found in substantial private equity portfolios. Discussion of enterprise valuation, value creation, business economics, negotiation, and legal structure, based on primary source materials and original cases. Prerequisites: intermediate microeconomics and econometrics.  SO

[ ECON 459, Corporate Finance ]

*ECON 461b, Economics, Addiction, and Public Policy  Jody Sindelar
Smoking, alcoholism, illicit drugs, and obesity studied from economic and policy perspectives. Focus on causes of and solutions to problems. After introductory microeconomics.  SO

*ECON 462b / EP&E 228b / GLBL 316b / LAST 410b, The Economics of Human Capital in Latin America  Douglas McKee
Economic issues related to a population’s education, skills, and health; focus on contemporary Latin American societies. Determinants of health and education; evaluation of human capital development policies; the role of human capital in a variety of economic contexts, including the labor market, immigration, child investment, intrahousehold bargaining, inequality, and poverty. Prerequisites: intermediate microeconomics and econometrics.  SO

*ECON 464a, The Economics of Africa  Cheryl Doss
Study of key microeconomic issues facing African economies and of the economic tools used to analyze such issues. Topics include infrastructure, land, agriculture, conflict, intrahousehold issues, health and education, microfinance and risk, and coping strategies. Readings from recent literature in microeconomic development. Prerequisites: intermediate microeconomics and econometrics.  SO
*ECON 465a / EP&E 224a / GLBL 330a, Debating Globalization  Ernesto Zedillo
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. Prerequisite: background in international economics and data analysis. Preference to seniors majoring in Economics or EP&E.  SO  RP

*ECON 466a / EP&E 448a, Economics of Aging  Douglas McKee
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.  SO

*ECON 467b / GLBL 307b, Economic Evolution of the Latin American and Caribbean Countries  Ernesto Zedillo
Economic evolution and prospects of the Latin American and Caribbean (LAC) countries. Topics include the period from independence to the 1930s; import substitution and industrialization to the early 1980s; the debt crisis and the "lost decade"; reform and disappointment in the late 1980s and the 1990s; exploration of selected episodes in particular countries; and speculations about the future. Prerequisites: intermediate microeconomics and macroeconomics.  SO

*ECON 471b, Topics in Cooperative Game Theory  Pradeep Dubey
The theory and applications of cooperative games. Topics include matching, bargaining, cost allocation, market games, voting games, and games on networks. Prerequisite: intermediate microeconomics.

*ECON 473b / EP&E 227b / PLSC 343b, Equality  John Roemer
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.  SO

*ECON 474b / EAST 454b / GLBL 312b, Economic and Policy Lessons from Japan  Stephen Roach
An evaluation of Japan’s continuing economic problems and of the possibility that these problems might spread to other economies. Currency pressures, policy blunders, bubbles, denial, and Japan’s role in the global economic crisis of 2008; comparison between Japan’s economy and other major economies; dangers to the global economy from a protracted postcrisis recovery period. Focus on policy remedies to avert similar problems in other countries. Prerequisite: a course in macroeconomics.  SO

*ECON 475b / EP&E 286b, Discrimination in Law, Theory, and Practice  Gerald Jaynes
How law and economic theory define and conceptualize economic discrimination; whether economic models adequately describe behaviors of discriminators as documented in court cases and government hearings; the extent to which economic theory and econometric techniques aid our understanding of actual marketplace discrimination. Prerequisites: introductory microeconomics and at least one additional
course in Economics, African American Studies, Ethnicity, Race, and Migration, or Women’s, Gender, and Sexuality Studies.

Ways that governments create and enforce rules. The nature of governments and the nature of rules; the dynamics of how governments are able to create rules that powerful individuals have incentives to obey. Prerequisite: intermediate macroeconomics.  SO

*ECON 484a, The United States Banking System  Nicholas Perna
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 U.S. banking, including the role of electronic commerce. After intermediate macroeconomics.  SO

*ECON 486a, Topics in Political Economics  Ruben Durante
Introduction to the field of political economy. Focus on empirical study of the relationships between voters, politicians, mass media, and special interests, and effects of these relationships on policy making. Prerequisites: intermediate microeconomics and econometrics.  SO

*ECON 489b, Auctions and Bidding  Zvika Neeman
Introduction to the theory of auctions and competitive bidding. Auction formats and their relation to strategies used by bidders and sellers. Topics include the revenue equivalence theorem, optimal auctions, the winner’s curse, double auctions, auctions of multiple objects, and collusion. Prerequisite: intermediate microeconomics.

*ECON 491a and ECON 492b, The Senior Essay  Samuel Kortum
Students deciding to write one-term senior essays by enrolling in ECON 491, or two-term senior essays by enrolling in ECON 491 and 492, must choose their topics and advisers by Monday, September 30, 2013. One-term senior essays are due at the end of the last week of classes in the fall term. Two-term senior essays are due on April 4, 2014. Students writing one-term senior essays who would like to be considered for Distinction in the Major must submit three copies of their essay to the Economics department office by April 4, 2014. 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. Meetings for seniors to discuss the senior essay will be held on Wednesday, August 28, at 4:30 p.m. and Thursday, August 29, at 1:30 p.m. in Room 106, 28 Hillhouse Avenue. Seniors planning to write either a one-term or a two-term senior essay should attend one of these meetings. Details regarding calculation of Distinction will be discussed and senior essay guidelines will be distributed.

*ECON 498a and ECON 499b, Directed Reading  Samuel Kortum
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.

Economics and Mathematics

Directors of undergraduate studies: Anthony Smith (Economics), Rm. 306, 28 Hillhouse Ave., 432-3583 or 432-3574, qazi.azam@yale.edu; Andrew Casson (Mathematics), 216 LOM, 432-7056, andrew.casson@yale.edu

The Economics and Mathematics major is intended for students with a strong intellectual interest in both mathematics and economics and for students who may pursue a graduate degree in economics.

Prerequisites The major has prerequisites in both mathematics and economics: MATH 120; ECON 110 or 115; and ECON 111 or 116. With permission of the directors of undergraduate studies, upper-level courses may be substituted for prerequisite courses. Upper-level courses substituted for prerequisites do not count toward the total of twelve term courses (beyond the introductory level in economics and mathematics) required for the major.

Requirements of the major A total of twelve term courses is required beyond the introductory level in economics and in mathematics: seven term courses in economics and five term courses in mathematics. These courses must include:

1. One intermediate microeconomics course chosen from ECON 121 or 125, and one intermediate macroeconomics course chosen from ECON 122 or 126

2. A year of mathematical economics, ECON 350 and 351

3. Two courses in econometrics, ECON 135 and 136 (with permission of the director of undergraduate studies in Economics, STAT 241 and 242 may be taken instead of ECON 135, in which case they count as one economics course and not as mathematics courses)

4. A course in linear algebra, MATH 222 or 225 (or 230 and 231, for two course credits)

5. An introductory course in analysis, MATH 300 or 301

6. Senior seminar in mathematics, MATH 480

Because optimization is an important theme in mathematics and is particularly relevant for economics, OPRS 235 is recommended for students majoring in Economics and Mathematics and can be counted toward either the Mathematics or Economics course requirements.

Credit/D/Fail courses For students in the Class of 2016 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major.

Distinction in the Major To be considered for Distinction in the Major, students must meet specified grade standards (see the Undergraduate Curriculum section) and submit a senior essay written either in an Economics department seminar or in ECON 491 or in 491 and 492 to the Economics department; for details see under Economics. (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.

**Approval of program** Students interested in the major should consult both directors of undergraduate studies, and verify with each that their proposed program meets the relevant guidelines. Registration forms must be signed by both directors of undergraduate studies each term.

**Requirements of the Major**

**Prerequisites** MATH 120; ECON 110 or 115; ECON 111 or 116

**Number of courses** 12 term courses beyond prereqs (incl senior req)

**Distribution of courses** 5 courses in math and 7 in econ

**Specific courses required** ECON 121 or 125; ECON 122 or 126; ECON 135, 136, 350, 351; MATH 222 or 225 (or 230, 231); MATH 300 or 301

**Substitution permitted** STAT 241 and 242 for ECON 135, with permission of DUS in Econ

**Senior requirement** Senior sem in math (MATH 480); optional senior essay in Econ

**Education Studies**

Director: to be announced, Rm. 203, 35 Broadway, 432-4631; yalecollege.yale.edu/content/education-studies

The undergraduate program in Education Studies provides a structure for students interested in educational institutions, policy, teaching, and learning. The program also promotes a multidisciplinary understanding of the role of education historically, socially, politically, and economically.

Any Yale College student interested in education may take the foundation course in education studies, EDST 110. This lecture course explores the historical, philosophical, and theoretical underpinnings of the field and helps students understand the critical role of education in society. The course examines aspects of education practice, research, and policy.

While Yale does not offer a teaching certificate program, students can apply to become a Yale Education Studies Undergraduate Scholar. The program selects students with appropriate background and interest in educational practice, research, and/or policy, and develops their experience and involvement in issues related to education.

The Education Studies Undergraduate Scholars program establishes an interdisciplinary cohort of scholars drawn from Yale College freshmen, sophomores, juniors, and seniors. Each Education Studies Scholar develops a course plan within the Education Studies curriculum that advances their interests in one of the various aspects of education studies, culminating in a capstone seminar. Education Studies Scholars gain practical experience through an appropriate academic-year or summer educational opportunity, and they explore educational topics through collaboration, colloquia, and advising relationships with mentors.

Students may apply to the Education Studies Undergraduate Scholars program in their freshman or sophomore year after they have successfully completed the foundation course, EDST 110. The application includes a statement of interest in some aspect of education research, practice, and/or policy; an official or unofficial transcript of courses
taken at Yale; and a letter of reference from a Yale College faculty member supporting the student in terms of character, motivation, and academic promise.

Courses

EDST 110a or b, Foundations in Education Studies  Staff
Introduction to key issues and debates in the U.S. public education system. Focus on the nexus of education practice, policy, and research. Social, scientific, economic, and political forces that shape approaches to schooling and education reform. Theoretical and practical perspectives from practitioners, policymakers, and scholars.

*EDST 125a / CHLD 125a / PSYC 125a, Child Development  Nancy Close and Carla Horwitz
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.  WR, SO

*EDST 127a / CHLD 127a / PSYC 127a, Early Childhood Education: Implications of Curriculum and Policy  Carla Horwitz
Development of curricula for preschool children—infants through five-year-olds—in light of current research and child development theory.  WR, SO  RP

*EDST 128b / CHLD 128b / PSYC 128b, Language, Literacy, and Play  Nancy Close and Carla Horwitz
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.  WR, SO  RP

*EDST 191a or b / CHLD 126a or b, Clinical Child Development and Assessment of Young Children  Nancy Close
Exposure to both conceptual material and clinical observations on the complexity of assessing young children and their families.  SO ½ Course cr

Electrical Engineering

Director of undergraduate studies: J. Rimas Vaišnys, 519 BCT, 432-4253, rimas vaisnys@yale.edu; seas.yale.edu/departments/electrical-engineering

FACULTY OF THE DEPARTMENT OF ELECTRICAL ENGINEERING

Professors  James Duncan, Jung Han, Peter Kindlmann (Adjunct), Roman Kuc, Tso-Ping Ma, A. Stephen Morse, Kumpati Narendra, Mark Reed, Peter Schultheiss (Emeritus), Hemant Tagare, J. Rimas Vaišnys, Y. Richard Yang

Associate Professors  Minjoo Lee, Richard Lethin (Adjunct), Lawrence Staib, Hongxing Tang, Sekhar Tatikonda

Assistant Professors  Jakub Szefer, Fengnian Xia
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.

The program’s educational objectives prepare students for four potential paths. An academic path qualifies graduates to enter a top-tier graduate program conducting research with broad applications or significant consequences, and eventually to teach at an academic or research institution. Graduates following an industrial path can enter a managerial or policy-making position that provides significant value to a company. An entrepreneurial path allows graduates to bring broad knowledge to a startup company, which can deliver a device that meets societal needs. Graduates who elect a nontraditional engineering path might complete a professional program such as business, law, or medicine, to which their engineering knowledge can be applied.

Because the introductory courses are common to all three degree programs, students do 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 112, 115, ENAS 151 or MATH 120 or higher, ENAS 130 or CPSC 112 or higher, and PHYS 180, 181 or higher (PHYS 170, 171 is acceptable for the B.A. degree). Acceleration credits awarded on entrance can be used to satisfy the MATH 112 and 115 requirements. Students whose preparation exceeds the level of ENAS 151 or MATH 120 are asked to take a higher-level mathematics course instead, such as MATH 250. Similarly, students whose preparation at entrance exceeds the level of PHYS 180, 181 are asked to take higher-level physics courses instead, such as PHYS 200, 201. Students whose programming skills exceed the level of ENAS 130 or CPSC 112 are asked to take a more advanced programming course instead, such as CPSC 201; 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 194; MATH 222 or 225; APHY 322 or equivalent; STAT 238, 241, or equivalent.

2. Electrical engineering and related subjects (thirteen term courses): EENG 200, 201, 202, 203, 310, 320, 325, 348, 481 (the senior project); and four engineering electives, at
least three of which should be at the 400 level. MENG 390, CPSC 365, and all 400-level Computer Science courses qualify as ABET electives.

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:

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<tr>
<td>EENG 200</td>
<td>CPSC 112 or ENAS 130</td>
<td>APHY 322</td>
<td>EENG 481</td>
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<tr>
<td>EENG 201</td>
<td>EENG 202</td>
<td>EENG 310</td>
<td>Four electives</td>
</tr>
<tr>
<td>ENAS 151 or MATH 120</td>
<td>EENG 203</td>
<td>EENG 320</td>
<td></td>
</tr>
<tr>
<td>MATH 222</td>
<td>ENAS 194</td>
<td>EENG 325</td>
<td></td>
</tr>
<tr>
<td>PHYS 180</td>
<td>STAT 241</td>
<td>EENG 348</td>
<td></td>
</tr>
<tr>
<td>PHYS 181</td>
<td></td>
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</tr>
</tbody>
</table>

For students who start with MATH 112, a typical ABET-accredited B.S. program might include:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112</td>
<td>EENG 200</td>
<td>EENG 202</td>
<td>APHY 322</td>
</tr>
<tr>
<td>EENG 201</td>
<td>ENAS 151 or MATH 120</td>
<td>EENG 203</td>
<td>EENG 481</td>
</tr>
<tr>
<td>MATH 112</td>
<td>ENAS 194</td>
<td>EENG 310</td>
<td>STAT 241</td>
</tr>
<tr>
<td>MATH 115</td>
<td>MATH 222</td>
<td>EENG 320</td>
<td>Four electives</td>
</tr>
<tr>
<td>PHYS 180</td>
<td>EENG 325</td>
<td>EENG 348</td>
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<tr>
<td>PHYS 181</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 222 or 225; ENAS 194; EENG 200, 201, 202, 203; EENG 471 or, with permission of the director of undergraduate studies, 481 (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>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>EENG 200</td>
<td>CPSC 112</td>
<td>Three electives</td>
<td>EENG 471</td>
</tr>
<tr>
<td>EENG 201</td>
<td>EENG 202</td>
<td></td>
<td>Three electives</td>
</tr>
<tr>
<td>ENAS 151 or MATH 120</td>
<td>EENG 203</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 222</td>
<td>ENAS 194</td>
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<tr>
<td>PHYS 180</td>
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<tr>
<td>PHYS 181</td>
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</tbody>
</table>

For students who start with MATH 112, a typical program for this degree might include:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112</td>
<td>EENG 200</td>
<td></td>
<td>EENG 471</td>
</tr>
<tr>
<td>EENG 201</td>
<td>ENAS 151 or MATH 120</td>
<td>EENG 203</td>
<td>Four electives</td>
</tr>
<tr>
<td>MATH 112</td>
<td>ENAS 194</td>
<td></td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 115</td>
<td>MATH 222</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 180</td>
<td></td>
<td></td>
<td>PHYS 181</td>
</tr>
</tbody>
</table>

Faster-paced and slower-paced variations are possible, depending on the student’s level of preparation and commitment to the major; consult with the director of undergraduate studies. The implied flexibility during the junior and senior years in the schedules above is often used to accommodate a second major, such as Economics, or to master a related technical area, such as recent developments in biology or environmental studies.

**B.A. degree program in Engineering Sciences (Electrical)** This program is appropriate for those planning a career in fields such as business, law, or medicine where scientific and technical knowledge is likely to be useful. It requires eight technical term courses beyond the prerequisites, specifically: MATH 222 or 225, or ENAS 194; EENG 200, 201, 202, and 471 (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 471 or 481, present a written report, and make an oral presentation. 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 471, 472, or 481 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.

**REQUIREMENTS OF THE MAJOR**

**ELECTRICAL ENGINEERING, B.S.**

**Prerequisites**  MATH 112, 115; ENAS 151 or MATH 120 or higher; ENAS 130 or CPSC 112 or higher; PHYS 180, 181 or higher

**Number of courses**  17 term courses beyond prereqs, incl senior req

**Specific courses required**  ENAS 194; MATH 222 or 225; APHY 322; STAT 238 or 241;
EENG 200, 201, 202, 203, 310, 320, 325, 348

**Distribution of courses**  4 engineering electives, 3 at 400 level

**Senior requirement**  One-term design project (EENG 481)

**ENGINEERING SCIENCES (ELECTRICAL), B.S. AND B.A.**

**Prerequisites**  Both degrees – MATH 112, 115; ENAS 151 or MATH 120 or higher;
ENAS 130 or CPSC 112 or higher; B.S. – PHYS 180, 181 or higher; B.A. – PHYS 170, 171 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 194; MATH 222 or 225; EENG 200, 201, 202, 203; B.A. – 1 from ENAS 194 or MATH 222 or 225; EENG 200, 201, 202

**Distribution of courses**  B.S. – 6 electives approved by DUS, 3 at 400 level; B.A. – 3 electives approved by DUS

**Senior requirement**  B.S. – one-term research or design project (EENG 471 or, with permission of DUS, 481); B.A. – one-term research or design project (EENG 471)

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**Courses**

**EENG 200a, Introduction to Electronics**  Tso-Ping Ma
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 115 or equivalent.  QR

**EENG 201b, Introduction to Computer Engineering**  Robert Sadowski
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.  QR

**EENG 202a, Communications, Computation, and Control**  Sekhar Tatikonda
Introduction to systems that sense, process, control, and communicate. Topics include communication systems (compression, channel coding); network systems (network architecture and routing, wireless networks, network security); estimation and learning (classification, regression); and signals and systems (linear systems,
Fourier techniques, bandlimited sampling, modulation). MATLAB programming and laboratory experiments illustrate concepts. Prerequisite: MATH 115. QR

**EENG 203b, Circuits and Systems Design**  Hongxing Tang
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 200 and 202. QR RP

**EENG 222a, Nanotechnology**  Mark Reed
An introduction to the emerging discipline of nanotechnology. The physical effects of nanoscale systems; the synthesis and fabrication of nanostructures; applications ranging from micromachines to electronics to biology. Attention to societal and economic impact, as well as ethical issues created by nanotechnologies. Prerequisites: MATH 115 or equivalent and PHYS 170, 171, or 180, 181, or equivalent; or permission of instructor. QR, SC

*EENG 235a and EENG 236b, Special Projects*  J. Rimas Vaštynys
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. 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. ½ Course cr per term

**EENG 310b, Signals and Systems**  Kumpati Narendra
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 115. Recommended preparation: EENG 202. QR

*EENG 320a, Introduction to Semiconductor Devices*  Mark Reed
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. Additional lab one afternoon per week. Prepares for EENG 325 and 401. Prerequisites: PHYS 180 and 181 or permission of instructor. Recommended preparation: EENG 200. QR, SC

**EENG 325a, Electronic Circuits**  Hongxing Tang
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. Additional lab one afternoon per week. Prerequisite: EENG 200. QR RP

**EENG 348a, Digital Systems** Roman Kuc
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 201. QR

**EENG 397b / ENAS 397b, Mathematical Methods in Engineering** J. Rimas Vaišnys
Exploration of several areas of mathematics useful in science and engineering; recent approaches to problem solving made possible by developments in computer software. Mathematica and Eureqa are used to investigate and solve problems involving nonlinear differential equations, complex functions, and partial differential equations. Prerequisites: MATH 222, and ENAS 194 or MATH 246, or equivalents; familiarity with computer programming. QR

**EENG 401bG / APHY 321bG, Semiconductor Silicon Devices and Technology** Tso-Ping Ma
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 320 or equivalent or permission of instructor. QR, SC

[ **EENG 406, Photovoltaic Energy** ]

**EENG 408aG, Electronic Materials: Fundamentals and Applications** Jung Han
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 320 or permission of instructor. QR, SC

*EENG 410bG, Photonics and Optical Electronics* Jung Han
A survey of the enabling components and devices that constitute modern optical communication systems. Focus on the physics and principles of each functional unit, its current technological status, design issues relevant to overall performance, and future directions. QR, SC

*EENG 425aG, Introduction to VLSI System Design* Richard Lethin
Chip design; integrated devices, circuits, and digital subsystems needed for design and implementation of silicon logic chips. CMOS fabrication overview, complementary logic circuits, design methodology, computer-aided design techniques, timing, and area estimation. Exploration of recent and future chip technologies. A course project is the design, through layout, of a digital CMOS subsystem chip; selected projects are fabricated for students. Prerequisite: familiarity with computer programming and with circuits at the level of introductory physics. QR

**EENG 436a or b, Systems and Control** Kumpati Narendra
Design of feedback control systems with applications to engineering, biological, and economic systems. Topics include state-space representation, stability, controllability, and observability of discrete-time systems; system identification; optimal control of
systems with multiple outputs. Prerequisites: ENAS 194, MATH 222 or 225, and EENG 310 or permission of instructor.  

**EENG 438b**<sup>6</sup>, Neural Networks for Pattern Recognition, Identification, and Control  
Kumpati Narendra  
Design of artificial neural networks (ANN) for approximation, pattern recognition, identification, and control. Introduction to the theory of artificial neural networks and linear adaptive control; adaptive identification and control problems in nonlinear dynamical systems. Applications in engineering and biology. Prerequisite: EENG 436 or permission of instructor.  

**EENG 442a**<sup>6</sup> / AMTH 342a, Linear Systems  
A. Stephen Morse  
Introduction to finite-dimensional, continuous, and discrete-time linear dynamical systems. Exploration of the basic properties and mathematical structure of the linear systems used for modeling dynamical processes in robotics, signal and image processing, economics, statistics, environmental and biomedical engineering, and control theory. Prerequisite: MATH 222 or permission of instructor.  

**EENG 445a**<sup>6</sup> / BENG 445a, Biomedical Image Processing and Analysis  
James Duncan and Lawrence Staib  
A study of the basic computational principles related to processing and analysis of biomedical images (e.g., magnetic resonance, computed X-ray tomography, fluorescence microscopy). Basic concepts and techniques related to discrete image representation, multidimensional frequency transforms, image enhancement, motion analysis, image segmentation, and image registration. Prerequisite: BENG 352 or EENG 310 or permission of instructors. Recommended preparation: familiarity with probability theory.  

**EENG 450b**, Applied Digital Signal Processing  
Roman Kuc  
An analysis, by computer, of processing requirements. Relevant probability and estimation theories applied to measurements corrupted by noise. Point estimates and system identification from random processes. MATLAB simulations verify the analysis. Prerequisite: EENG 310 or permission of instructor.  

**EENG 454b**<sup>6</sup> / AMTH 364b<sup>6</sup> / STAT 364b<sup>6</sup>, Information Theory  
Andrew Barron  

**EENG 471a** and **EENG 472b**, Advanced Special Projects  
J. Rimas Vaišnys  
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. 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 481a or b, Advanced ABET Projects  Robert Sadowski
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 310, 320, 325, and 348. RP

Electrical Engineering and Computer Science

Directors of undergraduate studies: Mark Reed (Electrical Engineering), 523 BCT, 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 112, 115, and ENAS 151 or MATH 120; CPSC 112; and PHYS 180 and 181, or 200 and 201. Acceleration credits may be used to satisfy some of these requirements. However, since the B.S. programs in Electrical Engineering and in Engineering Sciences (Electrical) both limit the use of such credits, students who wish to retain the option of switching to these programs should consult the director of undergraduate studies in Electrical Engineering when planning their course schedules.

The major requires fifteen term courses beyond the prerequisites: CPSC 201, 202, 223, 323, and 365; EENG 200, 201, 202, and 203; one from MATH 222, 225, or STAT 241; four advanced electives, two in electrical engineering, two in computer science; and a senior project. MATH 244 may be substituted for CPSC 202. Electives must be 300- or 400-level courses in the departments of Electrical Engineering and Computer Science, or must be approved by the director of undergraduate studies in each department. Double-titled courses may be counted either way to fulfill this requirement. CPSC 480 and 490 may not be used as electives. With permission of the director of undergraduate studies in each department, EENG 471 or 472 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>
</tr>
</thead>
<tbody>
<tr>
<td>EENG 200a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Senior project</td>
</tr>
<tr>
<td>ENAS 151a</td>
<td>EENG 202a</td>
<td>CPSC 323a</td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 180a</td>
<td>EENG 201b</td>
<td>CPSC 365b</td>
<td>Two electives</td>
</tr>
<tr>
<td>PHYS 181b</td>
<td>CPSC 223b</td>
<td>One elective</td>
<td></td>
</tr>
<tr>
<td>MATH 222b</td>
<td></td>
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</tbody>
</table>

Students with no programming experience should take CPSC 112 in the fall of their freshman year and either postpone EENG 200 until their sophomore year or take ENAS 151 or MATH 120 in the spring.

For students with one term of calculus and no programming experience, a typical program would be:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 115a</td>
<td>EENG 200a</td>
<td>CPSC 323a</td>
<td></td>
</tr>
<tr>
<td>PHYS 180a</td>
<td>EENG 202a</td>
<td>STAT 241a</td>
<td></td>
</tr>
<tr>
<td>EENG 201b</td>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Senior project</td>
</tr>
<tr>
<td>MATH 120b</td>
<td>EENG 203b</td>
<td>One elective</td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 181b</td>
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</tbody>
</table>

For students with no calculus and no programming experience, a typical program would be:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPSC 112a</td>
<td>CPSC 201a</td>
<td>CPSC 202a</td>
<td>Two electives</td>
</tr>
<tr>
<td>MATH 112a</td>
<td>EENG 200a</td>
<td>CPSC 323a</td>
<td></td>
</tr>
<tr>
<td>PHYS 170a</td>
<td>ENAS 151a</td>
<td>EENG 202a</td>
<td></td>
</tr>
<tr>
<td>EENG 201b</td>
<td>CPSC 223b</td>
<td>CPSC 365b</td>
<td>Senior project</td>
</tr>
<tr>
<td>MATH 113b</td>
<td>MATH 222b</td>
<td>EENG 203b</td>
<td>One elective</td>
</tr>
<tr>
<td>PHYS 171b</td>
<td>One elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who start with MATH 112 may satisfy the physics prerequisite by taking PHYS 170 and 171 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 490 or EENG 471 or 472, depending on 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.

REQUIREMENTS OF THE MAJOR

Prerequisites MATH 112, 115, and ENAS 151 or MATH 120; CPSC 112; PHYS 180, 181, or 200, 201 (PHYS 170, 171 is acceptable for students who need to take MATH 112)

Number of courses 15 term courses beyond prereqs (incl senior project)

Specific courses required CPSC 201, 202, 223, 323, and 365; EENG 200, 201, 202, and 203; one from MATH 222 or 225 or STAT 241

Distribution of courses 4 addtl 300- or 400-level electives, 2 in electrical engineering, 2 in comp sci

Substitution permitted MATH 244 for CPSC 202; advanced courses in other depts, with permission of DUS in each dept

Senior requirement Independent project (CPSC 490 or EENG 471 or 472) approved by DUS in each dept

Energy Studies

Yale Climate & Energy Institute (YCEI) sponsors the Energy Studies Undergraduate Scholars program. The program promotes a multidisciplinary approach to the linked challenges of energy and climate, and provides students with training in the science and technology of energy, the environmental and social impacts of energy production and use, and the economics, planning, and regulation of energy systems and markets. Energy Studies Scholars acquire the broad knowledge and skills needed for advanced studies and for leadership in energy-related fields.

In addition to their participation in the program, Energy Studies Scholars must complete the requirements of a Yale College major. Yale College does not offer a major in energy studies.

Admission to the Energy Studies Undergraduate Scholars program is by application, normally in the second term of the sophomore year. Accepted students are assigned an adviser from the YCEI faculty. Upon successful completion of the program, students receive a letter from YCEI acknowledging their participation in the program and are invited to attend the annual Yale Alumni in Energy Conference.

For additional information, including program requirements and application instructions, visit the YCEI Web site (climate.yale.edu/prog-init/undergraduate-scholars-energy-studies).

Engineering

Dean of the School of Engineering & Applied Science: T. Kyle Vanderlick, 222 DL, 432-4200, engineering@yale.edu; seas.yale.edu

Engineering programs are offered in the departments of Biomedical Engineering, Chemical and Environmental Engineering, Electrical Engineering, and Mechanical Engineering and Materials Science. These departments are administered by the dean of the School of Engineering & Applied Science. The School also offers interdisciplinary courses bearing on engineering programs.
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 Biomedical Engineering or Environmental Engineering and the B.S. in Engineering Sciences (Chemical, Electrical, or Mechanical), as well as the B.A. in Engineering Sciences (Electrical, 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 engineering courses and descriptions of the major programs mentioned above, see under Applied Mathematics, Biomedical Engineering, Chemical Engineering, Electrical Engineering, Engineering and Applied Science, Environmental Engineering, and Mechanical Engineering.

**Engineering and Applied Science**

Director of undergraduate studies: Vincent Wilczynski, 238 DL, 432-4221, vincent.wilczynski@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 Biomedical Engineering, Chemical and Environmental Engineering, Electrical Engineering, and Mechanical Engineering and Materials Science offer courses intended primarily for majors in engineering disciplines. Courses in these departments may also be relevant for students with appropriate backgrounds who are majoring in chemistry, physics, biology, geology and geophysics, mathematics, and computer science. For information about majors in engineering and their related courses, see under Biomedical Engineering, Chemical Engineering, Electrical Engineering, Environmental Engineering, and Mechanical Engineering.

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 110b / APHY 110b, The Technological World  Victor Henrich and Daniel Prober
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: high school physics or chemistry. Enrollment limited to 90. QR, SC

*ENAS 118b, Introduction to Engineering, Innovation, and Design  John Morrell and staff
An introduction to engineering, innovation, and design process. Principles of material selection, stoichiometry, modeling, data acquisition, sensors, rapid prototyping, and elementary microcontroller programming. Types of engineering and the roles engineers play in a wide range of organizations. Lectures are interspersed with practical exercises. Students work in small teams on an engineering/innovation project at the end of the term. Priority to freshmen. RP

*ENAS 120b / CENG 120b / ENVE 120b, Introduction to Environmental Engineering  Jordan Peccia
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 114, 115 (may be taken concurrently) or permission of instructor. QR, SC

*ENAS 323a, Creativity and New Product Development  Henry Bolanos
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. SO

ENAS 335a / EP&E 204a, Professional Ethics  Mercedes Carreras
A theoretical and case-oriented approach to ethical decision making. Concepts, tools, and methods for constructing and justifying solutions to moral problems that students may face as professionals. SO

ENAS 360bG / ENVE 360b, Green Engineering and Sustainable Design  Julie Zimmerman
Study of green engineering, focusing on key approaches to advancing sustainability through engineering design. Topics include current design, manufacturing, and disposal processes; toxicity and benign alternatives; policy implications; pollution prevention and source reduction; separations and disassembly; material and energy efficiencies and flows; systems analysis; biomimicry; and life cycle design,
management, and analysis. Prerequisites: CHEM 112, 113, or 114, 115, or permission of instructor.

**Applied Mathematics and Computation Courses**

**ENAS 130b, Introduction to Computing for Engineers and Scientists**  Marshall Long
and staff
An introduction to the use of the C 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. General problem-solving techniques, object-oriented programming, elementary numerical methods, data analysis, and a brief introduction to numerical simulations. Prerequisite: MATH 115 or equivalent.  QR

**ENAS 151a or b /APHY 151a or b, Multivariable Calculus for Engineers**  Mitchell Smooke [F] and Sohrab Ismail-Beigi [Sp]
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 115 or equivalent.  QR  RP

**ENAS 194a or b /APHY 194a or b, Ordinary and Partial Differential Equations with Applications**  Richard Dobbins [F] and Charles Ahn [Sp]
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 151 or equivalent, and knowledge of matrix-based operations.  QR  RP

**ENAS 397b / EENG 397b, Mathematical Methods in Engineering**  J. Rimas Vaišnys
Exploration of several areas of mathematics useful in science and engineering; recent approaches to problem solving made possible by developments in computer software. Mathematica and Eureqa are used to investigate and solve problems involving nonlinear differential equations, complex functions, and partial differential equations.  Prerequisites: MATH 222, and ENAS 194 or MATH 246, or equivalents; familiarity with computer programming.  QR

**ENAS 440a G / MENG 440a, Applied Numerical Methods I**  Beth Anne Bennett
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 are studied in several contexts throughout the course. Prerequisites: MATH 115, and 222 or 225, or equivalents; ENAS 130 or some knowledge of MATLAB, C++, or Fortran programming.  QR  RP

**ENAS 441b G / MENG 441b, Applied Numerical Methods II**  Beth Anne Bennett
The derivation, analysis, and implementation of numerical methods for the solution of ordinary and partial differential equations, both linear and nonlinear. Additional topics such as computational cost, error estimation, and stability analysis are studied in several contexts throughout the course. Prerequisites: MATH 115, and 222 or
ENAS 496G, Probability and Stochastic Processes  Mohamed Belabbas and Sekhar Tatikonda

English Language and Literature

Director of undergraduate studies: John Rogers; associate director of undergraduate studies: R. John Williams; registrar: Erica Sayers, erica.sayers@yale.edu; assistant registrar: to be announced; 107 LC, 432-2224, english.yale.edu/undergraduate-program

FACULTY OF THE DEPARTMENT OF ENGLISH

Professors Elizabeth Alexander, Harold Bloom, Leslie Brisman, David Bromwich, Ardis Buttersfield, Jill Campbell, Janice Carlisle, Joe Cleary (Visiting), Michael Denning, Wai Chee Dimock, Anne Fadiman (Adjunct), Roberta Frank, Paul Fry, Louise Glück (Adjunct), Jacqueline Goldsby, Langdon Hammer, Margaret Homans, Amy Hungerford, David Scott Kastan, Traugott Lawler (Emeritus), Lawrence Manley, Donald Margulies (Adjunct), Stefanie Markovits, J. D. McClatchy (Adjunct), Alastair Minnis, Annabel Patterson (Emeritus), Linda Peterson, Caryl Phillips, David Quint, Claude Rawson, Joseph Roach, Marc Robinson, John Rogers, Caleb Smith, Robert Stepto, Katie Trumpener, Michael Warner, Ruth Yeazell

Associate Professors Murray Biggs (Adjunct), Jessica Brantley, Brian Walsh

Assistant Professors Ian Cornelius, Benjamin Glaser, Paul Grimstad, Wendy Lee, Justin Neuman, Catherine Nicholson, Shital Pravinchandra, Anthony Reed, Sam See, R. John Williams

Senior Lecturers James Berger, John Crowley, Michael Cunningham, Fred Strebeigh, Cynthia Zarin

The undergraduate program in English teaches students foundational research and writing skills and cultivates their powers of argument and analysis. Courses offered by the department are designed to develop students’ understanding of important works of English, American, and world literatures in English; to provide historical perspectives from which to read and analyze these works; and to deepen students’ insight into their own experience. For students interested in creative writing, the department offers an array of courses taught by renowned professional writers. Student writers at Yale work in all of the major genres, including fiction, poetry, play and film writing, nonfiction prose, and journalism, and they often enjoy the satisfaction of publication or performance for both local and national audiences.

The ability to write well remains a rare but prized skill in almost every domain of our world, and English majors go on to careers in many fields of endeavor. The analytic talents and the writing and speaking skills honed in the major can lead graduates to careers in fields such as advocacy, publishing, teaching, the arts, law, venture capital, medicine, and policy making.

**Introductory courses** Courses numbered from 114 to 130 are introductory. Students planning to elect an introductory course in English should refer to the departmental Web site (http://english.yale.edu/undergraduate-program/pre-registration) for information about preregistration. To retain their place in an introductory English section, students must attend the first and all subsequent class meetings for the section until the end of the second week of classes. If a student misses a class meeting during this period without informing the instructor beforehand, his or her place will immediately be filled from the waiting list. Students may change their section by attending the desired section. If there are no available seats, the student may be placed on the waiting list for that section.

**Advanced courses** Courses numbered 150 and above are open to upperclassmen; the faculty recommends that students both within and outside the major prepare for such work with two terms of introductory English. Seminars are intended primarily for junior and senior English majors; sophomores and nonmajors may be admitted where openings are available.

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, genres, and figures 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.

**Writing courses** Besides introductory courses that concentrate on the writing of expository prose (ENGL 114, 115, 120, 121), the English department offers several creative writing courses. The introductory creative writing course, ENGL 123, is open to any student who has not taken an intermediate or advanced course in the writing of fiction, poetry, or drama. Interested students must preregister for ENGL 123, but they need not submit a writing sample to gain admission as is required for all other
creative writing courses. More advanced creative writing courses, designated "CW" in the course listings, 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 at the departmental office in 107 LC and on the English department Web site (http://english.yale.edu/undergraduate-program/course-applications-deadlines); writing samples are received in 107 LC or on line as directed on the Web site. Applicants receive e-mail notification of acceptance into writing courses. Students with questions about admission should visit the office of the director of undergraduate studies in 107 LC.

Students may in some cases arrange a tutorial in writing (ENGL 470), 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 (http://yalecollege.yale.edu/content/residential-college-seminar-program).

**Prerequisites** 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 prerequisites for the major are ENGL 125 and 126, the program’s foundational courses in English poetry. Prospective English majors are strongly encouraged to complete the prerequisites, as well as one or more introductory literature courses such as ENGL 127, 129, or 130, by the end of the sophomore year. Those who have not enrolled in the Directed Studies program should consider taking both ENGL 129 and 130, the foundational courses in the European literary tradition.

A student who takes both ENGL 125 and 126 may count any three terms of ENGL 114, 115, 120, 121, 123, 127–130, or DRST 001, 002 toward the remaining twelve courses required for the major. If ENGL 125 and 126 are not taken, two terms of ENGL 114, 115, 123, 127–130, or DRST 001, 002 may count as the prerequisites so long as the student also takes, as part of the major, four advanced courses that deal substantially and intensively with poets included in ENGL 125 and 126. Two of these courses should substitute for two of the four units in ENGL 125 (Chaucer, Spenser, Shakespeare, and Donne), and two should substitute for two of the four units in ENGL 126 (Milton, Pope, Wordsworth, and Eliot or another modern anglophone 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.

**The major** At least fourteen term courses are required for the major, including prerequisites and the senior requirement. No more than five courses numbered 130 or below may be counted toward 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.

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 designations "Pre-1800," "Pre-1900," or "Amer" in the course listings. Pre-1800 courses can, by definition, satisfy the pre-1900 requirement. Courses in American literature in the pre-1800 or pre-1900 periods may be counted toward both the relevant period requirement 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.

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. No more than two courses in creative writing may be counted toward the major; ENGL 123 does not count toward this limit. A student may petition the director of undergraduate studies for permission to include a third writing course.

**Senior requirement**  Students must complete a two-course senior requirement consisting of one of the following combinations: (1) a senior seminar and a one-term senior essay; (2) two senior seminars; (3) a senior seminar or one-term senior essay, and a junior seminar in which the student, with the permission of the instructor, fulfills the senior requirement; (4) a two-term senior essay, with permission of the director of undergraduate studies; (5) a senior seminar or one-term senior essay, and 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 designated "Senior sem" in the course listings. The final essays written for senior seminars should provide an appropriate culmination to the student’s work in the major and in Yale College. Such essays 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. Seniors, with the permission of the director of undergraduate studies and the instructor, may arrange to take a junior seminar for one term of the senior requirement. At the start of term the student must arrange with the instructor to do any additional work necessary to make the course an appropriate capstone experience.

**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. It may be written during one or two terms; single-term essays may be converted to yearlong essays through application to the director of undergraduate studies. See the course listings for ENGL 490 and 491 for procedures. Students fulfilling the senior requirement through a two-term senior essay or through a senior essay and the senior writing concentration project must take a seminar during their senior year, but it need not be a 400-level seminar.
Prospectuses and applications for senior essays are received in the office of the English major in 107 LC or on line as directed on the English department Web site (http://english.yale.edu/undergraduate-program/senior-projects-essays). They should be submitted during the designated sign-up period in the term before enrollment is intended.

**Credit/D/Fail option**  Courses taken Credit/D/Fail may be counted toward the requirements of the major.

**Advising**  Students planning a program of study in English are strongly encouraged to consult the director of undergraduate studies, the departmental representative in their residential college (see below), or their departmental adviser for advice about their course choices.

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Schedules for all majors must be discussed with, and approved by, a faculty adviser from the English department, the director of undergraduate studies, or the associate director of undergraduate studies. Only then may they be submitted to the residential college dean’s office. During the sixth term, each student completes a statement outlining progress in the major, in consultation with the student’s adviser.

**Individual programs of study**  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; Ethnicity, Race, and Migration; Theater Studies; and Women’s, Gender, and Sexuality Studies.

**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 creative writing courses 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; at least three must be at the 400 level. Only one of the four creative writing courses may be from ENGL 134, 135, 245, or 246; ENGL 123 does not count toward the writing concentration. 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 489, The Writing Concentration Senior Project, a tutorial in which students produce a single sustained piece of writing or a portfolio of shorter works. The writing concentration senior project may be offered in partial fulfillment of the senior requirement.

Applications for the writing concentration are received in the office of the English major in 107 LC or online as directed on the departmental Web site (http://english.yale.edu/undergraduate-program/course-applications-deadlines). They should be submitted during the designated sign-up period in the term before enrollment is intended. Students are admitted selectively on the overall strength of their performance in the major and on the quality of their writing samples.

Graduate school  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, and that a course orienting them to critical theory can be especially helpful preparation for graduate study.

Requirements of the Major

Prerequisites  ENGL 125 and 126, or, with 4 addtl courses in major English poets, 2 terms selected from ENGL 114, 115, 123, 127, 129, 130, or DRST 001, 002

Number of courses  At least 14 courses (incl prereq and senior req)

Distribution of courses  3 courses in lit in English before 1800, 1 course in lit in English before 1900, and 1 course in American lit, all representing a variety of periods and figures; 2 sems, 1 in junior, 1 in senior year; no more than 5 courses numbered ENGL 130 or below; no more than 2 creative writing courses; Writing concentration—same, except up to 4 creative writing courses, incl 2 in one genre and 1 in another genre, with at least 3 at 400 level; at least 11 lit courses

Substitution permitted College sem for departmental sem, with DUS permission; 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 for electives in the major; Standard major—a third writing course, with DUS permission

Senior requirement Standard major—1 senior sem and one-term senior essay (ENGL 490); or 2 sems in senior year, 1 of which is a senior sem, the other certified for senior req; or, with DUS permission, two-term senior essay (ENGL 490, 491); Writing concentration—senior sem or one-term senior essay, and writing concentration senior project (ENGL 489)

Courses

*ENGL 012b, Literary Cities: New York, Chicago, San Francisco  Wai Chee Dimock
An introduction to American literature, told through the vibrant lives, ethnic diversities, and innovative genres revolving around three urban centers. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  WR, HU
English: American Lit

*ENGL 013a, Forms of Communication and Intimacy  Jill Campbell
New forms of electronic communication and their effects on social relationships and individuals’ sense of self. Advantages and limitations of these forms in relation to means of communication and intimacy not dependent on electronic mediation. Correspondence by post, in-person conversation and nonverbal communication, social
gatherings centered on food, erotic intimacy, group sociability, and silence. Analytical and creative writing assignments. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. WR, HU

*ENGL 114a or b, Writing Seminars  Janice Carlisle
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, globalization, generosity, experts and expertise, the good life, and dissent in American culture. WR

*ENGL 115a or b, Literature Seminars  R. John Williams
Exploration of major themes in selected works of literature. Individual sections focus on topics such as war, justice, childhood, sex and gender, the supernatural, and the natural world. Emphasis on the development of writing skills and the analysis of fiction, poetry, drama, and nonfiction prose. WR, HU

*ENGL 120a or b, Reading and Writing the Modern Essay  Fred Strebeigh
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. WR

*ENGL 121a or b, Styles of Academic and Professional Prose  Andrew Ehrgood
A seminar and workshop in the conventions of good writing in a specific field. Each section focuses on one academic or professional kind of writing and explores its distinctive features through a variety of written and oral assignments, in which students both analyze and practice writing in the field. Section topics include legal, humor, travel, or nature writing; writing about medicine and public health, religion, the visual arts, or food; writing in the social sciences; writing reviews of the performing arts; and writing for radio. May be repeated for course credit in a section that treats a different genre or style of writing; may not be repeated for credit toward the major. Prerequisite: ENGL 114 or 120 or permission of instructor. Not open to freshmen in the fall term. WR

*ENGL 123a, Introduction to Creative Writing  Langdon Hammer and staff
Introduction to the writing of fiction, poetry, and drama. Development of the basic skills used to create imaginative literature. Fundamentals of craft and composition; the distinct but related techniques used in the three genres. Story, scene, and character in fiction; sound, line, image, and voice in poetry; monologue, dialogue, and action in drama. HU

*ENGL 125a or b, Major English Poets from Chaucer to Donne  Lawrence Manley
An introduction to the diversity and the continuity of the English literary tradition through close reading of four poets from the fourteenth through the seventeenth centuries, Chaucer, Spenser, Shakespeare, and Donne. Emphasis on developing skills of literary interpretation and critical writing. WR, HU
*ENGL 126b, Major English Poets from Milton to T. S. Eliot  Catherine Nicholson and staff
An introduction to the diversity and the continuity of the English literary tradition through close reading of four poets from the seventeenth through the twentieth centuries, Milton, Pope, Wordsworth, and Eliot or another modern anglophone poet. Emphasis on developing skills of literary interpretation and critical writing.  WR, HU

*ENGL 127a or b, Readings in American Literature  Caleb Smith
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. Diaz.  WR, HU

English: American Lit

*ENGL 129a or b / HUMS 198a or b / LITR 168a or b, Tragedy in the European Literary Tradition  Margaret Homans
The genre of tragedy from its origins in ancient Greece and Rome through the European Renaissance to the present day. Themes of justice, religion, free will, family, gender, race, and dramaturgy. Works include Homer’s Iliad and plays by Aeschylus, Sophocles, Euripides, Seneca, Shakespeare, Racine, Ibsen, Chekhov, Brecht, Beckett, and Soyinka. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

*ENGL 130a or b / HUMS 199a or b / LITR 169a or b, Epic in the European Literary Tradition  Stefanie Markovits
The epic tradition traced from its foundations in ancient Greece and Rome to the modern novel. The creation of cultural values and identities; exile and homecoming; the heroic in times of war and of peace; the role of the individual within society; memory and history; politics of gender, race, and religion. Works include Homer’s Odyssey, Vergil’s Aeneid, Dante’s Inferno, Cervantes’s Don Quixote, and Joyce’s Ulysses. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

*ENGL 131a, Versification  Joshua Stanley
The history, theory, and practice of verse-making in the English-language poetry tradition from its beginnings to contemporary hip-hop. Verse techniques as ways to think. Intended principally for aspiring poets who wish to learn the craft of verse construction, but open also to students of poetry who wish to have a firmer command of the historical and technical material of poetry.  HU

ENGL 132b, Science Fiction  Alfred Guy

English: American Lit
*ENGL 134a or b, Reading Fiction for Craft  Tom Hopkins [F] and Michael Cunningham [Sp]
Fundamentals of the craft of fiction writing explored through readings from classic and contemporary short stories and novels. Focus on how each author has used the fundamentals of craft. Writing exercises emphasize elements such as voice, structure, point of view, character, and tone.  HU
English: Creative Writing

*ENGL 135a or b, Reading Poetry for Craft  Tom Hopkins and staff
An introduction to reading and writing poetry. Classic examples from Shakespeare and Milton, the modernist poetics of Stein, Pound, Moore, and Stevens, and recent work in a variety of forms and traditions. Students develop a portfolio of poems and write an essay on the poetic craft of poets who have influenced their work.  HU
English: Creative Writing

*ENGL 152b, Anglo-Saxon Literature  Roberta Frank
Close reading in translation of selected works composed in Anglo-Saxon England, c. 700–1100. Genres include heroic poems, monster treatises, travelogues, biblical translations and adaptations, histories, saints’ lives, catalog poems, prayers, and riddle collections. Later uses and appropriations of this literature from the Norman Conquest to Tolkien, Auden, and Heaney.  HU
English: Pre-1800 Lit
English: Junior Seminar

*ENGL 157b / FREN 305b, Medieval Biography  Ardis Butterfield and Joseph Stadolnik
The sources, aims, and diversity of biographical forms in medieval literature. Analysis of the medieval world through the study of autobiography, hagiography, political martyrology, and literary biography; the challenges of viewing a historical period primarily through a single life. Includes a research trip to New York City. Recommended preparation: reading knowledge of French.  HU  Tr
English: Pre-1800 Lit
English: Junior Seminar

*ENGL 158b, Readings in Middle English: Language and Symbolic Power  Ian Cornelius
The English language and its literature in the late medieval period. Survey of the period’s literary language and genres; languages and forms of romance, dream vision, lyric, cycle drama, dialogue, and devotional prose; travel narratives that reflect on the truth of religious experience; problems of authorship and authority; first-person narration; encounters with religious and cultural alterity. Authors include Chaucer, Trevisa, Langland, Kempe, and Mandeville.  WR, HU
English: Pre-1800 Lit
English: Junior Seminar

ENGL 171b / LITR 177b, Chaucer and Medieval London  Ardis Butterfield
Chaucer’s writings explored through the human and physical landscape of medieval London and Westminster. The crowds, sounds, and visual stimuli of the city examined alongside literary genres in which the author wrote, including dream visions, love epic, lyrics, and comic, satiric, and religious narrative. Chaucer’s sense of the writer’s craft
as a means of imagining space and sound and of depicting the emotional resonance of urban street scenes.  
HU
English: Pre-1800 Lit

*ENGL 175b / HSAR 287b / RLST 267b, Sacred and Profane in Late Medieval Europe
Jessica Brantley and Christopher Wood
The interdependence and collaborations of the sacred and the profane in late medieval European literature and visual art. Close reading of primary texts; analysis of paintings, sculptures, manuscripts, printed books, and prints in Yale University collections. Ways in which disciplinary difference matters to the understanding of culture.  
WR, HU
English: Pre-1800 Lit
English: Junior Seminar

*ENGL 179a, Literary Approaches to the Past  
Ian Cornelius and Eric Weiskott
A study of literary narratives set in the distant past. Nostalgia, the use of the past in the present, historical changes in the meaning of the past, and the phenomenon of medievalism. Authors include Geoffrey Chaucer, Thomas Malory, William Shakespeare, Walter Scott, and Mark Twain. Pre-1800 with permission of the instructor.  
WR, HU
English: Junior Seminar

ENGL 200b, Shakespeare: Comedies and Romances  
Lawrence Manley
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.  
WR, HU
English: Pre-1800 Lit

ENGL 201a, Shakespeare: Histories and Tragedies  
David Scott Kastan
A study of Shakespeare’s histories and tragedies, focusing on attentive reading of the play texts and consideration of the theatrical, literary, intellectual, political, and social worlds in which the plays were written, performed, and experienced.  
HU

*ENGL 220a, Milton  
John Rogers
A study of John Milton’s poetry, his engagement with the cultural, social, and political struggles of the English Revolution, and his decisive influence on the course of English literature.  
WR, HU
English: Pre-1800 Lit

*ENGL 236b / AMST 330b, Dystopic and Utopian Fictions  
James Berger
Attempts since the late nineteenth century to imagine, in literature, cinema, and social theory, a world different from the existing world. The merging of political critique with desire and anxiety; the nature and effects of social power; forms of authority, submission, and resistance.  
HU
English: American Lit
English: Junior Seminar

*ENGL 242b, Consciousness and Form in Eighteenth-Century England  
Jill Campbell
The conceptualization of consciousness in England from the late-seventeenth through the eighteenth century. Philosophical writings that made "consciousness" a key term in defining personal identity, memory, and culpability; literary forms that variously depict individual and collective consciousness. Texts range from philosophical essays to novels, plays, poetry, and personal letters.  
HU
English: Pre-1800 Lit
English: Junior Seminar

*ENGL 245a, Introduction to Writing Fiction  Leslie Woodard
An intensive introduction to the craft of fiction, designed for aspiring creative writers. Focus on the fundamentals of narrative technique and peer review. Not open to freshmen. Prerequisite: a previous course in English or in another literature. English: Creative Writing

*ENGL 246a or b, Introduction to Verse Writing  Louise Glück [F] and Cynthia Zarin [Sp]
A seminar workshop for students who are beginning to write poetry (or students without prior workshop experience at Yale). Preference given to freshmen and sophomores. RP
English: Creative Writing

*ENGL 248a / EVST 325a, Nature Writing in the English-Speaking World  Linda Peterson
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, and South Africa. Pre-1900 with permission of instructor. WR, HU
English: Junior Seminar

*ENGL 250a, Romantic Poetry  Leslie Brisman
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. WR, HU RP
English: Pre-1900 Lit
English: Junior Seminar

*ENGL 252b, Romantic Poetry and Visual Art  Paul Fry
The rise of landscape in the works of Wordsworth, Constable, Byron, and Turner, with emphasis on the nonhuman in relation to consciousness and history. Some attention to the influence of earlier poetry and visual art and to effects on later painters. WR, HU
English: Pre-1900 Lit

*ENGL 264b, Victorian Crime  Janice Carlisle
Crimes of passion, greed, and desperation as they are represented in Victorian literature from Dickens to Conan Doyle and in the graphic arts from Cruikshank to Frith. Readings include fiction, journalism, poetry, and stage melodramas; art works range from narrative paintings in oil to popular wood engravings. WR, HU
English: Pre-1900 Lit
English: Junior Seminar

ENGL 265b, The Victorian Novel  Ruth Yeazell
A selection of nineteenth-century novels, with attention to cultural contexts. Authors chosen from the Brontës, Gaskell, Dickens, Collins, Eliot, Trollope, and Hardy. HU
English: Pre-1900 Lit


*ENGL 269b, The Wilde Years  Linda Peterson  
The writings of Oscar Wilde and his contemporaries explored in the context of late-nineteenth-century culture. The literary movements of aestheticism and decadence, debates over marriage, the New Woman and masculinity and femininity, the emergence of the homosexual as a category. Representations of these issues in poetry, plays, and fiction.  

Hu  
English: Pre-1900 Lit  
English: Junior Seminar  

*ENGL 275b, Emerson, Hawthorne, and Melville  Richard Deming  
Study of central works by three foundational writers of the nineteenth century. Cultural and historical context; questions concerning American identity, ethics, and culture, as well as the function of literature; the authors’ views on the intersections of philosophy and religious belief, culture, race, gender, and aesthetics. Readings include novels, short fiction, and essays.  

WR, Hu  
English: Pre-1900 Lit  
English: American Lit  
English: Junior Seminar  

*ENGL 276a / HUMS 354a, Ways of Knowing in Nineteenth-Century American Literature  Pamela Schirmister  
An examination of the ways in which nineteenth-century literary texts embody and express contested philosophical, epistemological, and historical claims about the developing American nation. Works by Brockden Brown, Poe, Emerson, Hawthorne, Melville, Thoreau, Henry James, and William James, with some attention to concurrent historical materials such as the Federalist Papers, the Journals of Lewis and Clark, and political speeches.  

WR, Hu  
English: Pre-1900 Lit  
English: American Lit  
English: Junior Seminar  

*ENGL 277a / HUMS 248a, The Age of Lincoln and Whitman  David Bromwich  
Ideas of the self, the nature of democracy, and the relationship between slavery and constitutional liberty in the years 1840–70. Extensive readings in Lincoln and Whitman, as well as Emerson, Thoreau, Douglass, Webster, Dickinson, and Melville.  

WR, Hu  
English: Pre-1900 Lit  
English: American Lit  
English: Junior Seminar  

*ENGL 281b / AMST 358b, Animals in Modern American Fiction  James Berger  
Literary portrayals of animals are used to examine the relations between literature, science, and social and political thought since the late nineteenth century. Topics include Darwinist thought, socialism, fascism, gender and race relations, new thinking about ecology, and issues in neuroscience.  

Hu RP  
English: American Lit  
English: Junior Seminar  

*ENGL 283b, Poetry since 1950  Langdon Hammer  
Major poets of the second half of the twentieth century, including Bishop, Lowell, Larkin, Plath, Ashbery, Merrill, Gunn, Hill, and Heaney.  

WR, Hu
*ENGL 286a, Modernism and Childhood  Natalia Cecire
The construction of childhood in British and American literary modernism examined through concepts such as play, cuteness, innocence, and learning. Readings include literature written for children and canonical modernist texts.  WR, HU
English: Junior Seminar

*ENGL 287b, Literature and the Future, 1887 to the Present  R. John Williams
A survey of literature’s role in anticipating and constructing potential futures since 1887. Early Anglo-American and European futurism during the years leading up to World War I; futures of speculative fiction during the Cold War; futuristic dreams of contemporary cyberpunk. What literature can reveal about the human need to understand both what is coming and how to respond to it.  WR, HU
English: Junior Seminar

*ENGL 288a / THST 291a, Eloquence: Classical Rhetoric for Modern Media  Joseph Roach
Classical rhetoric, from Demosthenes to the digital age: the theory and practice of persuasive public speaking and speech writing. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU
English: Junior Seminar

*ENGL 289a / AMST 246a, Hemingway, Fitzgerald, Faulkner  Wai Chee Dimock
Novels and short stories by Hemingway, Fitzgerald, and Faulkner, supplemented with works by Gertrude Stein, Langston Hughes, Nella Larsen, and others. Exploration of interconnections among these works using three analytic scales: the macro history of the United States and the world; the formal and stylistic innovations of modernism; and the small details of sensory input and psychic life.  WR, HU
English: American Lit

*ENGL 290b, American Literary Realisms since 1880  Natalia Cecire
Theoretical survey of American literary realisms since 1880, including naturalism, modernism, postmodern metafiction, and Language and post-Language poetry. Exploration of realist concepts such as resemblance, mimesis, objectivity, fact, the Lacanian real, and the index. Authors include James, Crane, Jewett, Chesnutt, Faulkner, Williams, Moore, Pynchon, and Rankine.  WR, HU
English: American Lit

English: Junior Seminar

ENGL 291a / AMST 261a, The American Novel since 1945  Amy Hungerford
American fiction; works by Richard Wright, Flannery O’Connor, Jack Kerouac, Vladimir Nabokov, Philip Roth, Thomas Pynchon, John Barth, Maxine Hong Kingston, Toni Morrison, Cormac McCarthy, Lev Grossman, Alison Bechdel, and Junot Diaz.  HU
English: American Lit

ENGL 293b / AMST 211b / ER&M 210b / WGSS 211b, Race and Gender in American Literature  Birgit Brander Rasmussen
The role of literature in constructing representations of America as an idea, a nation, a colonial settlement, and a participant in world affairs. What kind of place America is and who belongs there; the consequences of America’s history for its national literature.
Emphasis on the ways texts represent and contest social concepts of race and gender difference.  
HU
English: American Lit

*ENGL 299a / AMST 301a / FILM 311a, East Asia in U.S. Literature and Film
R. John Williams
An introductory course on American images of Asia and Asian America in twentieth-century literature and cinema.  
WR, HU
English: American Lit
English: Junior Seminar

ENGL 300b / LITR 300bG, Introduction to Theory of Literature  Carol Jacobs
An examination of concepts and assumptions in contemporary views of literature. Theories of meaning, interpretation, and representation. Critical analysis of formalist, psychoanalytic, structuralist, poststructuralist, Marxist, and feminist approaches to theory and to literature.  
HU

*ENGL 306bG / AFAM 423bG / AMST 384bG, American Artists and the African American Book  Robert Stepto
Visual art in African American books since 1900. Artists include Winold Reiss, Aaron Douglas, E. S. Campbell, Tom Feelings, and the FSA photographers of the 1940s. Topics include Harlem Renaissance book art, photography and literature, and children’s books. Research in collections of the Beinecke Library and the Yale Art Gallery is encouraged.  
HU
English: American Lit
English: Junior Seminar

*ENGL 310a, Modern Poetry  Benjamin Glaser and Benjamin Glaser
Introduction to the major movements and figures of modern English and American poetry. The concept of the new; modern poetry’s struggles with Romantic and Victorian predecessors. Movements such as war poetry, the Harlem Renaissance, imagism, and objectivism; poets include Yeats, Frost, Eliot, Pound, Moore, and Stevens.  
WR, HU
English: Junior Seminar

*ENGL 317a, Irish Modernism and Empire  Joe Cleary
Irish literary modernism explored in its cultural, intellectual, and political contexts. The movement’s affiliations with nineteenth-century English and European cultural and intellectual traditions, twentieth-century Irish national assertion, the decline of European imperialism, and wider developments in contemporary literature and art. Works by William Butler Yeats, John Millington Synge, James Joyce, Elizabeth Bowen, and Samuel Beckett.  
HU
English: Junior Seminar

*ENGL 329b / AMST 406b, The Spectacle of Disability  James Berger
Examination of how people with disabilities are represented in U.S. literature and culture. Ways in which these representations, along with the material realities of disabled people, frame society’s understanding of disability; the consequences of such formulations. Various media, including fiction, nonfiction, film, television, and memoirs, viewed through a wide range of analytical lenses.  
WR, HU  RP
English: American Lit
English: Junior Seminar

*ENGL 336b / LITR 323b / THST 303b, The Opera Libretto  J. D. McClatchy
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.  WR, HU

English: Junior Seminar

*ENGL 343a / ER&M 353a / HUMS 419a / LITR 268a / SAST 371a, Postcolonial Studies  Shital Pravinchandra
Introduction to key writers, literary works, concepts, and issues in the field of postcolonial studies. Definitions of the term "postcolonial," including to whom it can be applied; the cultural, psychological, and political consequences of colonization; opinions of non-Western writers about current cultural and political climates and the historical processes that shaped them.  HU

English: Junior Seminar

*ENGL 344a / EP&E 265a / ER&M 436a, Global Fictions  Justin Neuman
Literary fictions and social systems from 1827 to the present that take an idea of the global as their frame of reference. Themes include politics (empire to postcolony), economics (capitalism, communism, "three worlds theory"), and technology (trade, media, war, energy). Works by Goethe, Melville, Marx, Verne, Forster, Tagore, Ondaatje, Rushdie, Salih, Fukuyama, Friedman, and Ishiguro.  WR, HU

English: Junior Seminar

*ENGL 347b / HUMS 274b / LITR 264b / SAST 362b, South Asian Anglophone Literature  Shital Pravinchandra
Introduction to key works, concepts, and issues in twentieth-century South Asian writing in English. Focus on literature from and about India, Pakistan, Sri Lanka, and Bangladesh. The status of English on the Indian subcontinent; the current popularity of South Asian Anglophone literature; the relation of South Asian literature written in English to literature written in other South Asian languages.  WR, HU

English: Junior Seminar

*ENGL 350a / HUMS 288a / WGSS 408a, Queer Mythologies  Sam See
The use of mythology and mythopoeia (myth-making) by twentieth-century British and American writers to develop queer literary and historical communities. Texts include classical, biblical, Yorùbá, and Aztec myths as background for readings in modernist and postmodernist literature. Authors include Sigmund Freud, Hilda Doolittle, Jeanette Winterson, Tony Kushner, and Tarell Alvin McCraney.  WR, HU

English: Junior Seminar

*ENGL 353a / HUMS 295a / LITR 463a, Medieval Celtic Literature  David Gabriel
Major texts of Celtic literature, focusing on works from the birth of vernacular literature in the Middle Ages to the early modern period. Cultural, historical, and literary issues surrounding works in the Irish and Welsh languages; literary culture in Breton, Cornish, Scottish Gaelic, and Manx. Genres include lyric and bardic poetry, heroic and religious narrative, and early Arthurian works. Readings in English translation; no knowledge of Celtic languages assumed.  HU  Tr
*ENGL 357a / WGSS 340a, Feminist and Queer Theory  Margaret Homans
Historical survey of feminist and queer theory from the Enlightenment to the present, with readings from key British, French, and American works. Focus on the foundations and development of contemporary theory. Shared intellectual origins and concepts, as well as divergences and conflicts, among different ways of approaching gender and sexuality.  WR, HU

English: Junior Seminar

*ENGL 358b, Literature for Young People  Michele Stepto
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.  HU  RP

English: Junior Seminar

*ENGL 364a / AFAM 369a / AMST 378a / LITR 271a / THST 369a, African American Theater  Staff
African American dramatic literature and theater history from the nineteenth century to the present. Key events in black theater history, including the emergence of black musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson, Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU

English: American Lit

English: Junior Seminar

*ENGL 366a / AMST 371a / THST 398a  American Experimental Theater  Marc Robinson
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.

WR, HU

English: American Lit

English: Junior Seminar

*ENGL 374a, Renaissance Lyric  Lawrence Manley
A survey of English lyric poetry from the early sixteenth century through the mid-seventeenth, focusing on poetic forms and traditions and the place of poetry in the social, political, and religious life of the time. Authors include Wyatt, Sidney, Marlowe, Shakespeare, Aemylia Lanyer, Donne, Jonson, Herbert, Herrick, Milton, Lovelace, and Marvell.  WR, HU  RP

English: Pre-1800 Lit

English: Junior Seminar
*ENGL 383bG / LITR 275b / THST 348b, The Common Wealth of Drama
Murray Biggs
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.  WR, HU
English: Junior Seminar

*ENGL 384b / FILM 461b / THST 416b, British Cinema from Documentary to Reality
Fiction  Murray Biggs
Study of twentieth-century British film and culture. Focus on four periods: the 1930s, the Second World War, the late 1950s and early 1960s, and the past thirty years. Relations between film and the social, political, and aesthetic conditions of the period. Works directed by Grierson, Jennings, Reed, Lean, Powell and Pressburger, Richardson, Reisz, Anderson, Leigh, and from Ealing Studios.  WR, HU  RP
English: Junior Seminar

*ENGL 390b / THST 411b, Art and the Stage in Britain  Joseph Roach
The intersection of the fine and performing arts in London and in the British provinces and colonies, from the stage designs of Inigo Jones in the seventeenth century to those of David Hockney in the twentieth and twenty-first. Survey of major styles in stage design, theatrical portraiture, theater architecture, and ephemera. Extensive use of collections in the Yale Center for British Art.  WR, HU
English: Junior Seminar

*ENGL 395a / LITR 154a, The Bible as Literature  Leslie Brisman
Study of the Bible as a literature — 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. If there is sufficient interest, a second section will be offered.  WR, HU  RP
English: Junior Seminar

*ENGL 401b, J. M. Coetzee  Justin Neuman
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.  HU
English: Senior Seminar

*ENGL 405bG / AFAM 406bG / AMST 405bG, Autobiography in America
Robert Stepno
A study of autobiographical writings from Mary Rowlandson’s Indian captivity narrative (1682) to the present. Classic forms such as immigrant, education, and cause narratives; prevailing autobiographical strategies involving place, work, and photographs. Authors include Franklin, Douglass, Jacobs, Antin, Kingston, Uchida, Balakian, Rodriguez, and Bechdel.  WR, HU
English: American Lit
English: Senior Seminar

*ENGL 412bG, Victorian Poetry  Leslie Brisman
The major Victorian poets, Tennyson and Browning, in the context of the romanticism they inherited and transformed. Significant attention to Barrett Browning’s Aurora Leigh, and some attention to Swinburne, the Rossettis, and Morris.  WR, HU  RP
Eng: Pre-1900 Lit
Eng: Senior Seminar

*ENGL 414b / AMST 338b / THST 410b / WGSS 333b, Gertrude Stein  Sam See
An exploration of Gertrude Stein's major works, including her nonfiction prose, narrative prose fiction, verse, and drama. Special attention to Stein's modernist legacy and its divergence from the "Men of 1914" strain of modernism. Several class sessions at the Beinecke Library for inspection and discussion of archival materials.  HU
Eng: American Lit
Eng: Senior Seminar

*ENGL 416a, Contemporary British Fiction  Caryl Phillips
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 Alan Hollinghurst, Kazuo Ishiguro, Colin McInnes, Samuel Selvon, Ruth Prawer Jhabvala, and John Osborne.  WR, HU  RP
Eng: Senior Seminar

*ENGL 418b, Spenser  Catherine Nicholson
A reading of most of The Faerie Queene, together with a selection of shorter poems. Emphasis on Spenser's engagement with poetic precursors, his efforts to marry ethical and aesthetic ambitions, and his reinvention of the English language.  WR, HU  RP
Eng: Pre-1800 Lit
Eng: Senior Seminar

*ENGL 422b / AMST 417b / FILM 435b, The Private Eye  Paul Grimstad
and Alan Trachtenberg
American novels and films of the 1940s and 1950s that introduce and develop the figure of the private eye. Attitudes toward class, gender, sexuality, criminality, race and ethnicity, state authority, and police power; visual style, narrative form, character, performance, and mise-en-scène; meanings of "noir" in film and fiction.  HU
Eng: American Lit
Eng: Senior Seminar

*ENGL 427b, Shakespeare's Political Plays  David Bromwich
Reading and interpretation of selected histories and tragedies from Richard II to Coriolanus. Prerequisite: a previous course in Shakespeare.  WR, HU
Eng: Pre-1800 Lit
Eng: Senior Seminar

*ENGL 428b, The Victorian Political Novel  Stefanie Markovits
The engagement of the Victorian novel with the world of politics. The interaction of systems with individual agents to produce plots; whether political actors are capable of heroism; the operation of methods such as realism and romance in novels that portray the mechanics of government, with special attention to works that deal with reform acts of the period.  HU
Eng: Pre-1900 Lit
Eng: Senior Seminar

*ENGL 430a / GMAN 277a / GMST 294a / HUMS 467a / LITR 331a, Nietzsche and Emerson  Paul North and Paul Grimstad
Comparative introduction to the central writings of Nietzsche and Emerson, with reference to the historical relationship between the two men. Overlap and antagonism
on themes such as power, fate, nature, language, and writing; concepts that underwent radical shifts in each thinker’s work; ways in which philosophical style and ideas of style shaped and complicated the writers’ thinking.  

English: Senior Seminar

*ENGL 435a, Henry James  
Ruth Yeazell
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.  

English: Pre-1900 Lit

English: American Lit

English: Senior Seminar

*ENGL 437a, William Faulkner  
Caleb Smith
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.  

English: American Lit

English: Senior Seminar

*ENGL 438a and ENGL 439b / THST 473a and THST 474b, Directed Independent Study: Eugene O’Neill  
Murray Biggs
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.

*ENGL 443a / AFAM 408a / AMST 460a, African American Poets of the Modern Era  
Robert Stepto
The African American practice of poetry between 1900 and 1960, especially of sonnets, ballads, sermonic, and blues poems. Poets include Paul Laurence Dunbar, Langston Hughes, Sterling Brown, Gwendolyn Brooks, Margaret Walker, and Robert Hayden. Class sessions at the Beinecke Library for inspection and discussion of original editions, manuscripts, letters, and other archival material.  

English: American Lit

English: Senior Seminar

*ENGL 444a / AMST 466a, Contemporary Historical Novels  
James Berger
Attempts of contemporary American authors to put the complexities of history into written form. Narrative as the privileged mode of historical representation; differences between what is regarded as academic history, popular history, and historical fiction; the influence of power and of the writer’s own historical position on historical narrative; effects of ethnicity, gender, and race on the creation and reception of history; writers’ use of historical fiction to change the ways readers think about the present and the future.  

English: Senior Seminar

*ENGL 447a / AMST 346a, American Literature in the World  
Wai Chee Dimock
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, Mark Twain, Henry James, Ernest Hemingway, Gertrude Stein, Monique Truong, Amy Tan, Ruth Ozeki,
Jhumpa Lahiri, Cristina Garcia, Edwidge Danticat, and Dave Eggers. Pre-1900 with permission of the instructor. WR, HU
English: Pre-1900 Lit
English: American Lit
English: Senior Seminar

*ENGL 449a, T. S. Eliot: Tradition and Modernity  Claude Rawson
A study of Eliot as poet, critic, playwright, and man of letters.  HU
English: Senior Seminar

*ENGL 450b, Daily Themes  Richard Deming
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. Not open to freshmen. Counts as a nonfiction course in the writing concentration.  WR
English: Creative Writing

*ENGL 453a / THST 320a, Playwriting  Donald Margulies
A seminar and workshop in writing for the stage. Readings include modern American and British plays by Pinter, Mamet, Churchill, Kushner, Williams, and Wilder. Emphasis on play structure, character, and conflict. In addition to weekly exercises, students write a one-act play.
English: Creative Writing

*ENGL 454a, Nonfiction Writing: Voice and Structure  Fred Strebeigh
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. WR  RP
English: Creative Writing

*ENGL 455b, Writing about Oneself  Anne Fadiman
A seminar and workshop in first-person writing. Students explore a series of themes (e.g., family, love, loss, identity) both by writing about their own lives and by reading British and American memoirs, autobiographies, personal essays, and letters. An older work, usually from the nineteenth or early twentieth century, is paired each week with a more recent one on the same theme.  WR
English: Creative Writing

*ENGL 458b, The Writing of Fiction  Michael Cunningham
A workshop in the craft of writing fiction. May be repeated for credit with a different instructor.  RP
English: Creative Writing

*ENGL 459a / EVST 215a, Scientific and Environmental Writing  Carl Zimmer
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. WR  RP
English: Creative Writing

*ENGL 460a or b, The Writing of Verse  Louise Glück [F] and J. D. McClatchy [Sp]
A seminar and workshop in the writing of verse. May be repeated for credit with a different instructor.  RP
English: Creative Writing

*ENGL 465a or b, Advanced Fiction Writing  Caryl Phillips [F] and John Crowley [Sp]
An advanced workshop in the craft of writing fiction. May be repeated for credit with a different instructor.

English: Creative Writing

*ENGL 466b, Writing the Contemporary Essay  Cynthia Zarin
A seminar and workshop in the contemporary essay. Public versus private voice, the responsibilities of the essayist, and the evolution of writing in the first person. Readings include essays by Joan Didion, Jonathan Lethem, Jenny Diski, Zadie Smith, M. F. K. Fisher, Bruce Chatwin, John Berger, and Oliver Sacks.

English: Creative Writing

*ENGL 467a or b, Journalism  Steven Brill
An intensive workshop in the journalism profession and its changing role and accelerating challenges. Definitions of journalism; the role of journalism in a democracy and a free market; differences between information, news, vicarious news, and entertainment; knowing and telling a good story; the structure of newspaper articles, blogs, online newspapers and magazines, mixed digital media, magazine features, television reports, and nonfiction books; interviewing techniques; fairness; sourcing; the economics of journalism; and audience. Fulfills the core seminar requirement for Yale Journalism Scholars. No prerequisites. Admission by application including writing samples and statement of interest. May be repeated for credit only in the 2014 spring-term section with Bob Woodward as instructor.  WR

English: Creative Writing

*ENGL 468b / THST 327b, Advanced Playwriting Workshop  Donald Margulies
An intensive workshop in advanced playwriting techniques. Discussion of works by contemporary playwrights. In addition to weekly exercises, students write a full-length play. Prerequisite: an intermediate course in playwriting or screenwriting, or with permission of the instructor.  RP

English: Creative Writing

*ENGL 469a, Advanced Nonfiction Writing  Anne Fadiman
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.  WR, HU

English: Creative Writing

*ENGL 470a or b, Tutorial in Writing  John Rogers
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.

English: Creative Writing

*ENGL 473b, The Journalism of Ideas  Mark Oppenheimer
The history and practice of writing journalistic essays or articles in which the principal actor is not a person but a notion or idea. Conventions, tropes, and authorial strategies
that give rise to the best work in the genre. Readings span the era after World War II. Students write their own example of the journalism of ideas.  

WR, HU  RP  
English: Creative Writing

*ENGL 474a, The Genre of the Sentence  Verlyn Klinkenborg
A workshop that explores the sentence as the basic unit of writing and the smallest unit of perception. The importance of the sentence itself versus that of form or genre. Writing as an act of discovery. Includes weekly writing assignments. Not open to freshmen. HU  
English: Creative Writing

*ENGL 488a or b, Special Projects for Juniors or Seniors  John Rogers
Special projects set up by the student in an area of particular interest with the help of a faculty adviser and the director of undergraduate studies, intended to enable the student to cover material not otherwise offered by the department. The course may be used for research or for directed reading, but in either case a term paper or its equivalent is normally required. The student meets regularly with the faculty adviser. To apply for admission, a student must submit an application and prospectus signed by the faculty adviser to the office of the director of undergraduate studies. Students must apply by December 6, 2013, for spring-term projects and by April 25, 2014, for fall-term projects. Application details and forms are available at english.yale.edu/undergraduate-program.

*ENGL 489a or b, The Writing Concentration Senior Project  John Rogers
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 December 6, 2013, for spring-term projects and by April 25, 2014, for fall-term projects. 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 details and forms are available at english.yale.edu/undergraduate-program.

*ENGL 490a or b, The Senior Essay I  John Rogers
Students wishing to undertake an independent senior essay in English must apply through the office of the director of undergraduate studies. Applications are due by December 6, 2013, for spring-term essays or for yearlong essays beginning in the spring term; applications are due by April 25, 2014, for fall-term essays or for yearlong essays beginning in the fall term. Application details and forms are available at english.yale.edu/undergraduate-program. For one-term senior essays, the 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. Consult the director of undergraduate studies regarding the schedule for submission of the yearlong senior essay.

*ENGL 491a or b, The Senior Essay II  John Rogers
Second term of the optional yearlong senior essay. Students may begin the yearlong essay in the spring term of the junior year, allowing for significant summer research, with permission of the instructor. After ENGL 490.
Other Courses Related to English Language and Literature

*HUMS 218a, Shakespearian Character: Falstaff, Hamlet, Iago, Cleopatra  
Harold Bloom  
A close study of four of Shakespeare’s most compelling characters: Iago (from Othello), Cleopatra (from Antony and Cleopatra), Falstaff (from Henry IV), and the title character Hamlet.  HU

*HUMS 219b, Shakespeare: Four Late Masterworks  
Harold Bloom  
A close study of King Lear, Macbeth, The Winter’s Tale, and The Tempest.  HU

*HUMS 221a, Whitman, Melville, Dickinson  
Harold Bloom  
A close reading of works by two major American poets and of Melville’s great American novel, Moby-Dick. Selections from Ralph Waldo Emerson’s prose serve as a starting point.  HU

*HUMS 224b, Wallace Stevens and Hart Crane  
Harold Bloom  
A close reading of the poetry and prose of Wallace Stevens and Hart Crane.  HU

*THST 315a, Shakespeare Acted  
Murray Biggs  
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 audition. Preference to seniors and juniors; open to nonmajors.  HU  RP

Environment

At Yale, the environment is studied from a variety of perspectives. Majors are offered in Architecture, Chemical Engineering, Ecology and Evolutionary Biology, Environmental Engineering, Environmental Studies, and Geology and Geophysics. The program in 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, Global Affairs, History, History of Art, Political Science, Sociology, and Study of the City. Some professional schools and programs offer relevant courses that may admit undergraduates, including Public Health, Forestry & Environmental Studies, the Law School, and the School of Management.

Environmental Engineering

Director of undergraduate studies: Jordan Peccia, 313C ML, 432-4385, jordan.peccia@yale.edu; seas.yale.edu/departments/chemical-and-environmental-engineering

FACULTY ASSOCIATED WITH THE PROGRAM IN ENVIRONMENTAL ENGINEERING

Professors  
Michelle Bell (Forestry & Environmental Studies), Gaboury Benoit (Forestry & Environmental Studies), Ruth Blake (Geology & Geophysics), Stephen Edberg (School of Medicine), Menachem Elimelech (Chemical & Environmental Engineering), Thomas Graedel (Forestry & Environmental Studies), Edward Kaplan (School of Management), Yehia Khalil (Adjunct) (Chemical & Environmental Engineering), Lisa Pfefferle (Chemical
Environmental engineering 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, the prevention of pollution through product and process design, and strategies for sustainable water and energy use and production.

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, and economics. Accordingly, the program allows students in the major to select an emphasis on environmental engineering technology, sustainability, global health, economics, or energy and climate change. The program prepares students for leadership positions in industry and government agencies or for further studies in engineering, science, business, law, and medicine.

The major for the Class of 2014 Students in the Class of 2014 may fulfill the requirements of the major as described below for the Class of 2015 and subsequent classes. Alternatively, they may fulfill the requirements of the major that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS).

The major for the Class of 2015 and subsequent classes Two degree programs are offered: the B.S. in Environmental Engineering, and the B.A. in Engineering Sciences (Environmental). The B.S. degree program in Environmental Engineering is for students who desire a strong background in environmental engineering leading to a career in the field. 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.

Prerequisites The B.S. degree program has the following prerequisites in mathematics and basic sciences: MATH 112, 115; MATH 120 or ENAS 151; ENAS 194; either CHEM 112 and 113 or 114 and 115 with 116L and 117L, or CHEM 118 and 119L by Advanced Placement test only; PHYS 180, 181; and BIOL 101 and 102 or 103 and 104. The B.A. degree program requires MATH 112 and 115; CHEM 112 and 113, or 114 and 115; and PHYS 170, 171.

B.S. degree program in Environmental Engineering The B.S. degree program requires at least twelve term courses beyond the prerequisites, including the senior requirement. Students take CENG 300 or MENG 211, ENVE 120, 360, 373, 377, and either 315 or 448, EVST 344, and MENG 361 or F&ES 714. At least three electives must
be chosen in consultation with the director of undergraduate studies, preferably within one of the following tracks: environmental engineering technology, sustainability, global health, economics, or energy and climate change.

**B.A. degree program in Engineering Sciences (Environmental)** The B.A. degree program requires nine term courses beyond the prerequisites, including the senior requirement. Students take ENVE 120, 360, and either 373 or 377. Five electives must be chosen in consultation with the director of undergraduate studies.

**Senior requirement** Students in the B.S. program must pass ENVE 416 in their senior year. Students in the B.A. program must pass ENVE 490 in their senior year.

**Credit/D/Fail option** For the Class of 2015 and subsequent classes, no course taken Credit/D/Fail may count toward the major, including prerequisites.

**REQUIREMENTS OF THE MAJOR**

**ENVIRONMENTAL ENGINEERING, B.S.**

**Prerequisites** MATH 112, 115; MATH 120 or ENAS 151; ENAS 194; either CHEM 112, 113 or 114, 115 with 116L, 117L, or CHEM 118 and 119L by AP test only; PHYS 180, 181; BIOL 101 and 102 or 103 and 104

**Number of courses** 12 term courses beyond prereqs (incl senior req)

**Specific courses required** CENG 300 or MENG 211; ENVE 120, 360, 373, 377; ENVE 315 or 448; EVST 344; MENG 361 or F&ES 714

**Distribution of courses** 3 electives as specified

**Senior requirement** ENVE 416

**ENGINEERING SCIENCES (ENVIRONMENTAL), B.A.**

**Prerequisites** MATH 112, 115; either CHEM 112, 113 or 114, 115; PHYS 170, 171

**Number of courses** 9 term courses beyond prereqs (incl senior req)

**Specific courses required** ENVE 120, 360; ENVE 373 or 377

**Distribution of courses** 5 electives as specified

**Senior requirement** ENVE 490

**Courses**

*ENVE 120b / CENG 120b / ENAS 120b, Introduction to Environmental Engineering*  
| Jordan Peccia |

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 114, 115 (may be taken concurrently) or permission of instructor. **QR, SC**

*ENVE 210a / CENG 210a, Principles of Chemical Engineering and Process Modeling*  
| Gary Haller |

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 120 or permission of instructor. **QR, SC**

**RP**
ENVE 315b / CENG 315b, Transport Phenomena  André Taylor
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 194 or permission of instructor. QR, SC RP

ENVE 327a / F&ES 327aG / G&G 327a, Atmospheric Chemistry  Nadine Unger
The chemical and physical processes that determine the composition of the atmosphere; implications for climate, ecosystems, and human welfare. Origin of the atmosphere; photolysis and reaction kinetics; atmospheric transport of trace species; stratospheric ozone chemistry; tropospheric hydrocarbon chemistry; oxidizing power, nitrogen, oxygen, sulfur, and carbon cycles; interactions between chemistry, climate, and biosphere; aerosols, smog, and acid rain. Prerequisites: CHEM 115 or 118, and MATH 120, or equivalents. ENAS 194 recommended. QR, SC

ENVE 360b / ENAS 360b'', Green Engineering and Sustainable Design  Julie Zimmerman
Study of green engineering, focusing on key approaches to advancing sustainability through engineering design. Topics include current design, manufacturing, and disposal processes; toxicity and benign alternatives; policy implications; pollution prevention and source reduction; separations and disassembly; material and energy efficiencies and flows; systems analysis; biomimicry; and life cycle design, management, and analysis. Prerequisites: CHEM 112, 113, or 114, 115, or permission of instructor.

*ENVE 373a / CENG 373a, Air Pollution Control  Yehia Khalil
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 210 or permission of instructor. QR, SC RP

*ENVE 377a / CENG 377a, Water Quality Control  Jaehong Kim
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, electrodeionization, reverse osmosis, activated carbon adsorption, and biological methods. Prerequisite: ENVE 120 or permission of instructor. SC RP

ENVE 416a or b / CENG 416a or b, Chemical Engineering Process Design  
Paul Van Tassel and staff
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 301 and 411. QR, SC RP
ENVE 441aG, Biological Processes in Environmental Engineering  Jordan Peccia
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. Prerequisites: CHEM 112, 113, or 114, 115, or 118; MCDB 290 or equivalent; or with permission of instructor. SC

ENVE 448aG, Environmental Transport Processes  Staff
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 120 or permission of instructor. QR, SC

*ENVE 490a or b, Senior Project  Jordan Peccia
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: Amity Doolittle, 121 KRN, 432-9771, amity.doolittle@yale.edu; www.yale.edu/evst

FACULTY ASSOCIATED WITH THE PROGRAM OF ENVIRONMENTAL STUDIES

Professors  D. Michelle Addington (School of Architecture, Forestry & Environmental Studies), Paul Anastas (Forestry & Environmental Studies), Gaboury Benoit (Forestry & Environmental Studies), Graeme Berlyn (Forestry & Environmental Studies), Ruth Blake (Geology & Geophysics), Garry Brewer (Emeritus) (School of Management), Derek Briggs (Geology & Geophysics), Kelly Brownell (Psychology, Public Health), Gary Brudvig (Chemistry, Molecular Biophysics & Biochemistry), Benjamin Cashore (Forestry & Environmental Studies), Peter Crane (Forestry & Environmental Studies), Michael Donoghue (Ecology & Evolutionary Biology, Forestry & Environmental Studies), Michael Dove (Forestry & Environmental Studies, Anthropology), Menachem Elimelech (Chemical & Environmental Engineering), John Mack Faragher (History, American Studies), Durland Fish (Public Health, Forestry & Environmental Studies), Thomas Graedel (Forestry & Environmental Studies), Daniel Kevles (History, History of Medicine), Benedict Kiernan (History), Robert Mendelsohn (Forestry & Environmental Studies, Economics), Alan Mikhail (History), Mark Pagani (Geology & Geophysics), Jeffrey Park (Geology & Geophysics), Peter Perdue (History), Linda Peterson (English), Jeffrey Powell (Ecology & Evolutionary Biology, Forestry & Environmental Studies), Peter Raymond (Forestry & Environmental Studies), Nicholas Robinson (Adjunct) (Forestry & Environmental Studies), Susan Rose-Ackerman (Law School, Political Science), James Saiers (Forestry & Environmental Studies), Oswald Schmitz (Forestry & Environmental Studies, Ecology &
Evolutionary Biology), James Scott (Political Science, Anthropology), Karen Seto (Forestry & Environmental Studies), Kalyanakrishnan Sivaramakrishnan (Anthropology, Forestry & Environmental Studies), David Skelly (Forestry & Environmental Studies, Ecology & Evolutionary Biology), Brian Skinner (Geology & Geophysics), Ronald Smith (Geology & Geophysics, Forestry & Environmental Studies), 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), John Wetlaufer (Geology & Geophysics), Robert Wyman (Molecular, Cellular, & Developmental Biology)

**Associate Professors**  David Post (Ecology & Evolutionary Biology), Julie Zimmerman (Chemical & Environmental Engineering)

**Assistant Professors**  Hagit Affek (Geology & Geophysics), Mark Bradford (Forestry & Environmental Studies), Alex Felson (Forestry & Environmental Studies), Anjelica Gonzalez (Biomedical Engineering), Karen Hébert (Forestry & Environmental Studies, Anthropology), William Rankin (History, History of Science), Paul Sabin (History), David Vasseur (Ecology & Evolutionary Biology), Zhengrong Wang (Geology & Geophysics)

**Senior Lecturers**  Shimon Anisfeld, Carol Carpenter, John Grim

**Lecturers**  Mary Beth Decker, Amity Doolittle, Kealoha Freidenburg, Gordon Geballe, Julie Newman, Linda Puth, Catherine Skinner, Carl Zimmer

Environmental Studies provides an interdisciplinary approach to understanding and solving 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**  The major requires preparation in chemistry, either CHEM 112 and 113, or 114 and 115, or 118; a term of introductory biology, either MCDB 120 or E&EB 122, or two half-term courses chosen from BIOL 101, 102, 103, and 104; a natural science laboratory chosen from CHEM 117L, 119L, MCDB 121L, 221L, E&EB 123L, or 223L; and a term course in mathematics (MATH 112 or above, except MATH 190) or in physics (PHYS 170 or above). Students are advised to take chemistry and biology during the freshman year before enrolling in the EVST core courses in natural sciences. Students should complete the prerequisites by the end of the fall term in their sophomore year, prior to application to the major (see below). 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.
Requirements of the major  In addition to the prerequisites, twelve and one-half or thirteen and one-half course credits are required for the major, including four core courses, one core laboratory, a departmental seminar, a concentration of six courses, and a one- or two-term senior project and colloquium (EVST 496). All courses in the major must be taken for a letter grade.

Core courses  Students are required to take at least two core courses in the humanities and social sciences selected from EVST 120, 226, 255, 340, or 345. They must also take the environmental science core courses EVST 201, 202L, and 223. Completing one course in each area is recommended before the end of the sophomore year.

Departmental seminar  All majors must complete a departmental seminar approved by the director of undergraduate studies. This requirement may be completed in any year of study. Approved seminars include EVST 215, 285, and 290.

Area of concentration  Students plan their concentration in consultation with the director of undergraduate studies and the student’s adviser. A concentration is defined as six courses that provide depth in a problem or issue of interest, as well as disciplinary expertise. Past concentrations have included biodiversity, climate change, energy, environmental history, food and agriculture, human health, resource use and sustainability, and urban planning. Students also have the opportunity to design a unique concentration within the major, working with the director of undergraduate studies.

Senior requirement  Seniors must complete one or two terms of an independent research project and colloquium, taken as EVST 496. In the junior year, students consult with their advisers on the design of the project and submit a preliminary plan for approval to the director of undergraduate studies.

Application to the Environmental Studies major  Students typically apply to enter the major during their sophomore year. Application must be made in writing to the director of undergraduate studies during the designated application period in either the fall or the spring term; details can be found on the program’s Web site (http://www.yale.edu/evst). Juniors who have already completed considerable course work toward the major may also apply during the designated application period. Students considering a major in Environmental Studies should consult the director of undergraduate studies as early as possible in the freshman year.

Summer environmental internship  During the summer between the junior and senior years, many students gain experience in the field through research 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.

REQUIREMENTS OF THE MAJOR

Prerequisites  CHEM 112 and 113, or 114 and 115, or 118; MCDB 120 or E&E 122, or 2 from BIOL 101–104; CHEM 117L, 119L, MCDB 121L, 221L, E&E 123L, or 223L; MATH 112 or above (except MATH 190) or PHYS 170 or above

Number of courses  12½ or 13½ course credits beyond prereqs, incl one- or two-term senior project
**Specific courses required**  EVST 201, 202L, 223; 2 from EVST 120, 226, 255, 340, 345

**Distribution of courses**  1 departmental sem, 6 courses in area of concentration

**Senior requirement**  One- or two-term research project and colloq (EVST 496)

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**Introductory Course**

*EVST 010a / G&G 010a, Earth, Resources, Energy, and the Environment*

David Evans and Mary-Louise Timmermans

Humankind’s interactions with, and place within, the natural world. Plate tectonics and natural disasters, biological evolution and mass extinction, human evolution, population growth and ecology, industrial resources, groundwater and pollution, fossil fuels and energy transitions, the carbon cycle and greenhouse gases, paleoclimates, current global warming, alternative energies, and a planetary perspective on the Earth as a singular oasis in space. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  SC

**Core Courses**

**HUMANITIES AND SOCIAL SCIENCES**

[ EVST 120, Introduction to Environmental History ]

[ EVST 226, Global Environmental History ]

*EVST 255b / F&ES 255b / PLSC 215b, Environmental Politics and Law*  John Wargo

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.  SO

*EVST 340b, Economics of Natural Resources*  Robert Mendelsohn

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.  QR, SO

*EVST 345a / ANTH 382a / F&ES 384a, Environmental Anthropology*  Michael Dove

History of the anthropological study of the environment: nature-culture dichotomy, ecology and social organization, methodological debates, politics of the environment, and knowing the environment.  SO

**ENVIRONMENTAL SCIENCE**

*EVST 201a / G&G 140a, Atmosphere, Ocean, and Environmental Change*  Ronald Smith

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 202L.  QR, SC
*EVST 202La / G&G 141La, Laboratory for Atmosphere, Ocean, and Environmental Change  Ronald Smith
Laboratory and field exercises to accompany EVST 201. Must be taken concurrently with EVST 201.  SC  ½ Course cr

EVST 223a / E&EB 220a†, General Ecology  David Vasseur and David Post
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 112 or equivalent.  SC

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.

[ EVST 170, Sustainability and Institutions: Innovation and Transformation ]

*EVST 200b / G&G 115b, Earth System Science  Jeffrey Park
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. (Formerly G&G 200)  SC

EVST 206b / AMST 176b / HIST 144b / HSHM 206b / HUMS 323b, Science and Technology in the United States  Daniel Kevles
The development of science and technology in American society from the colonial period through the late twentieth century. The rise of the United States to a world-class scientific and technological power; the American scientific community and the tensions it has faced in a democratic society; the role of science and technology in exploration, agriculture, industry, national defense, religion, culture, and social change.  HU

*EVST 221a / E&EB 230a / F&ES 221a, Field Ecology  Linda Puth
A field-based introduction to ecological research, using experimental and descriptive approaches, comparative analysis, and modeling for field and small-group projects. Weekly field trips explore local lake, salt marsh, rocky intertidal, traprock ridge, and upland forest ecosystems. Includes one Saturday field trip and a three-day trip during the October recess. Concurrently with or after E&EB 220 or with permission of instructor.  SC

*EVST 234La, Field Science: Environment and Sustainability  Kealoha Freidenburg
A field course that explores the effects of human influences on the environment. Analysis of pattern and process in forested ecosystems; introduction to the principles of agroecology, including visits to local farms; evaluation of sustainability within an urban environment. Weekly field trips and one weekend field trip.  SC

*EVST 244a, Coastal Environments in a Changing World  Mary Beth Decker
The effects of human action and natural phenomena on coastal marine ecosystems. Methods used by coastal scientists to address environmental issues; challenges associated with managing and conserving coastal environments. Priority to Environmental Studies majors; open to nonmajors as space permits.  SC
EVST 245b / F&ES 245b / PLSC 146b, International Environmental Policy and Governance  Benjamin Cashore
The development of international environmental policy and the functioning of global environmental governance. Critical evaluation of theoretical claims in the literature and the reasoning of policy makers. Introduction of analytical and theoretical tools used to assess environmental problems. Case studies emphasize climate, forestry, and fisheries.  SO

*EVST 260aG / F&ES 260aG, Structure, Function, and Development of Vascular Plants  Graeme Berlyn
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.  SC

*EVST 261a / F&ES 261a / G&G 261aG, Minerals and Human Health  Catherine Skinner and Ruth Blake
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G 110 recommended.  SC

EVST 265b / G&G 255b, Environmental Geomicrobiology  Ruth Blake
Microbial diversity in natural geologic habitats and the role of microorganisms in major biogeochemical cycles. Introduction to prokaryote physiology and metabolic diversity; enrichment culture and molecular methods in geomicrobiology. Prerequisite: college-level chemistry.  SC

*EVST 275b / F&ES 275bG, Ecosystems Patterns and Processes  Peter Raymond and Mark Bradford
Study of ecosystem ecology and biogeochemistry. The use of concepts and data from these disciplines to predict and manage the impact of environmental changes on ecosystem services underlying the provisioning of resources such as food and clean water. Case studies of environmental changes include invasive species and changing climate. Undergraduate enrollment limited to 15.  SC  RP

*EVST 277b / F&ES 277b, Environmental Science and Policy  Mark Bradford
The synthesis of science, both for scientists and for policy makers. Usefulness of the two types of synthesis for developing scientific research and policy. Advancement of complementary practices between science and policy arenas. Concepts and data from ecological and biogeochemical disciplines are used to predict and manage the effects of environmental change on ecosystem services that underlie the provisioning of resources such as food and clean water.  SO

[ EVST 307, Organic Pollutants in the Environment ]

[ EVST 320, International Environmental Law ]

*EVST 325a / ENGL 248a, Nature Writing in the English-Speaking World  Linda Peterson
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, and South Africa. Pre-1900 with permission of instructor. WR, HU

[ EVST 343, Writing and the Natural Environment ]

*EVST 344b / F&ES 344bG, Aquatic Chemistry  Gaboury Benoit
A detailed examination of the principles governing chemical reactions in water. Emphasis on developing the ability to predict the aqueous chemistry of natural, engineered, 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. SC

*EVST 346b / SAST 378b, Urbanization and the Environment in China and India  Karen Seto and Angel Hsu
Study of contemporary urbanization processes in China and India, with a focus on environmental challenges and sustainable development. Energy, food, water, and land-use systems; manufacturing, industry, and technology; cultures and lifestyles. Introduction to conceptual and analytical tools for assessing the effects of urbanization. SO

EVST 347a, Biogeochemistry and Pollution  Gaboury Benoit
Introduction to biogeochemistry and to the nature and behavior of environmental pollutants, including chemical, biological, and physical processes. The fundamental classes of chemical reactions in the environment; critical analysis of chemical data; sampling techniques; analytical methods; natural biogeochemical controls on environmental chemistry. Case studies examine contaminants of special interest such as acid precipitation, nutrients, and sewage.

*EVST 348b, Yellowstone and Global Change  Susan Clark
Introduction to sustainability issues in natural resource management and policy, using the Greater Yellowstone ecosystem as a case study. Topics include large carnivores, wildlife conservation, parks, energy, and transportation. Priority to Environmental Studies majors.

*EVST 349a, Urbanization, Food Systems, and the Environment  Karen Seto
Trends in urbanization that affect the production and demand for food in the twenty-first century. Implications for natural resources such as agricultural and pasture lands. The simultaneous demographic, economic, and biophysical processes of urbanization; the life cycle of food, from production, processing, and distribution to demand, consumption, and waste. SO

*EVST 353a / LAST 353a, Sustainability in Latin America  Garry Brewer
The concept of sustainability applied to five topics of high priority in Latin America: biodiversity, payments for environmental services, eco-efficiency, social enterprises and entrepreneurship, and capacity building. Added support provided by visiting scholars from the University of the Andes. SO

*EVST 362bG / ARCG 362bG / G&G 362bG, Observing Earth from Space  Xuhui Lee
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. QR, SC

*EVST 399b, Agriculture: Origins, Evolution, Crises  Harvey Weiss
Analysis of the societal and environmental drivers and effects of plant and animal domestication, the intensification of agroproduction, and the crises of agroproduction: land degradation, societal collapses, sociopolitical transformation, sustainability, and biodiversity. SO

*EVST 400a or b / E&EB 275aG and bG, Biological Oceanography  Mary Beth Decker
Exploration of a range of coastal and pelagic ecosystems. Relationships between biological systems and the physical processes that control the movements of water and productivity of marine systems. Anthropogenic impacts on oceans, such as the effects of fishing and climate change. Includes three Friday field trips. Enrollment limited to 15. SC

*EVST 420a / EAST 425a / HIST 313Ja, Asian Environments and Frontiers  Peter Perdue and Kwangmin Kim
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. WR, HU

[ EVST 422, Anthropology of Climate Change, Past and Present ]

*EVST 424a / ANTH 406a / PLSC 420a, Rivers: Nature and Politics  James Scott
The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them. SO

EVST 441a / F&ES 441a / G&G 440aG, Methods in Geomicrobiology  Ruth Blake
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. SC

*EVST 473b / ANTH 473bG / ARCG 473bG, Abrupt Climate Change and Societal Collapse  Harvey Weiss
The coincidence of societal collapses throughout history with decadal and century-scale drought events. Challenges to anthropological and historical paradigms of cultural adaptation and resilience. Examination of archaeological and historical records and high-resolution sets of paleoclimate proxies. HU, SO

Departmental Seminars

*EVST 215a / ENGL 459a, Scientific and Environmental Writing  Carl Zimmer
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. WR RP

*EVST 290b / F&ES 290b, Geographic Information Systems  Charles Tomlin
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.

Senior Project

*EVST 496a or b, Senior Research Project and Colloquium  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 typically complete a two-term senior essay, but students completing the requirements of two majors may consider a one-term senior project.

Ethics, Politics, and Economics

Director of undergraduate studies: Steven Wilkinson, 31 Hillhouse Ave., 432-7178, steven.wilkinson@yale.edu; epe.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF ETHICS, POLITICS, AND ECONOMICS

Professors  Seyla Benhabib (Political Science, Philosophy), Donald Brown (Economics), David Cameron (Political Science), Ron Eyerman (Sociology), Bryan Garsten (Political Science), Shelly Kagan (Philosophy), Ioannis Kessides (Visiting), Joseph LaPalombara (Emeritus) (Political Science), Thomas Pogge (Philosophy), Benjamin Polak (Economics), Douglas Rae (Political Science), John Roemer (Political Science), Susan Rose-Ackerman (Political Science, Law School), Andrew Sabl (Visiting), Nicholas Sambanis (Director) (Political Science), Prakash Sethi (Political Science) (Visiting), Ian Shapiro (Political Science), Steven Wilkinson (Political Science)

Senior Lecturer  Boris Kapustin (Global Affairs)

Lecturers  Thomas Donahue (Political Science), Alexandra Dufresne (Political Science), Christopher Lebron (Political Science), Jonathan Schell (Global Affairs), David Simon (Political Science)

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
III. Subjects of Instruction

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, one intermediate microeconomics course, three core courses, one advanced seminar, and four courses comprising a student’s individual area of concentration. The concentration is developed in consultation with the director of undergraduate studies and should culminate in a senior essay written in the area defined by the concentration.

**Introductory courses** Introductory courses provide a basic familiarity with contemporary economic analysis and survey central issues in ethics and political philosophy. Such a background is necessary to understand theories that combine different approaches to the three areas of inquiry and to assess policies with complex social, economic, and moral implications.

The five introductory courses include two in economics (microeconomics and macroeconomics), one in political philosophy, one in ethics, and one in statistics. An intermediate course in microeconomics is also required.

**Core courses** Three core courses comprise the center of the major in Ethics, Politics, and Economics. The first core course, required for all majors, is EP&E 215, Classics of Ethics, Politics, and Economics. Students 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 (http://epe.yale.edu/requirements-major).

**Advanced seminars** All majors 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, see the program’s Web site (http://epe.yale.edu/requirements-major).

**Area of concentration** Each student defines an area of concentration in consultation with the director of undergraduate studies. The concentration enables 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 treats 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 four courses appropriate to the theme, including the seminar or independent study course in which the senior essay is written (see "Senior essay" below). In designing the area of concentration, students are encouraged to include seminars from other departments and programs. The director of undergraduate studies will also require students to show adequate competence in data analysis when the area of concentration requires 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.

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 the Academic Regulations.)

**Senior essay** A senior essay is required for the major and should constitute an intellectual culmination of the student’s work in Ethics, Politics, and Economics. The essay 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 EP&E 491 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 EP&E 492, 493.

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 9, 2013. Senior essays written in the spring term and yearlong essays are due April 14, 2014. 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. Applications must be submitted via e-mail to the program’s registrar at kellianne.farnham@yale.edu no later than 4 p.m. on Friday, December 6, 2013. Applications must include the application cover sheet (available on the program’s Web site (http://cpe.yale.edu/applying-major)), a transcript of work at Yale that indicates fall-term 2013 courses, and a brief application essay, all in PDF format. 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 is posted on the program’s Web site (http://cpe.yale.edu/applying-major).

III. Subjects of Instruction

REQUIREMENTS OF THE MAJOR

Prerequisites None
Number of courses 14 (incl senior req)
Specific course required EP&E 215
Distribution of courses 1 intro course each in microeconomics, macroeconomics, political phil, ethics, and stat; 1 intermediate microeconomics course; 2 addtl core courses, as specified; 1 advanced sem, as specified; 4 courses, incl course for senior req, in area of concentration defined by student in consultation with DUS
Senior requirement Senior essay in area of concentration (in a sem or in EP&E 491 or in EP&E 492 and 493)

Courses

EP&E 203a / PLSC 452a / STAT 102aG, Introduction to Statistics: Political Science
Jonathan Reuning-Scherer and Alan Gerber
Statistical analysis of politics, elections, and political psychology. Problems presented with reference to a wide array of examples: public opinion, campaign finance, racially motivated crime, and public policy. QR
EPE: Intro Statistics

EP&E 204a / ENAS 335a, Professional Ethics    Mercedes Carreras
A theoretical and case-oriented approach to ethical decision making. Concepts, tools, and methods for constructing and justifying solutions to moral problems that students may face as professionals. SO

Jonathan Reuning-Scherer
Descriptive and inferential statistics applied to analysis of data from the social sciences. Introduction of concepts and skills for understanding and conducting quantitative research. QR
EPE: Intro Statistics

*EP&E 215a or b, Classics of Ethics, Politics, and Economics    Boris Kapustin
and Thomas Donahue
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. HU, SO

*EP&E 220a / PLSC 327a, Collective Choice and Political Morality    Thomas Donahue
Social choice theory and its implications for political morality. Challenges involved in creating a collective choice procedure, given diverse individual preferences. Philosophical foundations of social choice theory, including its assumptions about the nature of liberty. The feasibility of democracy and the existence of a public interest. SO
EPE: Rationality Core
*EP&E 224a / ECON 465a / GLBL 330a, Debating Globalization  Ernesto Zedillo
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. Prerequisite: background in international economics and data analysis. Preference to seniors majoring in Economics or EPE.  SO  RP
EPE: Rationality Core

[ EP&E 226, Fundamentals of Game Theory ]

*EP&E 227b / ECON 473b / PLSC 343b, Equality  John Roemer
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.  SO
EPE: Rationality Core

*EP&E 228b / ECON 462b / GLBL 316b / LAST 410b, The Economics of Human Capital in Latin America  Douglas McKee
Economic issues related to a population’s education, skills, and health; focus on contemporary Latin American societies. Determinants of health and education; evaluation of human capital development policies; the role of human capital in a variety of economic contexts, including the labor market, immigration, child investment, intrahousehold bargaining, inequality, and poverty. Prerequisites: intermediate microeconomics and econometrics.  SO
EPE: Rationality Core

[ EP&E 232, Microeconomic Public Policy ]

*EP&E 234b / PLSC 345b, States, Markets, and Rational Individuals  Edwin Camp
Critical evaluation of rational choice theory, with applications to issues in economics and politics. Success and failure of cooperation among individuals; conditions under which markets fail; state facilitation or stifling of market activity; the ability of individuals to make collective decisions.  SO
EPE: Rationality Core

*EP&E 235a / PHIL 457aG / PLSC 283aG, Recent Work on Justice  Thomas Pogge
In-depth study of one contemporary book, author, or debate in political philosophy, political theory, or normative economics. Focus varies from year to year based on student interest and may include a ground-breaking new book, the life’s work of a prominent author, or an important theme in contemporary political thought.  HU
EPE: Rationality Core

*EP&E 236b / PLSC 466b, Ethics and the Multinational Business Firm  Susan Rose-Ackerman
Ethical challenges facing modern business leaders, with a focus on multinational corporations conducting business in developing countries. Topics include the normative basis of the market and firm, labor rights, environmental harms, corruption and fraud, and obligations of managers to shareholders and to other stakeholders. Priority to junior and senior majors in Ethics, Politics, and Economics.  SO
EPE: Rationality Core

**EP&E 237a / ECON 345a, Welfare Economics and Equity**  Donald Brown
Efficiency in simple general equilibrium models of competitive markets and market failures in which the first and second welfare theorems do not hold. Externalities, public goods, and monopoly pricing. The relative merits of the Kaldor–Hicks compensation principle in partial equilibrium analysis and the Pareto principle in general equilibrium analysis. Prerequisites: ECON 121 or 125, and MATH 112 or equivalent  so
EPE: Rationality Core

**EP&E 238a / PLSC 340a, Leadership, Coordination, and Focal Points**  Andrew Sabl
Analysis of a leadership model in which the leader’s role is both the coordination of mutually beneficial action among multiple parties and the appeal to focal points, understood as natural or obvious meeting points for communication or action. Basic concepts of coordination and focal points; the ability of leaders to exert power by creating new focal points, choosing among existing ones, or serving as focal or rallying points themselves; constitutionalism as a solution to coordination problems.  so
EPE: Rationality Core

**EP&E 242b / PLSC 372b, Politics and Markets**  Peter Swenson
Examination of the interplay between market and political processes in different substantive realms, time periods, and countries. Inquiry into the developmental relationship between capitalism and democracy, including the developmental and functional relationships between the two. Investigation of the politics of regulation in areas such as property rights, social security, international finance, and product, labor, and service markets. Topics include the economic motives of interest groups and coalitions in the political process.  so
EPE: PoliticalSystems Core

**EP&E 245a / PLSC 152a, Global Firms and National Governments**  Joseph LaPalombara
Challenges for political policy makers, governmental regulators, and managers of global corporations when corporations make direct investments in foreign countries. Special attention to emergent exclusionary measures in advanced industrial countries.  so
EPE: PoliticalSystems Core

**EP&E 246a / AFST 420a / LAST 406a / PLSC 430a, The Politics of Development Assistance**  David Simon
Study of development assistance, a dominant feature of the political economies of some of the world’s poorest countries. The motivations and politics of aid from donors’ perspectives; the political and economic impact of aid on developing countries. Proposals to make aid a more effective instrument of development.  so
EPE: PoliticalSystems Core

**EP&E 248b / PLSC 256b, American Political Institutions**  Michael Fotos
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.  so
EPE: PoliticalSystems Core
*EP&E 250a / PLSC 354a*, **The European Union**  David Cameron
Origins and development of the European Community and Union over the past fifty years; ways in which the often-conflicting ambitions of its member states have shaped the EU; relations between member states and the EU’s supranational institutions and politics; and economic, political, and geopolitical challenges.  SO
EPE: Political/Systems Core

*EP&E 255a / PLSC 306a*, **Sovereignty**  Andrew March
The history of the concept of sovereignty, including current debates over its meaning in political philosophy, international relations, and jurisprudence. Discussion of how these debates relate to both historical and contemporary political problems.  SO
EPE: Political/Systems Core

*EP&E 258a / PLSC 446a / SOCY 369a, Welfare States across Nations**  Sigrun Kahl
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.  SO
EPE: Political/Systems Core

*EP&E 259b / PLSC 183b, Europe, the United States, and the Iraq Crisis**  Jolyon Howorth
Examination of the contrasting relations between the main European powers and the United States in their approaches to Iraq in order to understand the divisions attending the 2003 war and the subsequent transfer of sovereignty. Topics include the Iran-Iraq War (1980–88), the first Persian Gulf crisis (1990–91), the sanctions regime (1991–2002), problems of peacekeeping and nation building, and the Obama exit strategy.  SO
EPE: Political/Systems Core

*EP&E 265a / ENGL 344a / ER&M 436a, Global Fictions**  Justin Neuman
Literary fictions and social systems from 1827 to the present that take an idea of the global as their frame of reference. Themes include politics (empire to postcolony), economics (capitalism, communism, "three worlds theory"), and technology (trade, media, war, energy). Works by Goethe, Melville, Marx, Verne, Forster, Tagore, Ondaatje, Rushdie, Salih, Fukuyama, Friedman, and Ishiguro.  WR, HU
EPE: Social Theory Core

*EP&E 267a / SOCY 216a / WGSS 314a, Social Movements**  Ron Eyerman
An introduction to sociological perspectives on social movements and collective action, exploring civil rights, student movements, global justice, nationalism, and radical fundamentalism.  SO
EPE: Social Theory Core

*EP&E 269a / EAST 408a / SOCY 395a*, **Wealth and Poverty in Modern China**  Deborah Davis
The underlying causes and consequences of the changing distribution of income, material assets, and political power in contemporary China. Substantive focus on inequality and stratification. Instruction in the use of online Chinese resources relevant to research. Optional weekly Chinese language discussions. Prerequisite: a previous course on China since 1949.  SO
EPE: Social Theory Core
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.  SO
EPE: Social Theory Core

*EP&E 274b / PLSC 337b / SOCY 318b, Debates over Capitalism  Thomas Donahue
Theories and arguments that explore capitalism’s positive and negative aspects. The role of capitalism in the production of freedom, wealth, stable democracy, efficiency, exploitation, democratic dysfunction, hierarchical business firms, and environmental destruction. Justifications and critiques of capitalism by Smith, Mill, Marx, Hayek, Schumpeter, Friedman, Nozick, and utopian socialists.  SO
EPE: Social Theory Core

*EP&E 275a / PLSC 338a, Capitalism and Ethics  Stephen Latham
Historical and contemporary social theories about the effects of capitalist and late-capitalist business practices on human character and ethics. Ways in which the processes used to make and acquire goods shape concepts of morality.  SO
EPE: Social Theory Core

*EP&E 285b / PLSC 122b, Humanitarian Intervention  Jolyon Howorth
Analysis of Western intervention in humanitarian crises since the end of the Cold War. Case studies from Kurdistan, Somalia, Bosnia-Herzegovina, Kosovo, Ivory Coast, Libya, and Mali. Reasons for nonintervention in Rwanda, Darfur, and Syria. Ethics of the humanitarian dimension; politics of coalitions of the willing; the material dimension of interest; the effectiveness of humanitarian intervention in achieving its stated objectives.  SO
EPE: Political Systems Core

*EP&E 286b / ECON 475b, Discrimination in Law, Theory, and Practice  Gerald Jaynes
How law and economic theory define and conceptualize economic discrimination; whether economic models adequately describe behaviors of discriminators as documented in court cases and government hearings; the extent to which economic theory and econometric techniques aid our understanding of actual marketplace discrimination. Prerequisites: introductory microeconomics and at least one additional course in Economics, African American Studies, Ethnicity, Race, and Migration, or Women’s, Gender, and Sexuality Studies.
EPE: Political Systems Core

*EP&E 287a / PLSC 288a, Liberty in Politics, Markets, and Society  Andrew Sabl
Key questions regarding liberty explored through critical examination of classic texts by Locke, Montesquieu, Smith, Tocqueville, and Mill. The definition, origins, and foundations of liberty; whether liberty in some realms might require the restriction of freedom in others.  SO
EPE: Political Systems Core
*EP&E 288b / ECON 476b, The Problem of Government and Rules  
John Wallis
Ways that governments create and enforce rules. The nature of governments and the nature of rules; the dynamics of how governments are able to create rules that powerful individuals have incentives to obey. Prerequisite: intermediate macroeconomics.  
SO EPE: Political/Systems Core

*EP&E 300b / ECON 452b / GLBL 302b, Contemporary Issues in Energy Policy  
Ioannis Kessides
Overview of challenges in the global energy framework generated by concerns about energy security and climate change; public policies necessary for addressing these issues. Potential contributions and limitations of existing, improved or transitional, and advanced technologies.  
SO EPE: Advanced Seminar

*EP&E 310b / PLSC 227b, Refugee Law and Policy  
Alexandra Dufresne
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.  
SO EPE: Advanced Seminar

*EP&E 312a / PLSC 297a, Moral Choices in Politics  
Boris Kapustin
SO EPE: Advanced Seminar


*EP&E 334b / PHIL 455b, Normative Ethics  
Shelly Kagan
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). Prerequisite: a course in moral philosophy.  
HU EPE: Advanced Seminar

*EP&E 337a / SOCY 306a, Empires and Imperialism  
Peter Stamatov
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.  
WR, SO EPE: Advanced Seminar

*EP&E 353b / PLSC 305b, Critique of Political Violence  
Boris Kapustin
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.  
SO
EPE: Advanced Seminar

*EP&E 369a / PLSC 246a, Ethics and American Business  Prakash Sethi
Ethical norms and values as they are incorporated in business decisions in the United
States. Corporate culture and reward systems that influence ethical concerns; corporate
responses to societal pressures to protect individuals and groups; emerging trends in
corporate social responsibility, shareholder activism, and civil society organizations;
changes in core concepts of economic efficiency and profitability.  SO
EPE: Advanced Seminar

*EP&E 381a / PLSC 120a, Ethics in the Age of Globalization and Multinational
Corporations  Prakash Sethi
Multinational corporations and their impact—both positive and negative—on national
cultures, ethical norms, business practices, and political governance structures in the
host countries. Attempts by corporations, civil society organizations, and national,
multilateral, and international political entities to ameliorate the negative side effects of
globalization while supporting efforts toward continued economic growth.  SO
EPE: Advanced Seminar

*EP&E 390a / PLSC 212a, 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.  SO
EPE: Advanced Seminar

*EP&E 396a / AMST 468a / PLSC 251aG, Progressivism: Theory and Practice
Stephen Skowronek
The progressive reform tradition in American politics. The tradition’s conceptual
underpinnings, social supports, practical manifestations in policy and in new
governmental arrangements, and conservative critics. Emphasis on the origins of
progressivism in the early decades of the twentieth century, with attention to latter-day
manifestations and to changes in the progressive impulse over time.  SO
EPE: Advanced Seminar

*EP&E 410b / PLSC 304b, Business Ethics  Charles Ellis and Vikram Mansharamani
Current ethical problems facing business leaders. Visible and invisible factors that
make ethical decisions complex and difficult to analyze. Anticipating ethical dilemmas;
framing decisions and gathering information; the difficulties of taking appropriate,
timely action.
EPE: Advanced Seminar

*EP&E 411a / PLSC 287a, Democracy and Distribution  Ian Shapiro
and Michael Graetz
An examination of relations between democracy and the distribution of income and
wealth. Focus on ways in which different classes and coalitions affect, and are affected
by, democratic distributive politics. Open to juniors and seniors.  SO
EPE: Advanced Seminar

*EP&E 425b / PLSC 181b / SAST 342b, South Asia in World Politics
Elizabeth Hanson
Relations of the major countries of South Asia with each other and with the rest of
the world; emphasis on India, Pakistan, and Afghanistan. Identification of the various

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actors and interests that are fueling current conflicts in the region. Analysis of issues in world politics, including nation building, ethnic conflict, militant extremism, nuclear proliferation, and strategies of development.  
SO
EPE: Advanced Seminar

*EP&E 440b, Nonviolence and Political Power in the Twentieth Century
Jonathan Schell
A study of nonviolent movements in the twentieth century. Topics include Gandhi in India, Solidarity in Poland, the fall of the Soviet Union, and the democracy movements of the late twentieth century. Consideration of democratic government, nuclear deterrence, and changes in the character of war and political power itself. Readings from case histories and from the works of such authors as Hobbes, Clausewitz, Mao Zedong, Hannah Arendt, Max Weber, and Václav Havel.  
SO
EPE: Advanced Seminar

*EP&E 443b / PLSC 240b, Public Schools and Public Policy  
John Bryan Starr
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.  
SO  
RP
EPE: Advanced Seminar

*EP&E 447b / PLSC 412b, Global Journalism, National Identities  
James Sleeper
Changes in the relationship between journalism and nationalism as new technologies, capital flows, and human migrations alter public understandings of political legitimacy. The consequences of these shifts for national identity and liberal public spheres in the United States, Europe, and selected Middle Eastern and Asian nations. Implications for a global public sphere.  
SO
EPE: Advanced Seminar

*EP&E 448a / ECON 466a, Economics of Aging  
Douglas McKee
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.  
SO
EPE: Advanced Seminar

*EP&E 458b / PHIL 461b / PLSC 315b, Egalitarianism  
Christopher Lebron
The concept of equality in normative political theory explored through contemporary philosophical texts. Reasons why oppressed, marginalized, and systematically disadvantaged groups express their claims in terms of equality; racial inequality as a case study.  
SO
EPE: Advanced Seminar

*EP&E 459a / PLSC 302a, Modern Liberty  
Bryan Garsten
Commercial society and representative democracy during the age of revolution, as treated by European political theorists including Montesquieu, Adam Smith, Emmanuel Sieyès, Benjamin Constant, François Guizot, Alexis de Tocqueville, G. W. F. Hegel, and Karl Marx.  
SO
EPE: Advanced Seminar

*EP&E 466a / PLSC 202a, Children’s Law and Policy  
Alexandra Dufresne
Major themes and controversies in children’s law and policy in the United States. Topics include juvenile justice, child abuse and neglect, special education, and the
rights of immigrant and refugee children. Development of skills in legal reasoning, analysis, and policy design. Priority to junior and senior majors in Ethics, Politics, and Economics and in Political Science. SO

EPE: Advanced Seminar

*EP&E 469b / PLSC 322b, Tolerance in Theory and Practice Andrew Sabl
Tolerance as a political practice that allows people with fundamentally different beliefs to live together; necessary limits, real or alleged, of that practice. Perspectives from the fields of history and political science and from moral, political, and legal theory. Origins and varieties of toleration; case studies in the United States and abroad, including hate speech, Amish exemptions from general laws, Islam and secularism, and national security as a basis for limits on religious freedom. SO

EPE: Advanced Seminar

*EP&E 471a or b, Directed Reading and Research Steven Wilkinson
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 Steven Wilkinson
A one-term senior essay. The 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.

A two-term senior essay. The 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.

Other Courses Related to Ethics, Politics, and Economics

PHIL 175a, Introduction to Ethics Karsten Harries
The question of what constitutes the good life, and the different answers to that question given by Plato, Bentham, Kant, Kierkegaard, and Nietzsche. HU

EPE: Intro Ethics

PLSC 14b, Introduction to Political Philosophy Bryan Garsten
Fundamental issues in contemporary politics investigated through reflection on classic texts in the history of political thought. Emphasis on topics linked to modern constitutional democracies, including executive power, representation, and political parties. Readings from Plato, Machiavelli, Hobbes, Locke, Rousseau, Madison and
Hamilton, Lincoln, and Tocqueville, in addition to recent articles on contemporary issues. So
EPE: Intro Political Phil

PLSC 118a, The Moral Foundations of Politics  Ian Shapiro
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 Bentham, Mill, Marx, Burke, Rawls, Nozick, and others. So
EPE: Intro Political Phil

Ethnicity, Race, and Migration

Director of undergraduate studies: Alicia Schmidt Camacho, 108 HGS, 432-7756, alicia.camacho@yale.edu; erm.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF ETHNICITY, RACE, AND MIGRATION

Professors  Rolena Adorno (Spanish & Portuguese), Ned Blackhawk (History, American Studies), Hazel Carby (African American Studies, American Studies), Michael Denning (American Studies, English), John Mack Faragher (History, American Studies), Inderpal Grewal (American Studies, Women’s, Gender, & Sexuality Studies), Dolores Hayden (Architecture, American Studies), Jonathan Holloway (History, African American Studies), Matthew Jacobson (American Studies, African American Studies, History), Gilbert Joseph (History), Kenneth Kidd (School of Medicine), Benedict Kiernan (History), Jennifer Klein (History), Mary Lui (American Studies, History), Stephen Pitti (History, American Studies), Alicia Schmidt Camacho (American Studies), Jing Tsu (East Asian Languages & Literatures), Michael Veal (Music), Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)

Assistant Professors  Jafari Allen (Anthropology, African American Studies), Rene Almeling (Sociology), Laura Barraclough (American Studies), Zareena Grewal (American Studies), Albert Laguna (American Studies, Ethnicity, Race, & Migration), Vida Maralani (Sociology), Justin Neuman (English), Dixa Ramirez (American Studies, Ethnicity, Race, & Migration), Birgit Brander Rasmussen (American Studies), Sara Shneiderman (Anthropology)

Senior Lecturers  Oluseye Adesola (African Studies), Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies)

Lecturers  Jasmina Beširević-Regan (Sociology), Alexandra Dufresne (Political Science), David Simon (Political Science)

The program in Ethnicity, Race, and Migration enables students to engage in an interdisciplinary, comparative study of forces that have created a multicultural, multietnic, and multiracial world. The major emphasizes familiarity with the intellectual traditions and debates surrounding the concepts of indigeneity, ethnicity, nationality, and race; grounding in both the history of migration and its contemporary manifestations; and knowledge of and direct engagement with the cultures, structures, and peoples formed by these migrations.
Prospective majors should consult the director of undergraduate studies early in their academic careers to discuss an individual plan of study. Enrollment in the major requires permission of the director of undergraduate studies prior to the beginning of the fall term of the junior year.

The major for the Class of 2014 Students in the Class of 2014 may fulfill the requirements of the Ethnicity, Race, and Migration major that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivedpdfs/YCPS). Those requirements include the stipulation that Ethnicity, Race, and Migration may only be taken as a second major. Alternatively, students in the Class of 2014 may fulfill the requirements for the major as described below for the Class of 2015 and subsequent classes.

Requirements of the major for the Class of 2015 and subsequent classes Students must complete twelve term courses in Ethnicity, Race, and Migration, including the senior requirement. These twelve must include ER&M 200, an introductory course on 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 freshman or sophomore year in preparation for more advanced work in the junior seminar. In the junior year, all majors are required to take ER&M 300, Comparative Ethic Studies. This junior seminar introduces majors to scholarship in ethnic studies, postcolonial studies, and cultural studies.

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.

Area of concentration In consultation with the director of undergraduate studies, each student defines an area of concentration consisting of five term courses, not including the senior essay or project. Advanced work in the foreign language related to a student’s area of concentration is advised. Courses applied toward the area of concentration may also be used to fulfill the major’s distributional requirements.

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. Students are also encouraged to engage in community-based learning opportunities.

Senior requirement The senior requirement has two components. In the fall term, all majors take the senior colloquium (ER&M 491) on theoretical and methodological issues. Students may choose to complete the requirement by writing a senior essay in the senior project seminar (ER&M 492) during the spring term. Alternatively, students may take an upper-level ER&M seminar and write a senior essay of thirty to thirty-five
pages in addition to completing all course requirements. This seminar may be taken during either the fall or spring term. Majors planning to undertake an independent senior project must submit a proposal signed and approved by a faculty adviser to the director of undergraduate studies during the fall term.

**Term abroad**  Because of the major’s emphasis on international and transnational work, students are encouraged to undertake a term abroad. They should consult with the director of undergraduate studies to identify courses from study abroad programs that may count toward the major.

### REQUIREMENTS OF THE MAJOR

**Prerequisites**  None

**Number of courses**  12 term courses (incl senior req)

**Specific courses required**  ER&M 200, 300

**Distribution of courses**  5 courses in area of concentration; at least 2 courses in each of 2 geographic areas; at least 1 course on historical or contemporary migrations; at least 2 interdisciplinary courses from different departments or fields

**Senior requirement**  Senior colloq (ER&M 491); senior essay or project in upper-level sem or in ER&M 492

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## Required Courses

**ER&M 200a, Introduction to Ethnicity, Race, and Migration**  Alicia Schmidt Camacho

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.  **HU, SO**

**ER&M 300b, Comparative Ethnic Studies**  Birgit Brander Rasmussen

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.  **SO**

## Electives within the Major

**AFAM 162b / AMST 162b / HIST 187b, African American History from Emancipation to the Present**  Jonathan Holloway

An examination of the African American experience since 1861. Meanings of freedom and citizenship are distilled through appraisal of race and class formations, the processes and effects of cultural consumption, and the grand narrative of the civil rights movement.  **HU**

**AFAM 408a / AMST 460a / ENGL 443a, African American Poets of the Modern Era**  Robert Stepto

The African American practice of poetry between 1900 and 1960, especially of sonnets, ballads, sermonic, and blues poems. Poets include Paul Laurence Dunbar, Langston Hughes, Sterling Brown, Gwendolyn Brooks, Margaret Walker, and Robert Hayden.
III. Subjects of Instruction

Class sessions at the Beinecke Library for inspection and discussion of original editions, manuscripts, letters, and other archival material. HU

*AFAM 423bG / AMST 384bG / ENGL 306bG, American Artists and the African American Book Robert Stepto

Visual art in African American books since 1900. Artists include Winold Reiss, Aaron Douglas, E. S. Campbell, Tom Feelings, and the FSA photographers of the 1940s. Topics include Harlem Renaissance book art, photography and literature, and children’s books. Research in collections of the Beinecke Library and the Yale Art Gallery is encouraged. HU

*AMST 405bG / AFAM 406bG / ENGL 405bG, Autobiography in America Robert Stepto

A study of autobiographical writings from Mary Rowlandson’s Indian captivity narrative (1682) to the present. Classic forms such as immigrant, education, and cause narratives; prevailing autobiographical strategies involving place, work, and photographs. Authors include Franklin, Douglass, Jacobs, Antin, Kingston, Uchida, Balakian, Rodriguez, and Bechdel. WR, HU

*ANTH 366b / AMST 435b, Anthropology of Inequality in America Kathryn Dudley

Sociocultural dimensions of social inequality in the contemporary United States. Ways in which the socioeconomic processes that produce inequality are inextricably embedded in worlds of cultural meaning; how those meanings are constructed and embodied in everyday practice. Perspectives from anthropology, sociology, economics, history, and popular media. SO

Anthropology: Sociocultural

ER&M 187b / AMST 133b / HIST 107b, Introduction to American Indian History Ned Blackhawk

Survey of American Indian history, beginning with creation traditions and migration theories and continuing to the present day. Focus on American Indian nations whose homelands are located within the contemporary United States. Complexity and change within American Indian societies, with emphasis on creative adaptations to changing historical circumstances. HU

ER&M 210b / AMST 211b / ENGL 293b / WGSS 211b, Race and Gender in American Literature Birgit Brander Rasmussen

The role of literature in constructing representations of America as an idea, a nation, a colonial settlement, and a participant in world affairs. What kind of place America is and who belongs there; the consequences of America’s history for its national literature. Emphasis on the ways texts represent and contest social concepts of race and gender difference. HU

ER&M 217b, Introduction to Latino/a Studies Albert Laguna

Themes and issues that have shaped the experiences of Latino/a populations in the United States explored within an interdisciplinary and hemispheric framework. Relations between the United States and Latin America; the history of ethnic labels; the formation of transnational communities and identities; the politics of language and bilingualism; race, class, and ethnicity; and gender and sexuality. HU
ER&M 219a / HIST 219a\(^G\) / JDST 200a\(^G\) / MMES 149a / RLST 148a\(^G\), History of the Jews and Their Diasporas to Early Modern Times  Ivan Marcus
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 European or non-Western distributional credit within the History major, upon application to the director of undergraduate studies.  HU  RP

*ER&M 224a / AMST 368a, Marxism and Social Movements in the Nineteenth Century  Michael Denning
The history and theory of the socialist and Marxist traditions from their beginnings in the early nineteenth century to the world upheavals of 1917–19. Relations to labor, feminist, abolitionist, and anticolonial movements.  RP

*ER&M 229b / AMST 369b, Marxism and Social Movements in the Twentieth Century  Michael Denning
The history of Marxism and its relation to the labor, feminist, and anticolonial social movements since the great upheavals of 1919. Topics include the Leninisms of the Communist movement, the anticolonial Marxisms of national liberation struggles, the cultural and intellectual trajectory of Western Marxism, the New Left, and contemporary global justice movements.  HU

*ER&M 260a / AMST 274a, American Captivity Narratives  Birgit Brander Rasmussen
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.  HU

*ER&M 271b / AFST 447b\(^G\) / EP&E 271b / PLSC 447b\(^G\), The Rwandan Genocide in Comparative Context  David Simon
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.  SO

ER&M 278b / AFAM 178b / AFST 188b / HSAR 378b, From West Africa to the Black Americas: The Black Atlantic Visual Tradition  Robert Thompson
Art, music, and dance in the history of key classical civilizations south of the Sahara— Mali, Asante, Dahomey, Yorùbà, Ejaghm, 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.  HU

ER&M 280a / GMST 380a / MUSI 280a, Music in Nazi Germany  Gundula Kreuzer
The interrelations between music and politics under the extreme conditions of a totalitarian regime. How the National Socialists sought to police all aspects of Germany’s musical life between 1933 and 1945 and why they often failed. Topics include aesthetic, political, and administrative prerequisites for the Nazis’ efforts;
III. Subjects of Instruction

consequences of Nazism for musical culture during the Third Reich and beyond; and
the vulnerability of music to ideological appropriation. HU

ER&M 282b / AMST 272b / HIST 183b / WGSS 272b, Asian American History, 1800
to the Present  Mary Lui
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. HU

*ER&M 291b / AFAM 352b / AMST 438b / LITR 295b / WGSS 343b, 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. HU

*ER&M 311b / AMST 311b, Latina/o New Haven  Alicia Schmidt Camacho
Introduction to the field of Latina/o studies, with a focus on community-based research
in New Haven. Training in interdisciplinary methods of social research, including
oral history, interviews, archival research, cultural analysis, and social documentation.
Students design collaborative research projects. SO

ER&M 313b / AFST 180b6, Nigeria and Its Diaspora  Oluseye Adesola
Nigerians in the modern diaspora, both those who endured forced migration and
those who migrated voluntarily. Specific reference to the Igbo and the Yorùbá. 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. SO

*ER&M 314a / AFAM 324a / AMST 337a, Urban Latina/o Literature  Dixa Ramirez
Latina/o literature and the urban experience. Focus on works from the twentieth and
twenty-first centuries, with background on the roots of Latina/o experience in the late
nineteenth century. Some attention to film and the visual arts. HU

*ER&M 315b / AFAM 336b / AMST 336b, Literature and Culture of Hispaniola and
Its Diaspora  Dixa Ramirez
The literature and culture of Haiti, the Dominican Republic, and their diasporas in the
United States and Canada since 1804. Focus on texts that explore relations between the
two nations, with some attention to each country’s individual literary and cultural
traditions. Conventional literary texts such as novels and poetry, as well as political
documents, orally transmitted texts, and imagery. HU

*ER&M 316b / AMST 342b, Los Angeles, City of Migrants  Laura Barraclough
The city of Los Angeles examined from the perspective of its migrant communities,
from the era of Spanish and American colonialism to the present. Emphasis on the
relationships between migrants and their cultural expressions as they shape, and are
shaped by, the city’s race, gender, and economic structures and its physical and cultural
geographies. SO
*ER&M 323b / AMST 322b / WGSS 371b, Gender, Family, and Cultural Identity in Asia and the United States  Geetanjali Singh Chanda
A cross-cultural dialogue focusing on family, gender, and identity. 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.  WR, HU

*ER&M 327b / MMES 311b / WGSS 327b, Constructing the Self: From Autobiography to Facebook  Geetanjali Singh Chanda
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; autobiography as a horizontal community formation.  WR, HU

*ER&M 328a / SAST 458a / WGSS 328a, Popular Culture and Postcolonial India  Geetanjali Singh Chanda
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.  WR

*ER&M 334b / AMST 334b / FILM 337b, Documentary Film in a Global Age  Zareena Grewal
Introduction to the genres and political uses of documentary film, from the first documentary to activist films on YouTube. The cultural observation, witnessing, and critique that documentary 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.  HU

*ER&M 342a / HIST 372Ja / LAST 372a, Revolutionary Change and Cold War in Latin America  Gilbert Joseph
Analysis of revolutionary movements in Latin America against the backdrop of the Cold War. Critical examination of popular images and orthodox interpretations. An interdisciplinary study of the process of revolutionary change and cold war at the grassroots level.  WR, HU

*ER&M 348b / AMST 404b / HIST 185Jb, Latina/o Histories  Stephen Pitti
Survey of two hundred years of Mexican American, Puerto Rican, Central American, and Cuban American history in the United States. Transnational politics; legacies of European colonialism; labor history; the rise of ethnic nationalism.  WR, HU

*ER&M 353a / ENGL 343a / HUMS 419a / LITR 268a / SAST 371a, Postcolonial Studies  Shital Pravinchandra
Introduction to key writers, literary works, concepts, and issues in the field of postcolonial studies. Definitions of the term "postcolonial," including to whom it can be applied; the cultural, psychological, and political consequences of colonization; opinions of non-Western writers about current cultural and political climates and the historical processes that shaped them.  HU

*ER&M 362a or b / GLBL 384a or b / SOCY 363a or b, Genocide and Ethnic Conflict  Jasmina Beširevic-Regan
Exploration of the explosion of genocide and violent ethnic conflict in the past seventy years, including contributory historical and political elements. Consideration of ways
to prevent or resolve such conflicts. Focus on questions of identity, religion, class, and nationhood as related to violence and conflict. An analytical framework developed from four case studies: the Holocaust, Cambodia, the former Yugoslavia, and Rwanda.  

*ER&M 405a / AFAM 350a / AMST 361a, Exile and Migration in Caribbean  
  Literature and Culture  Dixa Ramirez  
  Forms of geographic displacement in Caribbean literature and culture from the early nineteenth century to the present. National independence movements, the negritude and Pan-Africanist movements, and recent emigration to the United States and Canada. Connections between gender, class, race, and specific national ideals, and their effects on the displacement experience.  

*ER&M 406b / AFAM 375b / AMST 362b / WGSS 406b, Gender in Caribbean  
  Women’s and Latina Literature  Dixa Ramirez  
  Gender in the Caribbean and its diaspora explored through women’s literature and other cultural production. Ways in which gender has overlapped with other categories such as race and class; its effects on narratives of colonialism, imperialism, travel, and migration. The marginalization of Caribbean women’s cultural labor.  

*ER&M 408a, Race and Comedy  Albert Laguna  
  Introduction to theories of the ludic and to critical race theory. Ways in which comic modes have been utilized by racialized subjects to represent and issue critiques of the dominant culture. Analysis of stand-up comedy, film, television, and novels.  

*ER&M 412a, Native American Health  Mark Beitel and Christopher Cutter  
  Issues of health policy, research, and service delivery in Native American communities, with a focus on historical antecedents that shape health outcomes and social policy for indigenous communities. Urgent problems in health and wellness, with special attention to Native American mental health. The roles of the Indian Health Service, state and local agencies, and tribal health centers; comparison of Native American and European American conceptions of health and illness.  

*ER&M 413a / AFAM 411a / AMST 426a / WGSS 411a, The Fiction of Imaginary or  
  Imminent Futures  Hazel Carby  
  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.  

*ER&M 422b / AMST 320b, Latino New York  Albert Laguna  
  The historical presence of Latinas and Latinos in New York City from the late nineteenth century to the present. Differences and similarities among Puerto Rican, Mexican, Cuban, and Dominican communities in the context of New York City history. Complex cultural dynamics as illustrated in novels, poetry, music, and film.  

*ER&M 435a / AMST 422a / HIST 151Ja, Writing Tribal Histories  Ned Blackhaw  
  Historical overview of American Indian tribal communities, particularly since the creation of the United States. Challenges of working with oral histories, government documents, and missionary records.  

*ER&M 436a / ENGL 344a / EP&E 265a, Global Fictions  Justin Neuman  
  Literary fictions and social systems from 1827 to the present that take an idea of the global as their frame of reference. Themes include politics (empire to postcolony),
economics (capitalism, communism, "three worlds theory"), and technology (trade, media, war, energy). Works by Goethe, Melville, Marx, Verne, Forster, Tagore, Ondaatje, Rushdie, Salih, Fukuyama, Friedman, and Ishiguro. WR, HU

*FREN 320a / AFAM 191a / AFST 330a / LITR 266a, Introduction to Francophone African and Caribbean Literature  Christopher L. Miller  
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; the rise of Negritude and nationalism; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bâ, Belaya, Condé, and Lopes. L5, HU

*HIST 258jbG / JDST 278bG / RLST 227bG, Jewish Citizenship in Modern Europe  Eliyahu Stern  
Seventeenth- to twentieth-century responses to Jewish citizenship in modern European states. Religious law; modern Jewish identity; Zionism; Judaism as a religion vs. a nation; the place of minorities in contemporary Europe. WR, HU

HIST 340b / AFST 340b, Africa in the Era of the Slave Trade  Robert Harms  
Examination of the tumultuous changes experienced by African societies during the era of the Atlantic slave trade, approximately 1450–1850. Focus on the complex interaction between the internal dynamics of African societies and the impact of outside forces. HU

History: Preindustrial

*HIST 387ja / AFST 487a, West African Islam: Jihad Tradition and Its Pacifist Opponents  Lamin Sanneh  
The influence 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. WR, HU

HSAR 372a / AFAM 221a, Art of the Harlem Renaissance  Erica James  
The emergence of the modern movement known as the Harlem Renaissance and its impact on American and global black culture. Key ideas and concepts explored through visual and performance art of the period. The development of black subjectivity; black visual and racial aesthetics; the rise of Pan-Africanism; the representation of race, gender, and sexualities. Use of art and archival resources from the collections of the Beinecke Library and the Yale University Art Gallery. HU

HSAR 379a / AFAM 112a, New York Mambo: Microcosm of Black Creativity  Robert Thompson  
The rise, development, and philosophic achievement of the world of New York mambo and salsa. Emphasis on Palmieri, Cortijo, Roena, Harlow, and Colón. Examination of parallel traditions, e.g., New York Haitian art, Dominican merengue, reggae and rastas of Jamaican Brooklyn, and the New York school of Brazilian capoeira. HU

*HSAR 480a, The Arts of Nomads in China, 900–1400  Youn-mi Kim  
Visual culture of the nomadic Kitans and Mongols, ranging from gold death masks and murals excavated from tombs to religious artworks that reflect hybrid and diverse religious practices. Arts produced during the empires founded by the Liao (907–1125) and Yuan (1279–1368) located in a broad transregional context, including their role in
the cultural and political landscapes of East, Central, and South Asia from the tenth
century to the fifteenth.  HU

Stylistic currents in jazz that evolved during the 1960s and 1970s as jazz was influenced
by various popular, experimental, and world musics. Focus on the work of Miles Davis,
John Coltrane, Ornette Coleman, and Sun Ra.  HU

*PLSC 203b, Inequality and American Democracy*  Jacob Hacker
Exploration of how inequalities across lines of class, race, and gender affect the working
of American democracy. Analysis of ways that public policies contribute to or mitigate
such inequalities. Interdisciplinary and multimedia inquiry into participation, policy
making, and public policy in the United States.  SO

*PLSC 233b, Constitutional Law*  Akhil Amar
An introduction to the main themes of the American Constitution—popular
sovereignty, separation of powers, federalism, and rights—and to basic techniques of
constitutional interpretation. Special emphasis on the interplay of constitutional text,
judicial doctrine, and constitutional decision making outside the judiciary.  SO

*SOCY 216a / EP&E 267a / WGSS 314a, Social Movements*  Ron Eyerman
An introduction to sociological perspectives on social movements and collective action,
exploring civil rights, student movements, global justice, nationalism, and radical
fundamentalism.  SO

*SOCY 306aG / EP&E 337a, Empires and Imperialism*  Peter Stamatov
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.  WR, SO

*SOCY 372aG / AFST 372a / MMES 105a, Comparative Nationalism in North Africa
and the Middle East*  Jonathan Wyrtzen
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).  SO

*THST 369a / AFAM 369a / AMST 378a / ENGL 364a / LITR 271a, African American
Theater*  Staff
African American dramatic literature and theater history from the nineteenth century
to the present. Key events in black theater history, including the emergence of black
musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays
by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson,
Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to
nonmajors with permission of the instructor. Students must preregister during the
reading period of the preceding term.  WR, HU
Individual Research and Senior Essay Courses

*ER&M 471a and ER&M 472b, Individual Reading and Research for Juniors and Seniors  Alicia Schmidt Camacho

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  Alicia Schmidt Camacho

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  Alicia Schmidt Camacho

Independent research on a one-term senior essay or project.

Film Studies

Director of undergraduate studies: J. D. Connor, 559 LORIA, 432-8225, jd.connor@yale.edu; filmstudies.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF FILM STUDIES

Professors  *Dudley Andrew (Comparative Literature, Film Studies), Hazel Carby (African American Studies, American Studies), *Francesco Casetti (Humanities, Film Studies), *Katerina Clark (Comparative Literature, Slavic Languages & Literatures), Michael Denning (American Studies, English), *John Mack Faragher (History), *Aaron Gerow (East Asian Languages & Literatures, Film Studies), Inderpal Grewal (Women’s, Gender, & Sexuality Studies), Benjamin Harshav (Comparative Literature), *David Joselit (History of Art), Stathis Kalyvas (Political Science), *Thomas Kavanagh (French), *John MacKay (Chair) (Film Studies, Slavic Languages & Literatures), *Millicent Marcus (Italian), Donald Margulies (Adjunct) (English, Theater Studies), Giuseppe Mazzotta (Italian), Kobena Mercer (History of Art, African American Studies), Christopher L. Miller (African American Studies, French), *Charles Musser (American Studies, Film Studies), *Brigitte Peucker (German, Film Studies), Joseph Roach (English, Theater Studies), *Michael Roemer (Adjunct) (Art, American Studies), Alan Trachtenberg (Emeritus), *Katie Trumpener (Comparative Literature, English), *Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)

Associate Professors  *Murray Biggs (Adjunct) (Theater Studies, English), Moira Fradinger (Comparative Literature), Karen Nakamura (Anthropology), Brian Walsh (English)

Assistant Professors  *J. D. Connor (History of Art), Zareena Grewal (Ethnicity, Race, & Migration), R. John Williams (English)

Senior Lecturers  *John Crowley (English), *Ron Gregg (Film Studies)

Lecturers  *Jonathan Andrews (Art, Film Studies), James Charney (School of Medicine), *Michael Kerbel (American Studies), *Marc Lapadula (Film Studies)
Critic *Sandra Luckow (Art)

Senior Lectors II  Seungja Choi (*East Asian Languages & Literatures*), Risa Sodi (*Italian*)

Senior Lectors  Krystyna Illakowicz (*Slavic Languages & Literatures*), Karen von Kunes (*Slavic Languages & Literatures*)

*Member of the Film Studies Committee.*

The major in Film Studies focuses on the history, theory, criticism, and artistic creation of cinema and other moving-image media. 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. As an interdisciplinary program centered in the humanities, 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 the director of undergraduate studies early in their academic careers.

The Film Studies major consists of fourteen term courses, including the prerequisite. A maximum of one course taken Credit/D/Fail may count toward the major with permission of the director of undergraduate studies.

**Prerequisite** Students normally take FILM 150, *Introduction to Film Studies*, in their freshman or sophomore year. This course is useful preparation, and in some cases a prerequisite, for many other courses in the major.

**Required courses** Students are required to take FILM 320, *Close Analysis of Film*, preferably during their sophomore year. They must also take FILM 312, *Theory of Media*, or FILM 333, *Early Film Theory and Modernity*, preferably by the end of their junior year. Students are encouraged to take both. In addition, students must devote two term courses, preferably upper-level courses, to the study of representative films from at least two different nations or cultures (for example, German expressionist cinema, Italian cinema, American comedy).

Students must take one term course on the creative process in film. Appropriate courses are listed under "Production Seminars," but other courses in art, theater studies, or creative writing may be substituted with the permission of the director of undergraduate studies.

**Area of concentration** With the help of the director of undergraduate studies in Film Studies, each student defines an area of concentration comprising six courses leading up to and including the senior requirement. 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 141, 142 by the end of their sophomore year, and continue with ART 341, 342 by
the end of their junior year, to prepare for FILM 455, 456, or 483, 484 in their senior year. They must take at least seven critical studies courses in the major. FILM 150, 312, 320, 333, 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." Students with a concentration in filmmaking should also take courses in screenwriting, and vice versa.

**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 491, 492). 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 491 or 492), 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. Projects might include writing a screenplay 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 Advanced Fiction Film Workshop (FILM 483, 484) or the Documentary Film Workshop (FILM 455, 456), and receive three credits for their projects (two credits for FILM 483, 484 or 455, 456, and one for FILM 493 or 494). Such a choice effectively commits students to one extra course in addition to the fourteen courses required for the major, because FILM 493 or 494 does not count toward the fourteen required courses when taken in conjunction with FILM 483, 484 or 455, 456. 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 493 and 494 toward the fourteen courses required for the major.

Majors graduating in December must submit their senior essays or senior projects to the director of undergraduate studies by December 6; those graduating in May, by April 25. 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 are encouraged 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 150

**Number of courses** 14 term courses, incl prereq and senior req

**Specific courses required** FILM 320; FILM 312 or 333

**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

**Senior requirement** 2 terms of senior-level sems, or 2 terms of senior essay (FILM 491, 492), or 1 term of each; or 2 terms of senior project in FILM 455, 456, or 483, 484, and either FILM 493 or 494, for a total of 15 term courses; or 2 terms of senior project in FILM 493, 494 with approved petition

**Intensive major** Both senior essay and senior project

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**Required Courses**

**FILM 150a, Introduction to Film Studies** John MacKay and staff
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. WR, HU

**FILM 312a / HUMS 216a / LITR 354a, Theory of Media** Francesco Casetti
Introduction to key issues in media studies. Relationships between commodity, artwork, and networks of exchange; media and public sphere; the analysis of radio and
television; alternative or counter-hegemonic conceptions of media; and the viability of the concept "media" itself.  

*FILM 320b / HSAR 490b, Close Analysis of Film  J. D. Connor
Ways in which traditional genres and alternative film forms establish or subvert convention and expectation and express thematic and ideological concerns. The balancing of narrative containment and excess, as well as action and image. Use of body and voice, space and music. Examples include films by Antonioni, Zhang, Ozu, and Hitchcock. Prerequisite: FILM 150.  

[FILM 333, Early Film Theory and Modernity ]

National Cinemas

FILM 240b / LITR 143b, World Cinema  Dudley Andrew
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.  

*FILM 243a / HUMS 206a / LITR 312a / MGRK 218a / WGSS 245a, Family in Greek Literature and Film  George Syrimis
The structure and multiple appropriations of the family unit, with a focus on the Greek tradition. The influence of aesthetic forms, including folk literature, short stories, novels, and film, and of political ideologies such as nationalism, Marxism, and totalitarianism. Issues related to gender, sibling rivalry, dowries and other economic factors, political allegories, feminism, and sexual and social violence both within and beyond the family.  

*FILM 311a / AMST 301a / ENGL 299a, East Asia in U.S. Literature and Film  R. John Williams
An introductory course on American images of Asia and Asian America in twentieth-century literature and cinema.  

*FILM 317b / SAST 310b, Understanding Bollywood  Kedar Kulkarni and staff
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
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. 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.  

*FILM 382a / EALL 285a / EAST 428a, Home and Country in Chinese Cinema  Mia Liu
Visions and representations of home and nation in Chinese film from the 1930s to the present. The construction of utopian or monumental visions; representations of the destruction of an ideal, often manifested as sites of ruins or as memorials of loss, erasure, and eclipse. Relations between Chinese cinema and modern Chinese history.
III. Subjects of Instruction

*FILM 413b / FREN 398b, Seventeenth-Century France in Cinema
  Christopher Semk
Introduction to seventeenth-century French literature and culture through cinematic adaptations of literary works and representations of the period in film. The influence of seventeenth-century France on contemporary French culture; ways in which the period and its literature continue to capture the imagination of film directors. 15, HU

*FILM 441b / LITR 391b / RSEE 321b / RUSS 245b, Russian Film  Katerina Clark and Mihaela Mihailova
Overview of Russian, Soviet, and post-Soviet cinema, from the inception of silent film in prerevolutionary Russia to the present. Theoretical writings and canonical films of important figures such as Sergei Eisenstein, Dziga Vertov, Andrei Tarkovsky, Kira Muratova, Alexei German, and Alexander Sokurov. Special attention to films by Soviet minority directors. The genre diversity of Soviet and post-Soviet film, including animation, musical comedy, rock film, and historical drama. HU Tr

*FILM 446a / EALL 252a / LITR 384a, Japanese Cinema before 1960  Aaron Gerow
The history of Japanese cinema to 1960, including the social, cultural, and industrial backgrounds to its development. Periods covered include the silent era, the coming of sound and the wartime period, the occupation era, the golden age of the 1950s, and the new modernism of the late 1950s. No knowledge of Japanese required. Formerly JAPN 270. HU Tr

*FILM 461b / ENGL 384b / THST 416b, British Cinema from Documentary to Reality Fiction  Murray Biggs
Study of twentieth-century British film and culture. Focus on four periods: the 1930s, the Second World War, the late 1950s and early 1960s, and the past thirty years. Relations between film and the social, political, and aesthetic conditions of the period. Works directed by Grierson, Jennings, Reed, Lean, Powell and Pressburger, Richardson, Reisz, Anderson, Leigh, and from Ealing Studios. WR, HU RP

*FILM 463b / THST 415b, Eastern European Master Directors  Dominika Laster
The theories and methods of both theater and film directors in the Eastern European tradition. Focus on directors whose research and creative work is paradigmatic of theatrical and cinematic trends in the twentieth and twenty-first centuries. The directors’ artistic visions, work with actors, texts or scripts, use of light and space, performance construction, and montage techniques. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. HU

Film Theory, Visual Media, and Special Topics

*FILM 045a / THST 099a, Dance on Film  Emily Coates
An examination of dance on film from c. 1920 to the present, including early Hollywood pictures, the rise of Bollywood, avant-garde films of the postwar period, translations of stage choreography to screen, music videos, and dance film festivals. The impact of industry, circulation and audience, aesthetic lineages, and craft in the union of the two mediums. Students develop an original short film for a final class project. No prior dance or filmmaking experience necessary. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. HU
FILM 272a / AMST 212a / HSAR 319a, John F. Kennedy’s Assassination and Its Aftermath  J. D. Connor
Introduction to the materials and methods of cultural studies, with a focus on the Kennedy assassination. Written and visual narratives of the events in official accounts, scholarly and pseudoscholarly reconstructions, and artistic appropriations. The assassination in literature, film, and other arts. Attention to the moral responsibility of documentary and of fiction, ideas of mourning and trauma, and aestheticization and catharsis. HU

FILM 321b / AMST 351b, Hollywood in the Twenty-First Century  Ron Gregg
Examination of how globalization and the global success of American films have affected Hollywood film production, stardom, distribution, and exhibition, as well as the aesthetics of film image, sound, and narration. Topics also include the effects of new digital technologies on film aesthetics, spectacle, spectatorship, and exhibition, and the responses of independent and other national cinemas to Hollywood’s hegemony. HU

*FILM 324a / AMST 402a / ANTH 302a / WGSS 380a, Gender and Sexuality in Media and Popular Culture  Laura Wexler
Investigation of visual media and popular culture in the United States and transnationally. Gender, race, class, and sexuality in relation to the production, circulation, consumption, and reception of media culture. Focus on theories of media and the visual. Significant lab component in which students use media technologies to make and illustrate theoretical arguments. HU

*FILM 337b / AMST 334b / ER&M 334b, Documentary Film in a Global Age  Zareena Grewal
Introduction to the genres and political uses of documentary film, from the first documentary to activist films on YouTube. The cultural observation, witnessing, and critique that documentary 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. HU

*FILM 364a / CZEC 246a / RSEE 240a, Milos Forman and His Films  Karen von Kunes
An in-depth examination of selected films by Milos Forman and representatives of the New Wave, cinémat Libre 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. HU

*FILM 377a / AMST 352a / WGSS 454a, Postwar Queer Avant-Garde Film  Ron Gregg
Production, exhibition, and aesthetic practices in postwar queer underground cinema in the United States as it developed from the 1930s to the early 1970s. The films of gay or bisexual filmmakers such as Willard Maas, Andy Warhol, Jack Smith, Kenneth Anger, and José Rodríguez-Soltero; the work of antiheteronormative female filmmakers such as Barbara Rubin and Marie Menken; the links between avant-garde cinema, theater, and other arts, as well as the political context. HU

*FILM 409a / HUMS 452a / LITR 306a / RSEE 327a / RUSS 327a, The Danube in History and Culture  Marijeta Bozovic
The Danube River in the film, art, and literature of various Danubian cultural traditions, from the late nineteenth century to the present. Geography and history
of the region that includes the river’s shores and watershed; physical, historical, and metaphoric uses of the Danube; the region as a contested multilingual, multicultural, and multinational space, and as a quintessential site of cross-cultural engagement. **HU**

**Tr**

*FILM 411b / LITR 380b, The Films of Alfred Hitchcock*  Brigitte Peucker
An examination of Hitchcock’s career as a filmmaker from *Blackmail* to *Frenzy*, with close attention to the wide variety of critical and theoretical approaches to his work. Topics include the status of the image; the representation of the feminine and of the body; spectatorship; painterliness and theatricality; generic and psychoanalytic issues. **HU**

*FILM 412a, The Horror Film, 1960-1991*  Brigitte Peucker
An examination of the horror film genre, primarily in American cinema. Psychosocial determinants; spectatorship, affect, and identification; the uncanny and the monstrous; the body; abjection. Films by Hitchcock, Romero, Friedkin, De Palma, Carpenter, Kubrick, Cronenberg, Demme, and others. **HU**

*FILM 421a / HUMS 414a / MGRK 213a / WGSS 261a, Cinema of Migration*  George Syrimis
Cinematic representations of the migrant experience in the past thirty years, with some emphasis on the post–Cold War period. Focus on southeastern Europe and its migrant populations. Topics include identity, gender, sexual exploitation and violence, and nationalism and ethnicity. **WR, HU**  **Tr**

*FILM 426a / AMST 430a, Contemporary Documentary Film and Video*  Charles Musser and Anne Berke
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. **HU**  **RP**

*FILM 428b / AMST 331b / MUSI 330b / THST 330b, Alternate Realities and Musical Multimedia*  Lynda Paul
The role of music and other kinds of sound in the creation and experience of alternate realities, from video games to theme parks and theatrical multimedia. Perspectives from recent work in film and media studies, theater and performance studies, anthropology, cognitive science, and a variety of musicological and ethnomusicological subdisciplines, such as popular music studies, opera studies, and ritual studies. **HU**

*FILM 429a / LITR 466a, War in Literature and Film*  Katerina Clark
Representations of war in literature and film; reasons for changes over time in portrayals of war. Texts by Stendahl, Tolstoy, Juenger, Remarque, Malraux, and Vonnegut; films by Eisenstein, Tarkovsky, Joris Ivens, Coppola, Spielberg, and Altman. **HU**

*FILM 435b / AMST 417b / ENGL 422b, The Private Eye*  Paul Grimstad and Alan Trachtenberg
American novels and films of the 1940s and 1950s that introduce and develop the figure of the private eye. Attitudes toward class, gender, sexuality, criminality, race
and ethnicity, state authority, and police power; visual style, narrative form, character, performance, and mise-en-scène; meanings of "noir" in film and fiction. HU

*FILM 440b / HUMS 242b / LITR 313b / THST 384b, Modernism in Northern Europe, 1880–1918 Katie Trumpener and Carolyn Sinsky
The roots of modernism in Scandinavia, Russia, Germany, and Ireland from 1880 to 1918. Experiments with artistic forms, cultural institutions, and social theories such as feminism, Marxism, and psychoanalysis. Works from experimental theater, cinema, fiction, poetry, and the visual arts. HU

*FILM 454bG / ANTH 402bG, Ethnographic Filmmaking and Visual Field Methods
Karen Nakamura
A study of visual anthropology production, with readings from core texts in the analysis of visual culture and visual anthropology field methods. Analysis of the history, philosophy, ethics, production, and consumption of ethnographic film and photoethnography within both the field of anthropology and popular culture. HU, SO, RP

Close study of the films of R. W. Fassbinder, Werner Herzog, and Michael Haneke. Questions of authorship, cultural politics, intermediality, and cinematic modernism. Readings and discussion in English. HU, Tr

*FILM 469a / AMST 306a, The Films of Martin Scorsese Michael Kerbel and staff
Close analysis of Scorsese’s films, with attention to his themes and styles and to ways in which his works have assimilated literary and cinematic influences, reflected their eras, and influenced other directors. Scorsese’s work examined in the context of film history, and of U.S. culture and history, from the 1960s to the present. HU, RP

Production Seminars

*ART 141a and ART 142b, The Language of Film Workshop Michael Roemer
Problems and aesthetics of film studied in practice as well as in theory. In addition to exploring movement, image, montage, point of view, and narrative structure, students photograph and edit their own short videotapes. The fall term emphasizes the writing and production of short dramatic scenes. Materials fee: $150. Priority to majors in Art and in Film Studies. Prerequisite for Film Studies majors: FILM 150. RP

*ART 341a or b, Intermediate Fiction Film Workshop Michael Roemer [F] and Jonathan Andrews [Sp]
In the first half of the term, students write three-scene short films and learn the tools and techniques of staging, lighting, and capturing and editing the dramatic scene. In the second half of the term, students work collaboratively to produce their films. Focus on using the tools of cinema to tell meaningful dramatic stories. Materials fee: $150. Enrollment limited to 8. Priority to majors in Art and in Film Studies. Prerequisites: ART 141 or 142, and FILM 150. RP

*ART 342b, Intermediate Documentary Film Workshop Sandra Luckow
Students explore the storytelling potential of the film medium by making documentary art. The class concentrates 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 are considered using examples of students’ work.
Exercises in storytelling principles. Materials fee: $150. Limited enrollment. Priority to
majors in Art and in Film Studies. Prerequisites: ART 141 or 142, and FILM 150.  

*FILM 350a or b, Screenwriting  Marc Lapadula
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 150. Not open to
freshmen.

*FILM 395b, Intermediate Screenwriting  Marc Lapadula
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 350. Priority to Film
Studies majors.

*FILM 455a and FILM 456b / AMST 463a and AMST 464b, Documentary Film
Workshop  Charles Musser
A yearlong workshop designed primarily for majors in Film Studies or American
Studies who are making documentaries as senior projects. Seniors in majors other than
Film Studies and American Studies admitted as space permits.  

*FILM 483a and FILM 484b / ART 442a and ART 443b, Advanced Fiction Film
Workshop  Jonathan Andrews
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 341.

*FILM 487a and FILM 488b, Advanced Screenwriting  Marc Lapadula
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 395 or permission of instructor.

Individual Research and Senior Essay Course or Project

*FILM 471a or b, Independent Directed Study  J. D. Connor
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 FILM 492b, The Senior Essay  J. D. Connor
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 FILM 494b, The Senior Project  J. D. Connor
For students making a film or video, either fiction or nonfiction, as their senior project. Senior projects require the approval of the Film Studies Committee and are based on proposals submitted at the end of the junior year. An interim project review takes place at the end of the fall term, and permission to complete the senior project can be withdrawn if satisfactory progress has not been made. For guidelines, consult the director of undergraduate studies. Does not count toward the fourteen courses required for the major when taken in conjunction with FILM 455, 456 or FILM 483, 484.

Forestry and Environmental Studies

Program adviser: John Wargo, 124 KRN, 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 (http://environment.yale.edu/academics/degrees/five-year). Most graduate-level courses are open to qualified undergraduates. Listings and detailed descriptions of these courses are available in the bulletin of the School of Forestry & Environmental Studies, and most also appear in the online 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 School’s Web site (http://environment.yale.edu). Most lectures and symposia are open to undergraduates.

Courses

*F&ES 020a, Sustainable Development in Haiti  Gordon Geballe
The principles and practice of sustainable development explored in the context of Haiti’s rich history and culture, as well as its current environmental and economic impoverishment. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

*F&ES 221a / E&EB 230a / EVST 221a, Field Ecology  Linda Puth
A field-based introduction to ecological research, using experimental and descriptive approaches, comparative analysis, and modeling for field and small-group projects. Weekly field trips explore local lake, salt marsh, rocky intertidal, traprock ridge, and upland forest ecosystems. Includes one Saturday field trip and a three-day trip
during the October recess. Concurrently with or after E&EB 220 or with permission of instructor.  SC

F&ES 245b / EVST 245b / PLSC 146b, International Environmental Policy and Governance Benjamin Cashore
The development of international environmental policy and the functioning of global environmental governance. Critical evaluation of theoretical claims in the literature and the reasoning of policy makers. Introduction of analytical and theoretical tools used to assess environmental problems. Case studies emphasize climate, forestry, and fisheries.  SO

F&ES 255b / EVST 255b / PLSC 215b, Environmental Politics and Law John Wargo
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.  SO

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.  SC

*F&ES 261a / EVST 261a / G&G 261aG, Minerals and Human Health Catherine Skinner and Ruth Blake
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G 110 recommended.  SC

*F&ES 275bG / EVST 275b, Ecosystems Patterns and Processes Peter Raymond and Mark Bradford
Study of ecosystem ecology and biogeochemistry. The use of concepts and data from these disciplines to predict and manage the impact of environmental changes on ecosystem services underlying the provisioning of resources such as food and clean water. Case studies of environmental changes include invasive species and changing climate. Undergraduate enrollment limited to 15.  SC  RP

*F&ES 277b / EVST 277b, Environmental Science and Policy Mark Bradford
The synthesis of science, both for scientists and for policy makers. Usefulness of the two types of synthesis for developing scientific research and policy. Advancement of complementary practices between science and policy arenas. Concepts and data from ecological and biogeochemical disciplines are used to predict and manage the effects of environmental change on ecosystem services that underlie the provisioning of resources such as food and clean water.  SO

*F&ES 290b / EVST 290b, Geographic Information Systems Charles Tomlin
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.

**F&ES 315a / E&EB 115a, Conservation Biology**  Jeffrey Powell and Linda Puth  
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.  
SC

**F&ES 327a**  G / ENVE 327a / G&G 327a, Atmospheric Chemistry  Nadine Unger  
The chemical and physical processes that determine the composition of the atmosphere; implications for climate, ecosystems, and human welfare. Origin of the atmosphere; photolysis and reaction kinetics; atmospheric transport of trace species; stratospheric ozone chemistry; tropospheric hydrocarbon chemistry; oxidizing power, nitrogen, oxygen, sulfur, and carbon cycles; interactions between chemistry, climate, and biosphere; aerosols, smog, and acid rain. Prerequisites: CHEM 115 or 118, and MATH 120, or equivalents. ENAS 194 recommended.  
QR, SC

**F&ES 344b**  G / EVST 344b, Aquatic Chemistry  Gaboury Benoit  
A detailed examination of the principles governing chemical reactions in water. Emphasis on developing the ability to predict the aqueous chemistry of natural, engineered, 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.  
SC

**F&ES 384a / ANTH 382a / EVST 345a, Environmental Anthropology**  Michael Dove  
History of the anthropological study of the environment: nature-culture dichotomy, ecology and social organization, methodological debates, politics of the environment, and knowing the environment.  
SO

**F&ES 441a / EVST 441a / G&G 440a**  G, Methods in Geomicrobiology  Ruth Blake  
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.  
SC

**French**

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**FACULTY OF THE DEPARTMENT OF FRENCH**

**Professors**  R. Howard Bloch, Edwin M. Duval, Marie-Hélène Girard (Visiting), Alice Kaplan (Chair), Thomas Kavanagh, Christopher L. Miller, Maurice Samuels

**Assistant Professors**  Thomas C. Connolly, Christopher Semk, Yue Zhuo

**Senior Lecturer**  Maryam Sanjabi
Lecturers Jonathan Cayer, Diane Charney, Alyson Waters

Senior Lectors Kathleen Burton, Ruth Koizim, Soumia Koundi, Matuku Ngambe, Lauren Pinzka, Françoise Schneider, Constance Sherak, Candace Skorupa

Lectors Audrey Hoffmann, Vanessa Vysosias

The Department of French has two distinct but complementary missions: to provide instruction in the French language at all levels of competence, and to lead students to a broad appreciation and deep understanding of the literatures and cultures of France and other French-speaking countries.

The major in French is a liberal arts major, designed for those who wish to study one of the world’s greatest and richest literatures in depth. The department offers courses devoted to authors, works, and literary and cultural movements that span ten centuries and four continents. The curriculum also includes interdisciplinary courses on relations between literature and other areas of study such as history, law, religion, politics, and the arts. Majors are encouraged to explore all periods and genres of literature in French, as well as a wide variety of critical approaches.

Excellent knowledge of a foreign language and a mature, informed appreciation of a foreign literature open doors to many professions. The French major provides ideal preparation for careers not only in academics but also in a wide range of fields from law and diplomacy to journalism and the arts. Recent graduates have gone on to selective law schools and graduate programs in French and comparative literature. Others work in primary and secondary education, business, government, and a variety of nongovernmental agencies and international organizations.

French 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 French might include, but are not limited to, African American Studies, African Studies, English, Film Studies, Global Affairs, History, History of Art, Humanities, Literature, Music, Philosophy, Political Science, Theater Studies, and Women’s, Gender, and Sexuality Studies. (Regulations concerning the completion of two majors can be found in the Academic Regulations, section K.)

Study abroad Students are encouraged to spend a term or a year 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 and Professional Experience (http://cipe.yalecollege.yale.edu) and from Ruth Koizim (ruth.koizim@yale.edu), 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.

The major for the Class of 2015 and previous classes Students in the Class of 2015 and previous classes may fulfill the requirements of the standard or intensive French major that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/primer/bulletin/archivepdffiles/YCPS). Alternatively,
they may fulfill the requirements for the major as described below for the Class of 2016 and subsequent classes.

**Prerequisite for the Class of 2016 and subsequent classes** Candidates for the major should take FREN 150 or the equivalent during the freshman or sophomore year. Prospective majors are strongly encouraged to take at least one literature course numbered 170 or above before the end of the sophomore year.

**The standard major for the Class of 2016 and subsequent classes** The standard major consists of ten term courses numbered 160 or above, including a one-term senior essay (see below). One of these ten courses must be FREN 170 or the equivalent, which should be completed early in a candidate’s studies; at least four must be Group B courses numbered 200 or above. Students may count no more than two courses in the FREN 180–199 range and no more than two courses conducted in English (Group C) toward the major. With prior approval of the director of undergraduate studies, a maximum of four term courses taught outside the Yale Department of French but bearing directly on the student’s principal interest may be counted toward the major. Up to two of these may be taken in other departments at Yale, and up to four may be taken as part of a Year or Term Abroad or summer study abroad program. However, the combined number of courses from other departments and from study abroad may not exceed four. (The director of undergraduate studies may grant exceptions to this limit for students who spend two academic terms in an approved study abroad program.) Relevant freshman seminars may count toward the major, with permission of the director of undergraduate studies.

**The intensive major for the Class of 2016 and subsequent classes** The intensive major is designed for students who wish to undertake a more concentrated study of literature in French. It is recommended for students considering graduate study in French or in comparative literature. The intensive major consists of twelve term courses numbered 160 or above, including a one-term or two-term senior essay (see below). At least five courses must be from Group B and numbered 200 or above. The requirement of FREN 170 and the stipulations for courses in the 180–199 range, courses conducted in English, and courses taken outside the department are identical to those for the standard major.

**Senior requirement** All majors must write a senior essay showing evidence of careful reading and research and substantial independent thought. Essays may be written in either French or English and must be prepared under the direction of a ladder faculty member in the Department of French. Students planning to pursue advanced work in French after graduation are encouraged to write their senior essay in French.

Students writing a one-term essay enroll in FREN 491 in the senior year. A one-term essay may be written in either the fall or the spring term and should be approximately thirty pages in length. 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 13 (fall-term essay) or November 8 (spring-term essay). A one-page prospectus and bibliography are due September 20 (fall term) or January 24 (spring term). A rough draft must be submitted to the adviser by November 1 (fall term) or March 28 (spring term). Two copies of the final essay are due in the department by December 2 (fall term) or April 21 (spring term).
Students electing a two-term essay for the intensive major must select their subject and adviser by the end of the junior year and enroll in FREN 493 and 494 during the senior year. The essay should be approximately sixty pages in length. 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 13. A one-page prospectus and bibliography are due September 20. Students must submit an initial rough draft to their adviser by January 24 and a complete draft by March 28. Two copies of the final essay are due in the department by April 21.

All majors Students in the major are encouraged to take as many advanced courses as possible in all historical periods from the Middle Ages to the present. Candidates for the major should consult the director of undergraduate studies as early as the beginning of the sophomore year and 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.

Group A courses (FREN 110–159) This group consists of language courses that lead directly to courses counting toward the major. Preregistration is required for all Group A courses except FREN 125 and 145. For further details, students should consult the Freshman Web site (http://yalecollege.yale.edu/content/french-0) or see the director of undergraduate studies.

Group B courses (FREN 160–449, not including Group C courses) This group contains more advanced courses that are taught in French and count toward the major. FREN 160 and 170 are gateway courses that prepare students for courses numbered FREN 200 and above. Courses in the FREN 180–199 range are advanced language courses. Courses numbered 200–449 are advanced courses in literature and culture. The 200–299 range contains courses devoted to broad, general fields defined by century or genre; the 300–449 range contains courses devoted to specific topics within or across those general fields.

Group C courses This group comprises courses taught in English; readings may be in French or English. Two term courses from this group may be counted for credit toward the major.

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 in August. Students who study abroad during the summer with a non-Yale
program must take the placement examination to qualify for credit for their study and to be placed in the appropriate more advanced course.

Only the following students are exempt from the August placement examination:

1. Students who have no previous knowledge of French whatsoever. These students must still preregister on line for FREN 110.

2. Students who received a score of 5 on the Advanced Placement examination in French, a score of 6 or 7 on the higher-level International Baccalaureate examination, or a grade of A or B on the GCE A-level examination. These students should discuss their proper course placement with the director of undergraduate studies, who will be present during the advising session held by the department at the beginning of the fall term (visit the departmental Web site (http://french.yale.edu/language-placement-exam-and-pre-registration) for details).

Please note that the departmental placement test is given only once a year, at the beginning of the fall term. Students who wish to begin taking French in the spring must take the test in August. Details about placement and preregistration will be posted on the departmental Web site (http://french.yale.edu/language-placement-exam-and-pre-registration).

REQUIREMENTS OF THE MAJOR

Prerequisite FREN 150 or equivalent

Number of courses Standard major—10 term courses numbered 160 or above; Intensive major—12 term courses numbered 160 or above

Specific course required FREN 170 or equivalent

Distribution of courses Standard major—at least 4 courses in Group B numbered 200 or above; no more than 2 courses numbered FREN 180–199; no more than 2 courses conducted in English; Intensive major—same, plus 1 addtl Group B course numbered 200 or above

Substitution permitted With prior approval of DUS, up to 4 term courses outside French dept, as specified

Senior requirement Standard major—one-term senior essay in French or English (FREN 491); Intensive major—one-term (FREN 491) or two-term (FREN 493, 494) senior essay in French or English

**Group A Courses**

+FREN 110a, Elementary and Intermediate French I Matuku Ngambe and staff

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. Extensive use of audio and video material. Conducted entirely in French. Mandatory weekly tests given on Mondays at 30-minute intervals from 5 to 8:30 p.m. To be followed by FREN 120. For students with no previous experience of French. Daily classroom attendance is required. Online preregistration required; see french.yale.edu for details. Credit only on completion of FREN 120. 1/2 Course cr
*FREN 120b, Elementary and Intermediate French II  Matuku Ngambe and staff
Continuation of FREN 110. Conducted entirely in French. Only after FREN 110. Online preregistration required; see french.yale.edu for details. To be followed by FREN 130.
L2   RP 1½ Course cr

*FREN 121a or b, Intermediate French  Candace Skorupa and Matuku Ngame
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 discussion 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. Online preregistration required; see french.yale.edu for details. L2   RP 1½ Course cr

*FREN 125a, Intensive Elementary French  Constance Sherak
An accelerated course that covers in one term the material taught in FREN 110 and 120. Practice in all language skills, with emphasis on communicative proficiency. Admits to FREN 145. Conducted entirely in French. For students of superior linguistic ability. No preregistration required. L1, L2   RP 2 Course cr

*FREN 130a or b, Intermediate and Advanced French I  Ruth Koizim
The first half of a two-term sequence designed to develop students’ proficiency in the four language skill areas. Prepares students for further work in literary, language, and cultural studies, as well as for nonacademic use of French. Oral communication skills, writing practice, vocabulary expansion, and a comprehensive review of fundamental grammatical structures are integrated with the study of short stories, novels, and films. Admits to FREN 140. Conducted entirely in French. After FREN 120, 121, or a satisfactory placement test score. Online preregistration required; see french.yale.edu for details. L3   RP 1½ Course cr

*FREN 140a or b, Intermediate and Advanced French II  Soumia Koundi
The second half of a two-term sequence designed to develop students’ proficiency in the four language skill areas. Introduction of more complex grammatical structures. Films and other authentic media accompany literary readings from throughout the francophone world, culminating with the reading of a longer novel and in-class presentation of student research projects. Admits to FREN 150. Conducted entirely in French. After FREN 130 or a satisfactory placement test score. Online preregistration required; see french.yale.edu for details. L4   RP 1½ Course cr

*FREN 145b, Intensive Intermediate and Advanced French  Soumia Koundi
An accelerated course that covers in one term the material taught in FREN 130 and 140. Emphasis on speaking, writing, and the conversion of grammatical knowledge into reading competence. Admits to FREN 150. For students of superior linguistic ability. Conducted entirely in French. After FREN 120, 121, or 125. No preregistration required. L3, L4   RP 2 Course cr

*FREN 150a or b, Advanced Language Practice  Françoise Schneider
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. Conducted entirely in French. After FREN 140, 145, or a satisfactory placement test score. May not be taken after FREN <151>. Online preregistration required; see french.yale.edu for details. L5   RP
Group B Courses

Group B courses are conducted entirely in French. Courses numbered from 160 to 199 are open to students who have passed FREN 150 or the equivalent, and to others with consent of the department. Courses numbered from 200 to 449 are open to students who have passed FREN 170, 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 advanced language courses numbered 185 or higher. Students may take 200-, 300-, and 400-level courses in any order. Courses in the 200–299 range are devoted to general fields; courses in the 300–449 range are devoted to specific topics.

GATEWAY COURSES

*FREN 160a or b, Advanced Culture and Conversation  Lauren Pinzka
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. Conducted entirely in French. Prerequisites: FREN 150, <151>, or a satisfactory placement test score, or with permission of the course director. May be taken concurrently with or after FREN 170.  L5 RP

*FREN 170a or b, Introduction to the Study of Literature in French  Marie-Hélène Girard
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. May not be taken after FREN 171.  L5, HU

*FREN 171b, Introduction to the Study of Literature in French for Students of Directed Studies  Edwin M. Duval
An introduction to close reading and analysis of literary texts written in French, for current and former students of Directed Studies. Similar in content to FREN 170, but specifically designed to build on readings in DRST 001 and 002. Works by authors such as Du Bellay, Racine, Baudelaire, Flaubert, Proust, and Sartre. Prerequisites: DRST 001 or 002; FREN 150, or equivalent with permission of instructor and the director of undergraduate studies. May not be taken after FREN 170.  L5, HU

ADVANCED LANGUAGE COURSES

*FREN 195b, Advanced Writing Workshop  Lauren Pinzka and Benjamin Hoffmann
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). Recommended for prospective majors. Conducted entirely in French. After FREN 150 or higher, or a satisfactory placement test score. May be taken after courses in the 200–449 range.  L5

*FREN 198a, Applied Advanced French Grammar  Constance Sherak
In-depth study of grammar and discourse strategies. Advanced grammar exercises, linguistic analysis of literary selections, and English-to-French translation. Intended to improve students’ written command of French and to prepare them for upper-
level courses; recommended for prospective majors. After FREN 150 or higher, or a satisfactory placement test score. May be taken after courses in the 200–449 range. 

GENERAL FIELDS

*FREN 200a, Literary Analysis and Theory  Yue Zhuo
Close readings of short literary masterpieces of the modern period, supplemented by critical readings that introduce various theoretical approaches. Primary authors include Flaubert, Maupassant, Baudelaire, Proust, Genet, Sartre, Duras, and Ponge. May not be taken after FREN <175>.  L5, HU

*FREN 221b, The French Enlightenment  Thomas Kavanagh
The French Enlightenment as a crucial transition from ancien régime absolutism to modernity. Topics include the heritage of absolutism, libertinage and the rococo, new relations between the public and private spheres, changing constructions of identity and gender, and the role of the philosophes in the coming of the Revolution. Authors include La Bruyère, Montesquieu, Prévost, Marivaux, Voltaire, Rousseau, Laclos, Beaumarchais, Mercier, Mirabeau, Olympe de Gouges, and Sade. Examination of paintings by Watteau, Chardin, Boucher, Fragonard, and Greuze, as well as cinematic representations of the period by Leconte, Frears, and Renoir.  L5, HU

*FREN 230a / AFAM 191a / AFST 330a / LITR 266a, Introduction to Francophone African and Caribbean Literature  Christopher L. Miller
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; the rise of Negritude and nationalism; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bâ, Belaya, Condé, and Lopes.  L5, HU

*FREN 236a, Modern French Poetry  Thomas C. Connolly
Introduction to French poetry of the nineteenth and twentieth centuries. Methods for reading and analyzing a poetic text in French. Influences from classical and popular music, painting, sculpture, film, and dance, as well as from other European poetic traditions.  L5, HU

*FREN 265a / THST 265a, French Classical Tragedy  Christopher Semk
Comprehensive survey of seventeenth-century French tragedy, with an emphasis on performance. Stylistic features and major themes of tragedy; the material conditions of early modern performance; the art of declamation; recent productions, including both those that seek to reproduce early modern practices and those that modernize the plays. Works by Bernard, Corneille, Racine, and Rotrou.  L5, HU

SPECIAL TOPICS

*FREN 304b, Power in Medieval French Literature  Jonathan Cayer
Portrayals of feudal and martial power, intellectual domination, and amorous contests in medieval French literature. Introduction to foundational movements and diverse literary genres, from romances to chronicles.  L5, HU

*FREN 337a, Premodern Travels in French Narrative  Jonathan Cayer
The use and representation of travel in French literature from the Middle Ages to the eighteenth century. Ideas of travel and exploration, cross-cultural interactions and misunderstandings, and geographies, both real and imagined.  L5, HU
*FREN 361b, Subjectivity and Sexuality in Twentieth-Century French Fiction
Yue Zhuo
Ways in which fragmented subjectivities have been represented and constructed in twentieth-century French fiction through encounters with others and through aesthetic and sexual experiences. Key literary trends and authors considered from critical perspectives of psychoanalysis, narratology, phenomenology, and gender. 1.5, HU

*FREN 366b / HSAR 251b, Writers and Artists in Paris, 1780–1914  Marie-Hélène Girard
Ways in which the transformation of Paris shaped the representation of artists who lived and worked in the French capital from the end of the Old Regime until the eve of World War I. The emergence of Paris as a cultural marker; the role played by the image of the bohemian or the artiste maudit. Authors and artists include David, Balzac, Delacroix, Baudelaire, Manet, Mallarmé, impressionist painters, and Picasso. 1.5, HU

*FREN 381a, Paris, Capital of the Nineteenth Century  Maurice Samuels
The myth of Paris as it took shape in nineteenth-century art and literature. Works by writers such as Hugo, Balzac, Baudelaire, and Rimbaud and by artists such as Delacroix, Gavarni, and Manet, as well as major impressionists such as Monet, Sisley, and Caillebotte. Other topics include nineteenth-century French history, Haussmann’s urbanism, architecture, and the birth of photography. 1.5, HU

*FREN 398b / FILM 415b, Seventeenth-Century France in Cinema
Christopher Semk
Introduction to seventeenth-century French literature and culture through cinematic adaptations of literary works and representations of the period in film. The influence of seventeenth-century France on contemporary French culture; ways in which the period and its literature continue to capture the imagination of film directors. 1.5, HU

Special Tutorial and Senior Courses

*FREN 470a and FREN 471b, Special Tutorial for Juniors and Seniors  Christopher Semk
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. For additional information, consult the director of undergraduate studies.

*FREN 491a or b, The Senior Essay  Christopher Semk
A one-term research project completed under the direction of a ladder faculty member in the Department of French and resulting in a substantial paper in French or English. For additional information, consult the director of undergraduate studies.

*FREN 493a and FREN 494b, The Senior Essay in the Intensive Major  Christopher Semk
A yearlong research project completed under the direction of a ladder faculty member in the Department of French and resulting in a paper of considerable length, in French or English. For additional information, consult the director of undergraduate studies.
Group C Courses

Courses in Group C 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 008b, Les Misérables  
Maurice Samuels
Close reading of Victor Hugo's Les Misérables in translation, with some attention to stage and film adaptations of the work. The world of nineteenth-century France as described in the novel, including social, political, economic, religious, literary, and cultural history. Literary and mythological archetypes that allowed Les Misérables to transcend its historical moment and become famous in world literature. No knowledge of French required. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
HU  Tr

FREN 240a / HUMS 201a / LITR 214a, The Modern French Novel  
Alice Kaplan and Maurice Samuels
A survey of major French novels, considering style and story, literary and intellectual movements, and historical contexts. Writers include Balzac, Flaubert, Proust, Camus, and Sartre. Readings in translation. One section conducted in French.  
HU  Tr

*FREN 302a / HUMS 236a / LITR 192a, Medieval Humor  
R. Howard Bloch
Introduction to the fabliau, or Old French comic tale, and to the medieval sense of humor more generally. Close reading of a representative sample of extant fabliaux, with attention to the literary, historical, and social context of the tales. Readings and discussion in English; texts available in Old French.  
HU  Tr

*FREN 305b / ENGL 157b, Medieval Biography  
Ardis Butterfield and Joseph Stadolnik
The sources, aims, and diversity of biographical forms in medieval literature. Analysis of the medieval world through the study of autobiography, hagiography, political martyrology, and literary biography; the challenges of viewing a historical period primarily through a single life. Includes a research trip to New York City. Recommended preparation: reading knowledge of French.  
HU  Tr

*FREN 323a / THST 408a, Actor and the Text: The Misanthrope  
Toni Dorfman
Critical and practical exploration of Molière's Misanthrope, culminating in a public performance. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  
HU

*FREN 347a / HSAR 280a / HUMS 213a, Ekphrasis  
Thomas C. Connolly
An exploration of ekphrasis, understood both as the verbal representation of visual representation and, more broadly, as the way in which one artistic discourse represents, critiques, or transgresses another. Manifestations of this rhetorical device in both Western and non-Western cultures from antiquity to the present. Readings and discussion in English.  
HU  Tr

*FREN 352b / GMAN 256b / LITR 217b, Poetry and the Holocaust  
Thomas C. Connolly
The relationship between poetry and the Holocaust, both in poetry’s attempts to remember and come to terms with the past, and in the ways that it predicts and warns about the future. Readings from French, German, Hebrew, Arabic, Yiddish, and Italian
works in translation. Readings and discussion in English, with texts available in the original languages.  

*FREN 397b / HUMS 362b / LITR 339b, French Theory from Sartre to Derrida  
Yue Zhuo
A survey of French thought from the end of World War II to the present, from existentialism and Marxism to structuralism and poststructuralism. Authors include Sartre, de Beauvoir, Barthes, Lévi-Strauss, Foucault, Bataille, Deleuze, Kofman, and Derrida. Readings and discussion in English.  

Reading Course  

*FREN 109a or b, French for Reading  
Maryam Sanjabi
Fundamental grammar structures and basic vocabulary are acquired 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. No preregistration required. Conducted in English. Does not satisfy the language requirement.

Freshman Seminar program

The Freshman Seminar program offers a diverse array of courses open only to freshmen and designed with freshmen in mind. Enrollment in seminars is limited to fifteen or eighteen students, depending on the nature of the course. Most seminars meet twice each week and do not, unless otherwise noted, presume any prior experience in the field. Students must apply and preregister for freshman seminars before the beginning of each term. To ensure that all applicants share an equal chance at enrolling in a seminar, students are admitted by lottery from among those who apply. Students who do not preregister may be considered for placement at the instructor's discretion if space is available. Application procedures and a complete list of courses may be found on the program's Web site (http://yalecollege.yale.edu/content/freshman-seminar-program-2).

Geology and Geophysics

Director of undergraduate studies: David Evans, 210 KGL, 432-3127, david.evans@yale.edu

FACULTY OF THE DEPARTMENT OF GEOLOGY AND GEOPHYSICS

Professors  
Jay Ague, David Bercovici (Chair), Ruth Blake, Mark Brandon, Derek Briggs, Peter Crane, David Evans, Alexey Fedorov, Debra Fischer, Jacques Gauthier, Thomas Graedel, Shun-ichiro Karato, Jun Korenaga, Mark Pagani, Jeffrey Park, Danny Rye, Brian Skinner, Ronald Smith, Elisabeth Vrba, John Wettlaufer

Assistant Professors  
Hayat Affek, William Boos, Kanani Lee, Maureen Long, Trude Storelvmo, Mary-Louise Timmermans, Nadine Unger, Zhengrong Wang

Lecturers  
Michael Oristaglio, Frank Robinson, Lawrence Schwartz, Catherine Skinner, Ellen Thomas
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: atmosphere, ocean, and climate; environmental and energy geoscience; paleontology and geobiology; and solid Earth science. The tracks are suggested pathways to professional careers and major areas of research in geology and geophysics. Students may change tracks during their course of study with guidance from the director of undergraduate studies.

1. The atmosphere, 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 112, 113; 114, 115; or 118), physics (PHYS 180, 181 and PHYS 165L, 166L), computing (ENAS 130 or equivalent), and mathematics through differential equations (MATH 120 or ENAS 151, and ENAS 194). The major requirements consist of at least eleven term courses, for ten and one-half course credits, beyond the prerequisites, including either the senior essay or the senior thesis. To begin study of Earth processes, majors take an introductory course in G&G, with any accompanying laboratory, selected from G&G 100; 110 or 115, and 111L; 120; or 125 and 126L. A higher-level course in G&G can be substituted with the permission of the director of undergraduate studies. Six core courses, totaling five and one-half course credits, introduce students to Earth’s climate system (G&G 140 and 141L), meteorology (G&G 322), physical oceanography (G&G 335), fluid mechanics (MENG 361), and statistics or linear algebra (STAT 230 or 238 or MATH 222). Three electives are chosen from topics in the environment and in 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 departmental Web site (http://earth.yale.edu/undergraduate-program). At least one elective must be from G&G.

2. The environmental and energy geoscience track provides a scientific understanding of the natural and anthropogenic processes that shape the Earth-atmosphere-biosphere system, including energy and material flows among its components. It emphasizes comparative studies of past and current Earth processes to inform models of humankind’s role within the environment’s future. The prerequisites are broad
and flexible and include college-level chemistry (CHEM 112, 113; 114, 115; or 118) and mathematics through multivariate calculus (MATH 120 or ENAS 151). Depending on their area of focus, students may choose a prerequisite in physics (PHYS 170, 171; 180, 181; or 200, 201), or they may choose cellular biology (BIOL 101 and 102, or MCDB 120) and evolutionary biology (BIOL 103 and 104, or E&EB 122, or G&G 125 and 126L). The major requirements consist of at least eleven term courses, for eleven course credits, beyond the prerequisites, including either the senior essay or the senior thesis. To begin study of the Earth system, majors take two introductory courses in G&G, with any accompanying laboratories, selected from G&G 100; 110 or 115, and 111L; 120, or 140 and 141L (G&G 125 and 126L may count toward this requirement if not selected as the evolutionary biology prerequisite). Higher-level courses in G&G can be substituted with the permission of the director of undergraduate studies. Four core courses are chosen from topics in general resource use and sustainability (G&G 205), the microbiology of surface and near-surface environments (G&G 255), fossil fuels and energy transitions (G&G 274), renewable energies (G&G 275), geochemical principles (G&G 301), climate physics (G&G 322), and satellite-based image analysis (G&G 362). Four electives chosen from Geology and Geophysics, Environmental Studies, Ecology and Evolutionary Biology, engineering, or 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 departmental Web site (http://earth.yale.edu/undergraduate-program). 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, geobiological, 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 (BIOL 101–104; or MCDB 120 and E&EB 122) and chemistry (CHEM 112, 113; 114, 115; or 118), and mathematics through multivariate calculus (MATH 120 or ENAS 151). The major requirements consist of at least thirteen term courses, for twelve course credits, beyond the prerequisites, including either the senior essay or the senior thesis. Students take G&G 110 or 115, and 111L, to gain geological and environmental context, and they are introduced to the fossil record and evolution in G&G 125 and 126L; higher-level courses in G&G can be substituted with the permission of the director of undergraduate studies. Four core courses give majors a comprehensive background in sedimentary rocks and rock correlation (G&G 230 or equivalent), the study of evolution (G&G 250), microbiology in past and present environments (G&G 255), and statistical data analysis as applied to the life sciences (STAT 101). Four electives selected from Geology and Geophysics, Ecology and Evolutionary Biology, Molecular, Cellular, and Developmental Biology, and related fields offer students 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 departmental Web site (http://earth.yale.edu/undergraduate-program). At least one elective must be from G&G.
4. The solid Earth science 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, tsunamis, and volcanic eruptions). 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 112, 113; 114, 115; or 118) and physics (PHYS 170, 171; 180, 181; or 200, 201), and mathematics through multivariate calculus (MATH 120 or ENAS 151). The major requirements consist of at least eleven courses, for eleven course credits, beyond the prerequisites, including either the senior essay or the senior thesis. To begin study of the Earth system, majors take two introductory courses in G&G, with any accompanying laboratories, selected from G&G 100; 110 or 115, and 111L; 120; 125 and 126L; or 140 and 141L. Higher-level courses in G&G can be substituted with the permission of the director of undergraduate studies. The core of the track consists of four courses chosen from topics in mantle dynamics, earthquakes, and volcanoes (G&G 201), mountain building and global tectonics (G&G 212), rocks and minerals (G&G 220), sedimentary rocks and processes (G&G 230 or equivalent), and geochemical principles (G&G 301). Students also select four electives in geology, geochemistry, geophysics, or related topics. A list of suggested electives is available from the office of the director of undergraduate studies or on the departmental Web site (http://earth.yale.edu/undergraduate-program). 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 decide to pursue a science major only after the freshman year. The prerequisites include mathematics (MATH 115), biology (BIOL 101 and 102, or MCDB 120, or G&G 235), and chemistry (CHEM 103; 112, 113; 114, 115; or 118). The major requirements consist of at least nine term courses beyond the prerequisites. These include two courses in G&G numbered 100–150, with any accompanying laboratories; courses in natural resources (G&G 205) and geochemistry (G&G 301); and five additional courses at the 200 level or higher in Geology and Geophysics or related fields, approved by the director of undergraduate studies and 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 492) or, with the consent of the faculty, a two-term senior thesis (G&G 490, 491), 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 491 may count as an elective toward the major. A copy of each senior thesis or senior essay is made available on the departmental Web site (http://earth.yale.edu).
Geology and Geophysics majors may not employ the Credit/D/Fail option for their prerequisites or for courses in the major. With permission of the director of undergraduate studies, acceleration credits awarded on entrance for high scores on national or international examinations (e.g., AP subject tests) may be used to satisfy prerequisites, even if the student does not choose to accelerate. Higher-level courses may, with the permission of the director of undergraduate studies, be substituted for prerequisites and for specific required courses. Qualified juniors and seniors are encouraged to enroll in graduate courses, with the permission of the instructor and of the directors of graduate and undergraduate studies. Descriptions of graduate courses are available at the office of the director of 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 or see the departmental Web site (http://earth.yale.edu) for further information.

**Physics and Geosciences major**  The Department of Geology and Geophysics also offers a combined major with the Department of Physics. For more information, see under Physics and Geosciences.

**Requirements of the Major**

**Prerequisites**  B.A. – MATH 115; BIOL 101 and 102, or MCDB 120, or G&G 255; CHEM 103, or 112, 113, or 114, 115, or 118; MATH 120 or ENAS 151; *Atmosphere, ocean, and climate track* – ENAS 130 or equivalent; ENAS 194; PHYS 180, 181, 165L, 166L; *Environmental and energy geoscience track* – physics (PHYS 170, 171, or 180, 181, or 200, 201) or biology (BIOL 101 and 102, or MCDB 120; and BIOL 103 and 104, or E&EB 122, or G&G 125 and 126L); *Paleontology and geobiology track* – BIOL 101–104, or MCDB 120 and E&EB 122; *Solid Earth science track* – PHYS 170, 171, or 180, 181, or 200, 201

**Number of courses**  B.A. – at least 9 courses beyond prereqs for letter grades (incl senior req); B.S. – *Atmosphere, ocean, and climate track* – at least 11 courses, for 10½ credits, beyond prereqs for letter grades (incl senior req); *Environmental and energy geoscience and solid Earth science tracks* – at least 11 courses beyond prereqs for letter grades (incl senior req); *Paleontology and geobiology track* – at least 13 courses, for 12 credits, beyond prereqs for letter grades (incl senior req)

**Specific courses required**  B.A. – G&G 205, 301; B.S. – *Atmosphere, ocean, and climate track* – G&G 140, 141L, 322, 335; MENG 361; STAT 230 or 238 or MATH 222; *Environmental and energy geoscience track* – 4 from G&G 205, 255, 274, 275, 301, 322, 362; *Paleontology and geobiology track* – G&G 110 or 115, 111L, 125, 126L, 230 or equivalent, 250, 255, STAT 101; *Solid Earth science track* – 4 from G&G 201, 212, 220, 230 or equivalent, 301

**Distribution of courses**  B.A. – 2 intro courses in G&G, with labs, as specified; 5 addtl courses at 200 level or higher in G&G or related fields; B.S. – *Atmosphere, ocean, and climate track* – 1 intro course in G&G, with lab, as specified; 3 electives as specified; *Environmental and energy geoscience and solid Earth science tracks* – 2 intro courses
in G&G, with labs, as specified; 4 electives as specified; *Paleontology and geobiology track*—4 electives as specified

**Substitution permitted** *All programs*—with DUS permission, higher-level courses for prereqs or required courses

**Senior requirement** *All programs*—senior essay (G&G 492) or, with permission of faculty, two-term senior thesis (G&G 490, 491)

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### Courses

**G&G 010a / EVST 010a, Earth, Resources, Energy, and the Environment**
David Evans and Mary-Louise Timmermans
Humankind’s interactions with, and place within, the natural world. Plate tectonics and natural disasters, biological evolution and mass extinction, human evolution, population growth and ecology, industrial resources, groundwater and pollution, fossil fuels and energy transitions, the carbon cycle and greenhouse gases, paleoclimates, current global warming, alternative energies, and a planetary perspective on the Earth as a singular oasis in space. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  SC

**G&G 020b, Origins of Everything**  David Bercovici
Major scientific origin hypotheses such as the origin of the universe, galaxies, the solar system and planets, continents, oceans, atmospheres, climatic variations, magnetic fields, and mono- and multi-cellular life. Climate and geographical perspectives on the origin of civilizations and human history. Topics selected by students in consultation with instructor. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  SC

**G&G 100a, Natural Disasters**  David Bercovici and Maureen Long
Natural events and their impact on humanity and the built environment. Earthquakes, volcanoes, tsunamis, landslides, coastal flooding, tornadoes, hurricanes, and meteoritic impacts. Hazard mitigation strategies. Consequences of global warming.  SC

**G&G 110a, Dynamic Earth**  Danny Rye and David Evans
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.  SC

**G&G 111La, Dynamic Earth Laboratory and Field Methods**  David Evans and Danny Rye
Practical exercises in the laboratory and in the field to complement G&G 110 or 115. Identification of minerals and rocks; construction of geologic maps and cross sections to determine Earth-system processes and histories. Includes a field trip to the northern Appalachians during the October recess. After or concurrently with G&G 110, or after G&G 115.  SC  ½ Course cr
*G&G 115b / EVST 200b, Earth System Science  Jeffery Park
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. (Formerly G&G 200)  SC

[ G&G 120, Earth’s Changing Climate ]

*G&G 125b / E&EB 125b, History of Life  Derek Briggs and Nicholas Longrich
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.  SC

G&G 126Lb, Laboratory for the History of Life  Derek Briggs and Nicholas Longrich
A survey of the diversification of life using suites of fossils and related modern organisms drawn from critical evolutionary stages. Emphasis on direct observation and description of specimens, the solution of problems posed by the instructor, and the generation and testing of hypotheses by the students. To be taken concurrently with or following G&G 125.  SC  ½ Course cr

G&G 140a / EVST 201a, Atmosphere, Ocean, and Environmental Change  Ronald Smith
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 202L.  QR, SC

*G&G 141La / EVST 202La, Laboratory for Atmosphere, Ocean, and Environmental Change  Ronald Smith
Laboratory and field exercises to accompany EVST 201. Must be taken concurrently with EVST 201.  SC  ½ Course cr

*G&G 205b, Natural Resources and Their Sustainability  Jay Ague
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.  SC

*G&G 207b, The Science of Water  Kanani Lee
A study of water in its physical, chemical, biological, astronomical, geological, and environmental aspects. Topics include water’s role in food and energy production, conservation and pollution, magnetic field generation, plate tectonics and volcanism, climate, and security.  SC

*G&G 212b, Global Tectonics  Mark Brandon and David Evans
The architecture of continents and oceans; detailed geology of lithospheric plate margins and mountain chains. Examples of plate-interaction histories from the ancient geologic 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 (preferably 100, 110, or 115), or permission of instructor. Enrollment limited to 15.  SC

**G&G 220b, Petrology and Mineralogy**  Danny Rye
Comprehensive study of the structures, chemistry, and physical properties of minerals. Interpretation of mineral associations and textures in terms of processes acting in the formation of igneous and metamorphic rocks. Study of the interplay between plate tectonics and the genesis of igneous and metamorphic rocks. After one year of college-level chemistry; G&G 110 recommended.  SC

[ **G&G 230, Stratigraphy** ]

[ **G&G 235, Geomorphology and Surface Processes** ]

[ **G&G 240, Forensic Geoscience** ]

**G&G 247b / AMTH 247b / MATH 247b, Partial Differential Equations**  Igor Frenkel
Introduction to partial differential equations, wave equation, Laplace’s equation, heat equation, method of characteristics, calculus of variations, series and transform methods, and numerical methods. Prerequisites: MATH 222 or 225, MATH 246, and ENAS 194, or equivalents.  QR

**G&G 250a*, Paleontology and Evolutionary Theory**  Elisabeth Vrba
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 125 or a 100-level term course in biological sciences.  SC

**G&G 255b / EVST 265b, Environmental Geomicrobiology**  Ruth Blake
Microbial diversity in natural geologic habitats and the role of microorganisms in major biogeochemical cycles. Introduction to prokaryote physiology and metabolic diversity; enrichment culture and molecular methods in geomicrobiology. Prerequisite: college-level chemistry.  SC

**G&G 261a*,  EVST 261a / F&ES 261a, Minerals and Human Health**  
Catherine Skinner and Ruth Blake
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G 110 recommended.  SC

**G&G 274a, Fossil Fuels and Energy Transitions**  Michael Oristaglio
The origins, geologic settings, exploration, distribution, and extraction of fossil fuels as finite Earth resources. Energy use today; transitions to future renewable resources. Topical issues include peak oil, deep-water exploration, carbon sequestration, and shale gas. Prerequisites: high school chemistry, mathematics, and Earth science. Recommended preparation: G&G 110 or 205.  SC

[ **G&G 275, Renewable Energy** ]

[ **G&G 280, Organic Geochemistry** ]

**G&G 290a / PHYS 290a, Earthquakes and Volcanoes**  Jun Korenaga
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 provide students with hands-on problem-solving experiences in geophysics. Prerequisites: CHEM 112, 113, or 114, 115, or 118; MATH 120; PHYS 170, 171, or 180, 181, or 200, 201; or permission of instructor. QR, SC

**G&G 300b**, Mineral Deposits  Brian Skinner
Introduction to formation and distribution of mineral deposits. Recommended preparation: G&G 110, 115, or 220. SC

*G&G 301a, Introduction to Geochemistry  Mark Pagani
Basic principles of geochemistry and their use in geological science. Thermodynamics of aqueous and igneous systems. Element fractionation and isotopic geochemistry. Biogeochemical cycles, geochronology, cosmochemistry. After CHEM 115 or 118, and MATH 115; G&G 220 recommended. QR, SC

**G&G 310a** and **h**, Isotope Geochemistry  Zhengrong Wang
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 115, MATH 120, and PHYS 171 or equivalents, or with permission of instructor. QR, SC  RP

[ G&G 312, Structure and Deformation of the Lithosphere ]

**G&G 313a**, Invertebrate Paleontology: Evolving Form and Function  Derek Briggs
Exploration of the basic constraints and potentials that controlled adaptive radiation in the evolution of the invertebrate skeleton.

**G&G 319a**, Introduction to the Physics and Chemistry of Earth Materials  Kanani Lee and Shun-ichiro Karato
Basic principles that control the physical and chemical properties of Earth materials. Thermodynamics, equation of state, phase transformations, elastic properties and phase diagrams. After CHEM 115, MATH 120, and PHYS 181, or equivalents. QR, SC

*G&G 322a, Physics of Weather and Climate  William Boos
The climatic system; survey of atmospheric behavior and climatic change; meteorological measurements and analysis; formulation of physical principles governing weather and climate with selected applications to small- and large-scale phenomena. After PHYS 181 and MATH 120 or equivalents. QR, SC

**G&G 323b**, Climate Dynamics  Trude Storelvmo
An introduction to climate dynamics. Special emphasis on phenomena controlled by large-scale interactions between the ocean and atmosphere, from El Niño to decadal climate variability. Topics include conceptual models of climate, general circulation of the atmosphere, ocean wind–driven and thermohaline circulation, abrupt climate changes, climate models by means of GCMs, and climate predictability. After PHYS 181, MATH 120 or equivalent, and one course in meteorology or physical oceanography; or with permission of instructor. QR, SC
[G&G 326, Introduction to Earth and Planetary Physics]

G&G 327a / ENVE 327a / F&ES 327a*, Atmospheric Chemistry  Nadine Unger
The chemical and physical processes that determine the composition of the atmosphere; implications for climate, ecosystems, and human welfare. Origin of the atmosphere; photolysis and reaction kinetics; atmospheric transport of trace species; stratospheric ozone chemistry; tropospheric hydrocarbon chemistry; oxidizing power, nitrogen, oxygen, sulfur, and carbon cycles; interactions between chemistry, climate, and biosphere; aerosols, smog, and acid rain. Prerequisites: CHEM 115 or 118, and MATH 120, or equivalents. ENAS 194 recommended. QR, SC

[G&G 333, Paleogeography]

G&G 335a*, Physical Oceanography  Alexey Fedorov
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 181 and MATH 120 or equivalents, or with permission of instructor. QR, SC

G&G 342a / PHYS 342a, Introduction to Earth and Environmental Physics  Steven Lamoreaux
A broad introduction to the physical, chemical, and biological processes that affect the climate and other features of the Earth. Emphasis on anthropogenic activity that affects the environment; attention to issues of energy extraction from natural resources and subsequent waste disposal. Recommended preparation: familiarity with basic calculus. Prerequisite: PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. QR, SC

[G&G 350, Petrogenesis of Mountain Belts]

[G&G 355, Extraordinary Glimpses of Past Life]

*G&G 362b*, ARCG 362b*, EVST 362b*, Observing Earth from Space  Xuhui Lee
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. QR, SC

[G&G 370, Regional Perspectives on Global Geoscience]

*G&G 402b*, Paleoclimates  Mark Pagani
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 181 and one course in meteorology or oceanography, or with permission of instructor. SC

*G&G 421b*, Geophysical Fluid Dynamics  Mary-Louise Timmermans
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 361 or equivalent and one course in meteorology or oceanography, or with permission of instructor.  QR, SC

G&G 440a* / EVST 441a / F&ES 441a, Methods in Geomicrobiology  Ruth Blake
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. SC

G&G 450a*, Deformation of Earth Materials  Shun-ichiro Karato
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, electrical conductivity, and chemical reaction. Prerequisites: CHEM 115, MATH 120, and PHYS 181, or equivalents. QR, SC

[ G&G 456, Introduction to Seismology ]

G&G 470bG, Cloud Physics and Dynamics  Trude Storelumo and William Boos
Basic concepts of cloud microphysics, cloud dynamics, and precipitation. Principles of cloud modeling; field observations of clouds. Prerequisites: MENG 361 or G&G 322 or 323; MATH 230 and 247, or PHYS 301; or equivalents with permission of instructor. SC

*G&G 487a or b, Individual Study in Geology and Geophysics  David Evans
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. May be taken more than once for credit.

1/2 Course cr

*G&G 488a and G&G 489b, Research in Geology and Geophysics  David Evans
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 G&G 491b, Research and Senior Thesis  David Evans
Two terms of independent library, laboratory, field, or modeling-based research under faculty supervision. To register for this course, each student 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  David Evans
One term of independent library, laboratory, field, or modeling-based research under faculty supervision. To register for this course, each student 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.

German Studies

Director of undergraduate studies: Paul North, 323 WLH, 432-6401, p.north@yale.edu; german.yale.edu
FACULTY ASSOCIATED WITH THE MAJOR

Professors  Seyla Benhabib (Political Science), David Cameron (Political Science), Rüdiger Campe (German), Paul Franks (Judaic Studies), Michael Friedmann (Adjunct) (Music), Timothy Guinnane (Economics), *Karsten Harries (Philosophy), Carol Jacobs (German), Rainer Nägele (German), *Brigitte Peucker (German, Film Studies), Steven Smith (Political Science), Henry Sussman (German) (Visiting), J. Adam Tooze (History), Katie Trumpener (Comparative Literature, English), Christopher Wood (History of Art)

Associate Professor  Kirk Wettters (German)

Assistant Professor  Paul North (German)

*Member of the Advisory Committee for the program.

The major in German Studies offers an interdisciplinary approach to the study of the German cultural tradition in history, philosophy, the visual arts, music, film studies, politics, and culture, with a German-language requirement. The major draws on several departments and programs along with core courses in German Studies. It is particularly suited to students wishing to combine interests in German language and culture with intensive work in another discipline.

In German Studies, students have the freedom to develop a program of courses to meet their particular needs and interests. Through consultation with the director of undergraduate studies, each student is expected to define a focus of concentration within the major. Interested students should contact the director of undergraduate studies to begin planning their course of study.

Two majors  The German Studies major is particularly well suited for students who wish to fulfill the requirements of two majors. For such students, the focus of concentration within the German Studies major often reflects or augments the other elected major.

Prerequisite  Students choosing the German Studies major should have completed GMAN 110 and 120 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 130 and 140 or equivalent; GMAN 150; two courses from the German Modernities series, numbered GMST 180–189; one German literature course numbered GMAN 171–179; and the senior essay. The remaining five courses must include four term courses that together constitute a focus of concentration. One of the courses in the concentration, taken in the spring of the junior year, is designated as the junior seminar. Students in the standard major elect one additional advanced seminar in German literature or culture. Students in the intensive major complete a two-term senior essay instead of taking the additional advanced seminar. 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 a discipline or 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, European studies, film studies, humanities, 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 490, 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 6, 2013; a three-page prospectus and a bibliography are due by September 27. A rough draft must be submitted to the adviser by November 8. The completed essay, due on December 9, 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 replaces one advanced seminar with a second term of the senior essay. In the fall term seniors in the intensive major enroll in GMST 491 and begin work on their project under the guidance and supervision of a 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 21, 2013. The student must submit a draft of at least fifteen pages of the essay by December 6 to receive credit for the first term of the course. The second term, GMST 492, is devoted to completing the essay, which should be substantial (between fifty and sixty pages); the completed essay must be submitted by April 22, 2014. 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 under "Special Arrangements" in the Academic Regulations.

**Requirements of the Major**

**Prerequisites** GMAN 110 and 120, or equivalent
Number of courses 12 term courses, totaling 13 course credits, beyond prereq (incl senior req) for letter grades

Specific courses required GMAN 130, 140, 150; 2 courses numbered GMST 180–189; 1 course numbered GMAN 171–179

Distribution of courses 4 term courses constituting a focus of concentration, 1 of them the junior sem; 1 addtl advanced sem 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 490)

Intensive major Two-term senior essay (GMST 491, 492), instead of 1 addtl advanced sem

German Modernities


Introduction to Germany's "classical" period, from the 1790s to the 1830s, with attention to literature, philosophy, art, and culture. The close connection between literature and philosophy of the period; the theoretical foundations of European Romanticism and of later backlashes against it. Some attention to twentieth-century theory. HU

*GMST 186a / LITR 226a, German Modernism Henry Sussman

Introduction to the radical innovations of modernism as it was forged, received, and revised in German-speaking Europe from c. 1880 to 1945. Literary experiments in dissonance and multifaceted suggestion; strategies in criticism and elucidation demanded by modernist works. Some attention to parallels in painting and music. Readings in English translation. Priority to German Studies majors. HU RP

German Literature and Culture

GMST 194b / LITR 243b / MUSI 363b / THST 351b, Cabaret Lynda Paul

An exploration of cabaret as both a historical and a contemporary form of musical-literary-theatrical performance. Famous historical cabarets, with a focus on Europe in the late nineteenth and early twentieth centuries; films, plays, novels, and short stories based on the genre; cabaret songs and famous performers. Analysis of works by contemporary American cabaret artists. Students collaborate to write, produce, and perform three cabaret events. HU

*GMST 201a / GMAN 245a, Postwar German Literature and Politics Jason Groves

Introduction to the literature of East and West Germany from the 1950s to the present. Focus on the relationships between literature, history, and politics. Readings include works by Paul Celan, Heinrich Böll, Peter Handke, Heiner Müller, Christa Wolf, and W. G. Sebald. Conducted in English with readings in German or English. HU Tr

*GMST 210a / GMAN 274a, Revolutionary German and Soviet Theater Rainer Nägele and Joshua Alvizu

Theater as revolutionary process in German and Soviet plays and in theoretical and dramaturgical texts of the 1920s and early 1930s. Focus on the writings of Bertolt Brecht and Sergei Tretyakov, with some attention to works by Benjamin, Shklovsky,
Eisenstein, and Meyerhold. Brief examination of set designs; musical excerpts from Hans Eisler. Reading knowledge of German or Russian desirable but not required.  HU  
Tr

**GMST 212b / HUMS 330b / PHIL 261b, Realism, Idealism, and Romanticism**
Paul Franks
Investigation of the possibility of individual agency and absolute reason in modernity. Introduction to figures from classical German philosophy such as Kant, Goethe, Mendelssohn, Jacobi, Fichte, Schelling, Schlegel, and Hegel. Themes include realism, idealism, romanticism, skepticism, nihilism, freedom, individuality, systematicity, and romantic irony.  HU

*GMST 222b / HUMS 464b, The Question of Evidence*  Rüdiger Campe
Ideas of what constitutes evidence and their role in shaping difference, strife, and parallels between science and humanities in Western culture. Key texts and authors in the debate, from ancient rhetoric to current philosophy and history of science. Evidence as a concept and a practice; forms of evidence, including persuasion, inference, conviction, and visualization; contemporary debates on definitive arguments.  HU

*GMST 294a / ENGL 430a / GMAN 277a / HUMS 467a / LITR 331a, Nietzsche and Emerson*  Paul North and Paul Grimstad
Comparative introduction to the central writings of Nietzsche and Emerson, with reference to the historical relationship between the two men. Overlap and antagonism on themes such as power, fate, nature, language, and writing; concepts that underwent radical shifts in each thinker’s work; ways in which philosophical style and ideas of style shaped and complicated the writers’ thinking.  HU  
Tr

Close study of the films of R. W. Fassbinder, Werner Herzog, and Michael Haneke. Questions of authorship, cultural politics, intermediality, and cinematic modernism. Readings and discussion in English.  HU  
Tr

*GMST 361a / GMAN 361a / HUMS 255a, Visions of the End and Representations of Transcendence*  Kirk Wetter
The end as a formal feature of narrative and temporal forms, and as an opening to an uncertain beyond. The complex relation between finality and transcendence in Goethe’s Faust II, Mahler’s symphonic works, twentieth-century German and Austrian literature (Broch, Ransmayr, Sebald), and Beckett’s Endgame. Discussion in English; readings in German or English.  HU  
Tr

*GMST 369aG / GMAN 388aG / HUMS 410a / LITR 327a / RLST 322aG, Translating the Sacred*  Hindy Najman and Kirk Wetter
Historical dynamics of cultural transfer, translation, reinterpretation of religious revelations, and foundational narratives from antiquity to modernity. Readings from ancient scripture, modern literary works, and theoretical reflections.  HU

*GMST 378aG / HUMS 226a / LITR 307a, Walter Benjamin and the Modernization of Nineteenth-Century Paris*  Henry Sussman
The radical modernization of Paris under the Second Empire (1851–70) as seen through the eyes of Walter Benjamin. Focus on Benjamin’s Arcades Project, a compendium that charted developments such as Parisian mass transit and streamlined traffic, the
construction of apartment houses, and the dissemination of mass media. Readings from other literary texts on the same events include works by Balzac, Zola, and Aragon.  

**GMST 380a / ER&M 280a / MUSI 280a, Music in Nazi Germany**  Gundula Kreuzer  
The interrelations between music and politics under the extreme conditions of a totalitarian regime. How the National Socialists sought to police all aspects of Germany’s musical life between 1933 and 1945 and why they often failed. Topics include aesthetic, political, and administrative prerequisites for the Nazis’ efforts; consequences of Nazism for musical culture during the Third Reich and beyond; and the vulnerability of music to ideological appropriation.  

**GMST 381a / PHIL 204a, Kant’s Critique of Pure Reason**  Paul Franks  
An examination of the metaphysical and epistemological doctrines of Kant’s Critique of Pure Reason. Prerequisite: PHIL 126 or DRST 004.  

**Senior Courses**  
*GMST 479a or b, Directed Readings or Individual Research in German Studies*  Paul North  
Individual study under faculty supervision. Applicants must submit a prospectus and bibliography approved by the faculty adviser to the director of undergraduate studies. The student meets with the adviser at least one hour each week and takes a final examination or writes a term paper. No credit granted without prior approval of the director of undergraduate studies.  

*GMST 490a or b, The Senior Essay for the Standard Major*  Paul North  
Preparation of a one-term senior essay, typically during the fall term, under the supervision of a member of the faculty.  

*GMST 491a and GMST 492b, The Senior Essay for the Intensive Major*  Paul North  
Preparation of a two-term senior essay under the supervision of a member of the faculty.  

**Germanic Languages and Literatures**

Director of undergraduate studies: Paul North, 323 WLH, 432-6401, p.north@yale.edu;  
language director: Theresa Schenker, 325 WLH, 432-0783, theresa.schenker@yale.edu;  
german.yale.edu  

**FACULTY OF THE DEPARTMENT OF GERMANIC LANGUAGES AND LITERATURES**  
**Professors** Rüdiger Campe (*Chair*), Carol Jacobs, Rainer Nägele, Brigitte Peucker, Henry Sussman (*Visiting*)  

**Associate Professor** Kirk Wetters  

**Assistant Professor** Paul North  

**Lecturer** William Whobrey  

**Senior Lecturer II** Marion Gehlker  

**Senior Lecturer** Howard Stern  

**Lectors** Chrissy Hosea, Theresa Schenker
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 110 and 120 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 130, 140, and 150; one course from the German Modernities series, GMST 180–189; two introductory courses in German literature numbered GMAN 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 492, 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 6; a three-page prospectus and bibliography are due by September 27. A rough draft must be submitted to the adviser by November 1. The completed essay, due on December 9, 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 492 and 493). 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 22 of the senior year. The second term of essay preparation is undertaken independently, without tutorial support. The essay is graded jointly by the adviser and a designated faculty reader.

**Group A courses**  Courses in Group A (GMAN 110–169) include elementary, intermediate, and advanced language courses. Only one advanced language course from Group A at the level of 160 and above may count toward the major.
**Group B courses**  Courses in Group B (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**  Courses in Group C are conducted in English with texts in translation. Only two term courses from this group may count toward the major.

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.

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 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 under "Special Arrangements" in the Academic Regulations.

**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 under German Studies.

**Placement**  A written placement examination will be administered before the first day of classes in the fall term, followed by a five-minute oral interview; see the Center for Language Study Web site (http://cls.yale.edu/placement-testing) for the time and location. Students wishing to take the placement exam in January should sign up with the language director by December 11, 2013. Students may also consult with the director of undergraduate studies or the language director 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 110 or 125.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites**  GMAN 110 and 120, or equivalent

**Number of courses**  11 term courses, totaling 12 course credits, beyond prereq (incl senior essay) for letter grades

**Specific courses required**  GMAN 130, 140, 150; 2 from Group B courses numbered 171–179; 1 from GMST 180–189

**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 492)
Intensive major  12 term courses, totaling 13 course credits, beyond prereq for letter grades, incl two-term senior essay (GMAN 492 and 493)

Group A Courses

*GMAN 110a or b, Elementary German I  Marion Gehlker and staff
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 120. Enrollment limited to 14 per section. Credit only on completion of GMAN 120.  L1  RP  1½ Course cr

GMAN 120a or b, Elementary German II  Marion Gehlker and staff
Continuation of GMAN 110. 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 130. Enrollment limited to 14 per section.  L2  RP  1½ Course cr

GMAN 125a, Intensive German I  Howard Stern
Intensive training in speaking, reading, writing, and comprehending the language. Focus on the mastery of formal grammar. For beginning students of superior linguistic ability.  L1, L2  RP  2 Course cr

GMAN 130a or b, Intermediate German I  Marion Gehlker and staff
Builds on and expands knowledge acquired in GMAN 120. 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 120 or according to placement examination. Followed by GMAN 140. Enrollment limited to 14 per section.  L3  RP  1½ Course cr

GMAN 140a or b, Intermediate German II  Marion Gehlker and staff
Continuation of GMAN 130. 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 130 or according to placement examination. Normally followed by GMAN 150 or, with permission of the director of undergraduate studies, by GMAN 171. Enrollment limited to 14 per section.  L4  RP  1½ Course cr
III. Subjects of Instruction

**GMAN 145b, Intensive German II**  Howard Stern  
Continuation of GMAN 125. Focus on speaking, writing, and the conversion of grammatical knowledge into reading competence for literary and scholarly purposes.  
Prerequisite: GMAN 125. L3, L4 RP 2 Course cr  

**GMAN 150a or b, Advanced German I**  Marion Gehlker  
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 140 or 145. For entering students with a score of 5 on the German Advanced Placement test, or according to results of the placement examination. L5  

**GMAN 160b, German Culture, History, and Politics in Text and Film**  Marion Gehlker  
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 140, 145, or 150. L5  

**GMAN 162a, Contemporary German Culture**  Marion Gehlker and staff  
Analysis and discussion of current social and cultural trends. Topics drawn from newspapers, films, TV series, cabaret, short literary texts, and talks. Focus on oral and written production to improve upper-level linguistic skills. Prerequisite: GMAN 150, or with permission of instructor. May not be taken for credit after GMAN <168>. L5, HU  

**Group B Courses**  

**GMAN 173a, Introduction to German Lyric Poetry**  Paul North and Jan van Treeck  
The German lyric tradition, including classic works by Goethe, Schiller, Hölderlin, Eichendorff, Heine, Mörike, Droste-Hülshoff, Rilke, George, Brecht, Trakl, Celan, Bachmann, and Jandl. Attention to the German Lied (art song). Development of advanced reading, writing, speaking, and translation skills. Prerequisite: GMAN 150 or equivalent. L5, HU  

**GMAN 176b, Medieval German Romance and Epic**  William Whobrey  
Study of five great medieval works of Arthurian romance and courtly epic: Erec, Parzival, Tristan, the Rolandslied, and the Nibelungenlied. Literary transmission in both oral and written cultures, courtly patronage and its historical context, moral and religious codes of knighthood, and development of a literary German language. Readings in modern verse translation. Prerequisite: GMAN 140 or permission of instructor. L5  

**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 192b / LITR 467b, The Prose Labyrinth  Howard Stern
Short prose (prismatic, encyclopedic, labyrinthine) considered as a characteristic genre of twentieth-century literature. Works by Benjamin, Shklovsky, Ponge, Queneau, Calvino, and Cortázar. All readings available in English.  HU

GMAN 209b / HIST 231b, War in Germany, 1648–2010  J. Adam Tooze
The rise and fall of modern militarism in Germany. Individual battles, soldiers, and weapons discussed within a broader context of the justification and regulation of state violence. Germany as a European battlefield, and as a nation that has perhaps come closest to drawing a final, concluding line under its military history.  HU

*GMAN 245a / GMST 201a, Postwar German Literature and Politics  Jason Groves
Introduction to the literature of East and West Germany from the 1950s to the present. Focus on the relationships between literature, history, and politics. Readings include works by Paul Celan, Heinrich Böll, Peter Handke, Heiner Müller, Christa Wolf, and W. G. Sebald. Conducted in English with readings in German or English.  HU  Tr

*GMAN 256b / FREN 352b / LITR 217b, Poetry and the Holocaust  Thomas C. Connolly
The relationship between poetry and the Holocaust, both in poetry’s attempts to remember and come to terms with the past, and in the ways that it predicts and warns about the future. Readings from French, German, Hebrew, Arabic, Yiddish, and Italian works in translation. Readings and discussion in English, with texts available in the original languages.  HU  Tr

*GMAN 274a / GMST 210a, Revolutionary German and Soviet Theater  Rainer Nägele and Joshua Alvizu
Theater as revolutionary process in German and Soviet plays and in theoretical and dramaturgical texts of the 1920s and early 1930s. Focus on the writings of Bertolt Brecht and Sergei Tretyakov, with some attention to works by Benjamin, Shklovsky, Eisenstein, and Meyerhold. Brief examination of set designs; musical excerpts from Hans Eisler. Reading knowledge of German or Russian desirable but not required.  HU  Tr

*GMAN 277a / ENGL 430a / GMST 294a / HUMS 467a / LITR 331a, Nietzsche and Emerson  Paul North and Paul Grimstad
Comparative introduction to the central writings of Nietzsche and Emerson, with reference to the historical relationship between the two men. Overlap and antagonism on themes such as power, fate, nature, language, and writing; concepts that underwent radical shifts in each thinker’s work; ways in which philosophical style and ideas of style shaped and complicated the writers’ thinking.  HU

*GMAN 302b / HUMS 332b / RLST 312b, Faith and Knowledge in Hegel and Derrida  Paul North
Examination of the frequently opposed human capacities of faith and knowledge through close reading of essays by Hegel and Derrida. Differences between conceptualizations of the two concepts and of human capacities at these two points in the history of philosophy. Some attention to contemporary background materials and to literary texts by Hölderlin and Kafka that offer strong countertoins to the philosophical accounts. Discussion in English; readings in German or English.  HU  Tr
*GMAN 311b / GMST 184b / HUMS 230b / LITR 215b, The Age of Goethe
  Kirk Wettens
  Introduction to Germany’s "classical" period, from the 1790s to the 1830s, with
  attention to literature, philosophy, art, and culture. The close connection between
  literature and philosophy of the period; the theoretical foundations of European
  Romanticism and of later backlashes against it. Some attention to twentieth-century
  theory.  HU

*GMAN 345bG / HUMS 237b / LITR 344b, Fiction and Knowledge  Carol Jacobs
  Fiction and related prose pieces in which the relationships between narration, fiction,
  understanding, and knowing play a critical role. Focus on works by Western writers
  of the nineteenth through the twenty-first century. The texts’ theoretical implications
  and implicit self-deﬁnitions; the import of concepts such as truth, ﬁction, self-
  consciousness, perception, science, and narrative. Readings and discussion in English;
  texts available in the original German or French.  HU  Tr

*GMAN 354bG / FILM 459b / GMST 354b / LITR 355b, The Films of Fassbinder,
  Herzog, and Haneke  Brigitte Peucker
  Close study of the films of R. W. Fassbinder, Werner Herzog, and Michael Haneke.
  Questions of authorship, cultural politics, intermediality, and cinematic modernism.
  Readings and discussion in English.  HU  Tr

*GMAN 361a / GMST 361a / HUMS 255a, Visions of the End and Representations of
  Transcendence  Kirk Wettens
  The end as a formal feature of narrative and temporal forms, and as an opening to an
  uncertain beyond. The complex relation between ﬁnality and transcendence in Goethe’s
  Faust II, Mahler’s symphonic works, twentieth-century German and Austrian literature
  (Broch, Ransmayr, Sebald), and Beckett’s Endgame. Discussion in English; readings in
  German or English.  HU  Tr

*GMAN 363bG / HUMS 238b, The Bildungsroman, 1750–1800  Kirk Wettens
  The origins of the German novel. The historical and cultural context of the later
  eighteenth century, including the Enlightenment and revolutions; literary history of the
  period; the signiﬁcance of the authors for the literary and intellectual currents of their
  time. Discussion in English; readings in German or English.  HU  Tr

*GMAN 388aG / GMST 369aG / HUMS 410a / LITR 327a / RLST 322aG, Translating
  the Sacred  Hindy Najman and Kirk Wettens
  Historical dynamics of cultural transfer, translation, reinterpretation of religious
  revelations, and foundational narratives from antiquity to modernity. Readings from
  ancient scripture, modern literary works, and theoretical reﬂections.  HU

Dutch Courses

*DUTC 110a or b, Elementary Dutch I  Chrissy Hosea and staff
  The basic grammar of Dutch. Intensive practice in listening, speaking, reading, and
  writing in everyday contexts. Introduction to the society and culture of the Netherlands
  and Flanders (Belgium). Credit only on completion of DUTC 120. Course includes
  students from Cornell University via videoconference.  L1  1½ Course cr
*DUTC 120b, Elementary Dutch II  Chrissy Hosca
Continuation of DUTC 110, with a focus on improving the four language skills. Further study of Dutch grammar and vocabulary through a variety of media, including television and radio. The society, culture, and habits of Dutch-speaking peoples in the Netherlands and Belgium. To be followed by DUTC 130. Prerequisite: DUTC 110 or equivalent. Course includes students from Cornell University via videoconference. L2 1½ Course cr

DUTC 130a, Intermediate Dutch I  Chrissy Hosca
Increased use of authentic Dutch texts to expand proficiency in the language and familiarity with the culture. Discussions, compositions, television shows, and contact with native speakers improve control of grammatical structures and vocabulary. Prerequisite: DUTC 120 or equivalent. Course includes students from Cornell University via videoconference. L3 1½ Course cr

*DUTC 140b, Intermediate Dutch II  Chrissy Hosca
Use of authentic Dutch texts to expand proficiency in the language and familiarity with the culture. Focus on Dutch cultural themes that reflect students’ interests and fields of study. Readings include a novel and news articles on current events. Prerequisite: DUTC 130. Course includes students from Cornell University via videoconference. L4 1½ Course cr

*DUTC 160b, Introduction to Dutch Culture and Society  Chrissy Hosca
Study of contemporary Dutch culture and major events in Dutch history. Attention to cultural differences and their origins. Topics include Dutch art, exploration, and trade in the seventeenth century; modern immigration and Islam in Europe; water management and environmental issues in the Netherlands; and sex and drugs in Dutch political discourse. Readings and discussion in English. SO

Reading Course

*GMAN 100a and GMAN 101b, German for Reading  Marion Gehlker and staff
Students learn the skills with which to read German-language texts of any difficulty with some fluency. Study of syntax and grammar; practice in close reading and translation of fiction and expository prose in the humanities and sciences. Conducted in English. Does not satisfy the language distributional requirement. Credit for GMAN 100 only on completion of GMAN 101.

Senior Courses

*GMAN 478a or b, Directed Readings or Individual Research in Germanic Languages and Literatures  Paul North
Individual study under faculty supervision. Applicants must submit a prospectus and bibliography approved by the faculty adviser to the director of undergraduate studies. The student meets with the adviser at least one hour each week and takes a final examination or writes a term paper. No credit granted without prior approval of the director of undergraduate studies.

*GMAN 492a and GMAN 493b, The Senior Essay Tutorial  Paul North
Preparation of an original essay under the direction of a faculty adviser.
Global Affairs

Director of undergraduate studies: Susan Hyde, 137 Rosenkranz Hall, 432-3418, jackson.yale.edu/ba-degree

FACULTY ASSOCIATED WITH THE PROGRAM OF GLOBAL AFFAIRS

Professors  Julia Adams (Sociology), Elizabeth Bradley (Public Health), Thad Dunning (Political Science), John Gaddis (History), Jeffrey Garten (School of Management), Jacob Hacker (Political Science), Oona Hathaway (Law School), Jolyon Howorth (Global Affairs, Political Science) (Visiting), Stathis Kalyvas (Political Science), Paul Kennedy (History), James Levinsohn (Director) (Global Affairs, School of Management), Nicoli Nattrass (Global Affairs) (Visiting), Catherine Panter-Brick (Global Affairs, Anthropology), W. Michael Reisman (Law School), Susan Rose-Ackerman (Political Science, Law School), Peter Schott (School of Management), Ian Shapiro (Political Science), J. Adam Tooze (History), Aleh Tsyvinski (Economics), Christopher Udry (Economics), Steven Wilkinson (Political Science), Martin Wittenberg (Global Affairs) (Visiting), Elisabeth Wood (Political Science), Ernesto Zedillo (Center for the Study of Globalization)

Associate Professors  Costas Arkolakis (Economics), Patrick Cohrs (History), Susan Hyde (Political Science), Kaveh Khoshnood (Public Health), Ellen Lust (Political Science), Mushfiq Mobarak (School of Management)

Assistant Professors  David Atkin (Economics), Lorenzo Caliendro (School of Management), Ana De La O (Political Science), Lloyd Grieger (Global Affairs, Sociology), Daniel Keniston (Global Affairs, Economics), Jason Lyall (Political Science), Nuno Monteiro (Political Science), Nancy Qian (Economics), Thania Sanchez (Global Affairs, Political Science), Tariq Thachil (Political Science), Jessica Weiss (Political Science), Jonathan Wyrtzen (Sociology)

Senior Lecturers  Charles Hill (MacMillan Center), Ioannis Kessides (Global Affairs, Ethics, Politics & Economics), Michael Moore (Global Affairs)

Lecturers  Jasmina Beširević-Regan (Sociology), Harry Blair (Political Science), Michael Boozer (Economics), Pia Rebbel Britto (Global Affairs, Child Study Center), Robert Hopkins (Global Affairs), Matthew Kocher (Political Science), Jean Krasno (Political Science), Douglas McKee (Economics), Jonathan Schell (Global Affairs), Michael Skowroneczny (Public Health), Sean Smith (Global Affairs), Edward Wittenstein (Global Affairs)


The Global Affairs major, administered by the Jackson Institute for Global Affairs, prepares Yale students for global citizenship and leadership by enhancing their understanding of the world around them. Students in this interdisciplinary major develop expertise in contemporary global affairs that is informed by the social sciences.

Most Global Affairs courses are open to both majors and nonmajors. If a Global Affairs course requires an application, the application will be posted on the Jackson Institute Web site (http://jackson.yale.edu/courses-2).
Students in the Global Affairs major concentrate their course work in one of two tracks. The international development track focuses on economic development and poverty, including global public health, in all but the world’s wealthiest countries. The international security track focuses on international relations, foreign policy, and diplomacy and includes topics relevant to national and human security. All majors are required to take a core course in each track and complete at least five additional courses in a single track.

Prerequisites There are no prerequisites for the Global Affairs major. However, students interested in applying to the major are encouraged to complete the introductory economics courses and work toward the foreign language requirement early in their course planning.

Requirements of the major Twelve term courses are required for the major in addition to a foreign language requirement. Introductory courses in microeconomics (ECON 108, 110, or 115) and macroeconomics (ECON 111 or 116) are required for both tracks. All majors are required to take two core courses: GLBL 225, Approaches to International Development, and GLBL 275, Approaches to International Security. Students must complete GLBL 121, Applied Quantitative Analysis, prior to taking GLBL 225. Majors also take one research design course, in either qualitative or quantitative research methods, approved by the director of undergraduate studies.

 Majors in the international development track take intermediate microeconomics (ECON 121 or 125) and four electives in their area of concentration. Those in the international security track take five electives in their area of concentration. Electives must be chosen from an approved group of courses in Global Affairs, History, Political Science, Economics, and other social science departments. For information about which courses qualify as electives within each track, see the Jackson Institute Web site (http://jackson.yale.edu/ba-degree).

Language requirement Global Affairs majors are required to take a course designated L5 in a modern language other than English by the time of their graduation. In exceptional cases, a demonstration of proficiency will meet the requirement.

Senior requirement In the fall term of the senior year, majors must complete a capstone project in GLBL 499. For the project, small groups of students each form a policy task force that works on a specific problem relevant to global affairs and presents the task force’s findings and recommendations to a real-world client. Clients may include government agencies, nongovernmental organizations and nonprofit groups, and private sector organizations in the United States and abroad.

Application to the major Students apply to the Global Affairs major in the fall of the sophomore year. The number of students accepted into the major is limited, and selection is competitive. For application information, visit the Jackson Institute Web site (http://jackson.yale.edu/ba-degree). Students interested in receiving the call for applications to the major should sign up for the Jackson Institute’s electronic mailing list.

Credit/D/Fail Courses taken Credit/D/Fail may not be applied to the requirements of the major, with the exception that a grade of Credit in an L5 language course may be used to demonstrate proficiency in a foreign language.
**Study abroad**  Global Affairs majors who study abroad should consult the director of student affairs to devise a course of study prior to the term abroad.

**Internships**  Students in the major are encouraged to take a summer internship in the field of global affairs after their junior year. The Jackson Institute’s Career Services Office can help students find appropriate internships.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites**  None

**Number of courses**  12 (incl senior req; excluding lang req)

**Specific courses required**  
- Both tracks — ECON 108, 110, or 115; ECON 111 or 116;
- GLBL 121, 225, 275; *International development track* — ECON 121 or 125

**Distribution of courses**  
- Both tracks — 1 course in research methods; *International development track* — 4 approved electives; *International security track* — 5 approved electives

**Language requirement**  Advanced ability (L5) in 1 modern lang other than English

**Senior requirement**  Senior capstone project in GLBL 499

**Courses**

**GLBL 101a, Gateway to Global Affairs**  Michele Malvesti

Introduction to critical thinking about current international issues. Guest lecturers lead a series of modules, each on a global affairs topic in their area of expertise. Students learn to frame policy questions and write policy memos while examining competing points of view. Topics vary from year to year.  **SO**

**GLBL 121a, Applied Quantitative Analysis**  Lloyd Grieger

Mathematical fundamentals that underlie analytical approaches in public policy and the social sciences. Development of mathematical skills in areas such as linear functions, single and multiple variable differentiation, exponential functions, and optimization. Statistical approaches include descriptive statistics, principles of sampling, hypothesis tests, simple linear regression, multiple regression, and models for analyzing categorical outcomes.  **QR**

**GLBL 184b / ECON 327b, The Economics of Poverty Alleviation**  Staff

Measures that succeed and fail — and why — in the fight against poverty in developing countries. Fundamentals of behavioral economics and their application to policy and program design. When and how to use experimental methods to evaluate ideas and programs. Interventions and policies that apply to households, small firms, and communities, with particular attention to microfinance, health, and education. After introductory microeconomics and econometrics.  **SO**

Global Affairs: Research

*GLBL 189a / HLTH 325a, Methods and Ethics in Global Health Research*

Kaveh Khoshnood and Kristina Talbert-Slagle

Introduction to research methods in global health that recognize the influence of political, economic, social, and cultural factors. Quantitative, qualitative, and mixed-method approaches; ethical aspects of conducting research in resource-constrained settings; the process of obtaining human subjects’ approval. Students develop
proposals for short-term global health research projects conducted in resource-constrained settings. SO RP

Global Affairs: Research

*GLBL 225b, Approaches to International Development  Daniel Keniston and staff
The unique set of challenges faced by households in developing countries, and the economic theories that have been developed to understand them. Health, education, and discrimination against women in the household; income generation, savings, and credit; institutions, foreign aid, and conflict. Recent econometric techniques applied to investigate the underlying causes of poverty and the effectiveness of development programs. Enrollment limited to sophomores, juniors, and seniors. Prerequisite: GLBL 121. QR, SO

GLBL 234b / ECON 184b, International Economics  Peter Schott
Introduction to conceptual tools useful for understanding the strategic choices made by countries, firms, and unions in a globalized world. After two terms of introductory economics. SO

Global Affairs: Development

GLBL 237a / ECON 185a, Debates in Macroeconomics  Stephen Roach and Aleh Tsyvinski
Introduction to current theoretical and practical debates in macroeconomics. In-class debates between the instructors on topics such as economic crises, fiscal and monetary policy, inflation, debt, and financial regulations. Prerequisites: introductory microeconomics and macroeconomics. SO

Global Affairs: Development

*GLBL 238a, International Trade Policy  Giovanni Maggi
Analysis of issues concerning international trade policy and agreements, including recent academic research. Welfare analysis of trade policy; the political economy of trade policy; international trade agreements. Attention to both theoretical methods and empirical research. Prerequisites: intermediate microeconomics and ECON 184. SO

Global Affairs: Development

GLBL 243a / AFST 347a / LAST 348a / PLSC 347a, Post-Conflict Politics  David Simon
Consideration of a range of issues and challenges faced by countries emerging from domestic conflict. Focus on elements of peace-building—demilitarization, post-conflict elections, institution-building, and reconstruction—as well as modes of transitional justice and mechanisms for truth and reconciliation. SO

GLBL 260a / PLSC 130a, Nuclear Politics  Alexandre Debs
The pursuit, use, and non-use of nuclear weapons from the Manhattan Project to the present. The effect of the international system, regional dynamics, alliance politics, and domestic politics in the decision to pursue or forgo nuclear weapons. The role of nuclear weapons in international relations, the history of the Cold War, and recent challenges in stemming nuclear proliferation. SO

Global Affairs: Security

GLBL 265b / HIST 133b / PLSC 174b, Strategic, Political, and Moral Dilemmas of the Nuclear Age  Jonathan Schell
A chronological inquiry into the central questions raised by the invention, deployment, and use of nuclear weapons. Topics include the effects of nuclear weapons on the theory
and practice of war, nuclear deterrence, disarmament, proliferation, preemptive war, and the human capacity for self-extinction.  HU, SO

Global Affairs: Security

**GLBL 269a / PLSC 359a, Violence and Civil Strife**  Stathis Kalyvas
An examination of political violence with an emphasis on civil wars, presently the dominant form of war.  SO

Global Affairs: Security

**GLBL 275a, Approaches to International Security**  Thania Sanchez and Susan Hyde
Introduction to leading theoretical explanations for inter- and intrastate conflict; focus on issues central to contemporary research. The origins, conduct, and outcomes of war; the determinants of military effectiveness; the uses and limits of state coercion; the rise of transnational terrorism; arms control; the laws of war. Enrollment limited to sophomores, juniors, and seniors.  WR, SO

**GLBL 281a / HIST 221a, Military History of the West since 1500**  Paul Kennedy
A study of the military history of the West since 1500, with emphasis on the relationship between armies and navies on the one hand, and technology, economics, geography, and the rise of the modern nation-state on the other. The coming of firepower in its varied manifestations. Also meets requirements for the Air Force and Naval ROTC programs.  HU

Global Affairs: Security

**GLBL 302b / ECON 452b / EP&E 300b, Contemporary Issues in Energy Policy**  Ioannis Kessides
Overview of challenges in the global energy framework generated by concerns about energy security and climate change; public policies necessary for addressing these issues. Potential contributions and limitations of existing, improved or transitional, and advanced technologies.  SO

Global Affairs: Security

**GLBL 303b, Global Economics: Markets, Institutions, and Policy**  Michael Moore
Issues in macroeconomic development and performance analyzed through standard economic frameworks. Developed, closed economies in the United States, the European Union, and Japan; open economies and developing countries. The influence of globalization on countries’ growth; policies available for promoting long-term growth and stability. Prerequisites: introductory microeconomics and macroeconomics.  SO

Global Affairs: Development

**GLBL 305b, Social Enterprise in Developing Economies I**  Robert Hopkins
Harnessing the power of markets in the fight against poverty. The use of social enterprise to foster local empowerment and establish the building blocks of regional economic development. Measuring the impact of grants and program-related investments from philanthropic organizations and for-profit corporations. Students design summer research projects. Followed by GLBL 306 in the fall term.  SO

Global Affairs: Development

**GLBL 306a, Social Enterprise in Developing Economies II**  Robert Hopkins
Summer research developed into a case-study project on a topic related to the use of social enterprise in regional economic development. Prerequisite: GLBL 305.

Global Affairs: Development
*GLBL 307b / ECON 467b, Economic Evolution of the Latin American and Caribbean Countries Ernesto Zedillo
Economic evolution and prospects of the Latin American and Caribbean (LAC) countries. Topics include the period from independence to the 1930s; import substitution and industrialization to the early 1980s; the debt crisis and the "lost decade"; reform and disappointment in the late 1980s and the 1990s; exploration of selected episodes in particular countries; and speculations about the future. Prerequisites: intermediate microeconomics and macroeconomics. so
Global Affairs: Development

*GLBL 310b / ECON 407b, International Finance Costas Arkolakis
A study of how consumers and firms are affected by the globalization of the world economy. Topics include trade costs, the current account, exchange rate pass-through, international macroeconomic co-movement, multinational production, and gains from globalization. Prerequisite: intermediate macroeconomics or equivalent. so
Global Affairs: Development

*GLBL 312b / EAST 454b / ECON 474b, Economic and Policy Lessons from Japan Stephen Roach
An evaluation of Japan’s continuing economic problems and of the possibility that these problems might spread to other economies. Currency pressures, policy blunders, bubbles, denial, and Japan’s role in the global economic crisis of 2008; comparison between Japan’s economy and other major economies; dangers to the global economy from a protracted postcrisis recovery period. Focus on policy remedies to avert similar problems in other countries. Prerequisite: a course in macroeconomics. so
Global Affairs: Development

*GLBL 316b / ECON 462b / EP&E 228b / LAST 410b, The Economics of Human Capital in Latin America Douglas McKee
Economic issues related to a population’s education, skills, and health; focus on contemporary Latin American societies. Determinants of health and education; evaluation of human capital development policies; the role of human capital in a variety of economic contexts, including the labor market, immigration, child investment, intrahousehold bargaining, inequality, and poverty. Prerequisites: intermediate microeconomics and econometrics. so
Global Affairs: Development

GLBL 318a / EAST 338a / ECON 338a, The Next China Stephen Roach
Economic development in China since the late 1970s. Emphasis on factors pushing China toward a transition from its modern export- and investment-led development model to a pro-consumption model. The possibility of a resulting identity crisis, underscored by China’s need to embrace political reform and by the West’s long-standing misperceptions of China. Prerequisite: introductory macroeconomics. so
Global Affairs: Development

*GLBL 322a / HLTH 450a / PLSC 121a, Strategic Thinking in Global Health
Elizabeth Bradley and staff
Core principles for the development and implementation of grand strategy in addressing common global health problems. Application of these principles and of strategic problem solving at both conceptual and practical levels. Political and policy
analysis, organizational theory, and leadership skills central to addressing global health issues in low- and middle-income countries.  

SO

Global Affairs: Development

*GLBL 330a / ECON 465a / EP&E 224a, Debating Globalization  
Ernesto Zedillo
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. Prerequisite: background in international economics and data analysis. Preference to seniors majoring in Economics or EPE.  

SO  RP

Global Affairs: Development

*GLBL 345b, Humility  
David Brooks
Traditions of modesty and humility in character building and political leadership. Contemporary understandings of character and character building. The premise that human beings are blessed with many talents but are also burdened by sinfulness, ignorance, and weakness. The concept of humility in works by and about Homer, Moses, Augustine, Montaigne, Burke, Niebuhr, Martin Luther King, Jr., and others.

HU

*GLBL 361aG / PLSC 436a, Violence: State and Society  
Matthew Kocher
Examination of large-scale violence, generally within sovereign states. Why violence happens, why it takes place in some locations and not others, why it takes specific forms (insurgency, terrorism, civilian victimization), what explains its magnitude (the number of victims), and what explains targeting (the type or identity of victims).  

SO

Global Affairs: Security

*GLBL 362b / MMES 282b / SOCY 339bG, Imperialism, Insurgency, and State Building in the Middle East and North Africa  
Jonathan Wyrtzen
The historical evolution of political order from Morocco to Central Asia in the past two centuries. Focus on relationships between imperialism, insurgency, and state building. Ottoman, European, and nationalist strategies for state building; modes of local resistance; recent transnational developments; American counterinsurgency and nation-building initiatives in the region.  

SO

Global Affairs: Security

*GLBL 363a / AFST 406aG / PLSC 406aG, Sexual Violence and War  
Elisabeth Wood
Analysis of patterns of sexual violence in war. Assessment of how well scholars in various disciplines and policy analysts account for these patterns.  

SO

Global Affairs: Security

*GLBL 369a, Transatlantic Relations since 1989  
Jolyon Howorth
The shifting relations between the United States and the European Union since the end of the Cold War. Root causes of convergence and divergence; political and security relations; economic and trade relations; sociocultural issues.  

SO

Global Affairs: Security

*GLBL 372a, The New Iraq  
Emma Sky
The effects of U.S. policy, state collapse, sectarian rivalry, and the emergence of violent non-state actors following the invasion of Iraq led by the United States in 2003. Effects of external intervention and domestic legacies – patrimonialism, the political economy
of oil, and violence—in shaping the new Iraq; whether Iraq had become a democracy or had reverted to authoritarianism by the end of the U.S. era.  

Global Affairs: Security

* GLBL 378a / PLSC 184a, The United Nations and the Maintenance of International Security  Jean Krasno
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.  

Global Affairs: Security

* GLBL 379a / PLSC 132aG, China’s International Relations  Jessica Weiss
Analysis of contemporary Chinese diplomacy, including China’s increasing regional and global influence. Mainstream concepts and theories in international relations applied to current events and policy debates. Priority to majors in Political Science and in Global Affairs.  

Global Affairs: Security

* GLBL 384a or b / ER&M 362a or b / SOCY 363a or b, Genocide and Ethnic Conflict  Jasmina Beširevic-Regan
Exploration of the explosion of genocide and violent ethnic conflict in the past seventy years, including contributory historical and political elements. Consideration of ways to prevent or resolve such conflicts. Focus on questions of identity, religion, class, and nationhood as related to violence and conflict. An analytical framework developed from four case studies: the Holocaust, Cambodia, the former Yugoslavia, and Rwanda.  

Global Affairs: Security

* GLBL 392a, Intelligence, Espionage, and American Foreign Policy  John Negroponte and Edward Wittenstein
The discipline, theory, and practice of intelligence; the relationship of intelligence to American foreign policy and national security decision-making. Study of the tools available to analyze international affairs and to communicate that analysis to senior policymakers. Case studies of intelligence successes and failures from World War II to the present.  

Global Affairs: Security

* GLBL 450a or b, Directed Research  Staff
Independent research under the direction of a faculty member on a special topic in global affairs not covered in other courses. Permission of the director of undergraduate studies and of the instructor directing the research is required.

* GLBL 499a, Senior Capstone Project  Sean Smith and staff
Students work in small task-force groups and complete a one-term public policy project under the guidance of a faculty member. Clients for the projects are drawn from government agencies, nongovernmental organizations and nonprofit groups, and private sector organizations in the United States and abroad. Projects and clients vary from year to year. Fulfills the capstone project requirement for the Global Affairs major.

Global Health Studies

Program advisers: Elizabeth Bradley, 300A LEPH, 785-2937; Kristina Talbert-Slagle, 60 College St., 432-6058; healthstudies@yale.edu; ghi.yale.edu
GLOBAL HEALTH STUDIES ADVISORY COMMITTEE
Elizabeth Bradley (Chair) (Public Health), Jane Edwards (Yale College Dean’s Office), Howard Forman (School of Medicine), Marcia Inhorn (Anthropology), Kaveh Khoshnood (Public Health), Stephen Latham (Political Science), Joanna Radin (History of Medicine), William Segraves (Vice Chair) (Yale College Dean’s Office), John Wargo (Forestry & Environmental Studies), John Warner (History of Medicine)

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. The Global Health Studies program facilitates global health education for undergraduates at Yale. Although not a major, the program offers courses through an interdisciplinary framework that brings together the natural sciences, the social sciences, and the humanities. Students choose a major in another department or program and expand their discipline with elective courses offered by Global Health Studies. Students can also pursue interdisciplinary concentrations and global health tracks within their major, allowing them to pursue an area of study that crosses conventional disciplinary and departmental boundaries. For details about coursework, students should consult the director of undergraduate studies in their major.

Students should supplement their classroom experience with applications in the community, whether in the United States or abroad. The Global Health Studies program organizes opportunities such as the Global Health Fellows program (http://ghi.yale.edu/gh-fellows), the Global Health Initiative field experience (http://ghi.yale.edu/fellowships), and the Yale–Collaborative Action Project (http://ghi.yale.edu/fellowships).

Qualified students may take graduate courses at the School of Public Health, subject to the restrictions on graduate and professional school enrollment described in the Academic Regulations. Further information about these courses and other graduate offerings can be found in the School of Public Health bulletin. 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.

Global Health Studies Courses

*HLTH 155a / MCDB 106a, Biology of Malaria, Lyme, and Other Vector-Borne Diseases Alexia Belperron
Introduction to the biology of pathogen transmission from one organism to another by insects; special focus on malaria and Lyme disease. Biology of the pathogens including modes of transmission and establishment of infection; immune responses and the associated challenges to prevention and treatment. Intended for non-science majors; preference to freshmen and sophomores. Prerequisite: high school biology.  sc
HLTH 170a / AMST 247aG / HIST 147aG / HSHM 202aG, Media and Medicine in Modern America  John Warner and Gretchen Berland
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.  HU

*HLTH 215b / PSYC 310b, Health Psychology  Benjamin Toll
An introduction to health behaviors and ways in which they can be altered. Health-compromising behaviors such as the use of alcohol, drugs, and tobacco; the impact of health psychology on problems such as stress, pain management, AIDS, and cancer.  SO

*HLTH 230a or b, Global Health: Challenges and Responses  Richard Skolnik
Overview of the determinants of health and how health status is measured, with emphasis on low- and middle-income countries. The burden of disease, including who is most affected by different diseases and risk factors; cost-effective measures for addressing the problem. The health of the poor, equity and inequality, and the relationship between health and development. Not open to freshmen except by permission of instructor. Enrollment limited to 40.  WR, SO

HLTH 280b / HIST 146bG / HSHM 212bG, Historical Perspectives on Global Health  Joanna Radin
The broader historical context of contemporary practices, policies, and values associated with the concept of global health. Historical formations around ideas about disease, colonialism, race, gender, science, diplomacy, security, economy, and humanitarianism; ways in which these formations have shaped and been shaped by attempts to negotiate problems of health and well-being that transcend geopolitical borders.  HU

*HLTH 325a / GBL 189a, Methods and Ethics in Global Health Research  Kaveh Khoshnood and Kristina Talbert-Sлагle
Introduction to research methods in global health that recognize the influence of political, economic, social, and cultural factors. Quantitative, qualitative, and mixed-method approaches; ethical aspects of conducting research in resource-constrained settings; the process of obtaining human subjects’ approval. Students develop proposals for short-term global health research projects conducted in resource-constrained settings.  SO RP

*HLTH 330a, Case Studies in Global Health  Richard Skolnik
Exploration of three important themes in the study of global health: efforts to eradicate communicable disease, attempts to reform health systems, and investments to achieve more equity and equality in health services delivery. Case studies examined from historical, economic, technical, epidemiological, political, sociological, and managerial perspectives. Prerequisite: HLTH 230 or equivalent, or with permission of instructor.  SO

*HLTH 350b, Causes and Prevention of Violence  Bandy Lee
Overview of issues related to violence and its prevention. The dynamics underlying self-directed, interpersonal, collective, and structural manifestations of violence;
relations among these different forms. Perspectives from biology, psychology, sociology, anthropology, criminology, political science, history, and environmental studies.

*HLTH 444b, Biology, Pathogenesis, and Natural History of HIV/AIDS
Kristina Talbert-Slagle
Study of HIV/AIDS from the perspectives of molecular biology, immunology, sociology, history, and epidemiology. Prerequisites: BIOL 101, 102, 103, and 104, or permission of instructor. Enrollment limited to 30.

*HLTH 450a / GLBL 322a / PLSC 121a, Strategic Thinking in Global Health
Elizabeth Bradley and staff
Core principles for the development and implementation of grand strategy in addressing common global health problems. Application of these principles and of strategic problem solving at both conceptual and practical levels. Political and policy analysis, organizational theory, and leadership skills central to addressing global health issues in low- and middle-income countries.

Related Courses

*AFST 401a, Research Methods in African Studies
Cheryl Doss
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.

*ANTH 357a, Anthropology of the Body
Sean Brotherton
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.

Anthropology: Sociocultural

*ANTH 427b, Topics in Medical Anthropology
Sean Brotherton
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 <114> or equivalent.

Anthropology: Sociocultural

*ANTH 451b / WGSS 431b, Intersectionality and Women’s Health
Marcia Inhorn
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, and gender.

Anthropology: Sociocultural

*ANTH 455b / WGSS 459b, Masculinity and Men’s Health
Marcia Inhorn
Ethnographic approaches to masculinity and men’s health around the globe. Issues of ethnographic research design and methodology; interdisciplinary theories of
masculinity; contributions of men’s health studies from Western and non-Western sites to social theory, ethnographic scholarship, and health policy. SO RP
Anthropology: Sociocultural

*E&EB 460b, Studies in Evolutionary Medicine I  Stephen Stearns and staff
Principles of evolutionary biology applied to issues in medical research and practice.
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; 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 (http://www.eeb.yale.edu). SC

*E&EB 461a, Studies in Evolutionary Medicine II  Paul Turner and Stephen Stearns
Continuation of E&EB 460. Prerequisite: E&EB 460 or permission of instructor. SC

ECON 170a, Health Economics and Public Policy  Howard Forman
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. SO

ECON 327b / GLBL 184b, The Economics of Poverty Alleviation  Staff
Measures that succeed and fail—why—in the fight against poverty in developing
countries. Fundamentals of behavioral economics and their application to policy
and program design. When and how to use experimental methods to evaluate ideas
and programs. Interventions and policies that apply to households, small firms, and
communities, with particular attention to microfinance, health, and education. After
introductory microeconomics and econometrics. SO

*ECON 405b, Economics of Health and Health Care  Amanda Kowalski
Economic principles and empirical methods applied to issues in health economics.
Discussion of policies to address market failures in health care markets. Consumer
behavior in medical markets, valuing medical improvements, and evaluating health
insurance reform. Prerequisites: intermediate microeconomics and econometrics. SO

*ECON 461b, Economics, Addiction, and Public Policy  Jody Sindelar
Smoking, alcoholism, illicit drugs, and obesity studied from economic and policy
perspectives. Focus on causes of and solutions to problems. After introductory
microeconomics. SO

*ECON 462b / EP&E 228b / GLBL 316b / LAST 410b, The Economics of Human
Capital in Latin America  Douglas McKee
Economic issues related to a population’s education, skills, and health; focus on
contemporary Latin American societies. Determinants of health and education;
evaluation of human capital development policies; the role of human capital in a variety
of economic contexts, including the labor market, immigration, child investment,
intrahousehold bargaining, inequality, and poverty. Prerequisites: intermediate
microeconomics and econometrics. SO

ENVE 441a, Biological Processes in Environmental Engineering  Jordan Peccia
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. Prerequisites: CHEM 112, 113, or 114, 115, or 118; MCDB 290 or equivalent; or with permission of instructor. SC

*EP&E 246a / AFST 420a / LAST 406a / PLSC 430a, The Politics of Development Assistance  David Simon
Study of development assistance, a dominant feature of the political economies of some of the world’s poorest countries. The motivations and politics of aid from donors’ perspectives; the political and economic impact of aid on developing countries. Proposals to make aid a more effective instrument of development. SO
EP&E: Political Systems Core

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. SO
EP&E: Social Theory Core

EVST 255b / F&ES 255b / PLSC 215b, Environmental Politics and Law  John Wargo
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. SO

*G&G 261aG / EVST 261a / F&ES 261a, Minerals and Human Health  Catherine Skinner and Ruth Blake
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G 110 recommended. SC

HSHM 215aG / HIST 140a, Public Health in America, 1793–2000  Naomi Rogers
A survey of public health in America from the yellow fever epidemic of 1793 to AIDS and breast cancer activism at the end of the past century. Focusing on medicine and the state, topics include quarantines, failures and successes of medical and social welfare, the experiences of healers and patients, and organized medicine and its critics. HU

*HUMS 076a / HSHM 007a, Epidemics in Global Perspective  William Summers
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.  

**HU, SO**

**PLSC 257b, Bioethics and Law**  
Stephen Latham  
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.  

*SO*  

**PLSC 446a / EP&E 258a / SOCY 369a, Welfare States across Nations**  
Sigrun Kahl  
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.  

*SO*  

**SOCY 126b, Health of the Public**  
Nicholas Christakis  
Biological and social factors that jointly determine the health of individuals and populations. The influence of medical care, social networks, and socioeconomic inequality on illness, recovery, and death.  

*SO*  

**Hellenic Studies**

Directors: Stathis Kalyvas, 115 Prospect Pl., 432-5386, stathis.kalyvas@yale.edu; John Geanakoplos, 30 Hillhouse Ave., 432-3397, john.geanakoplos@yale.edu; associate program chair: George Syrimis, 34 Hillhouse Ave., 432-9342, george.syrimis@yale.edu; www.yale.edu/macmillan/hsp

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

**Professors** John Geanakoplos (*Economics*), Stathis Kalyvas (*Political Science*)

**Lecturers** Konstantina Maragkou (*History*), George Syrimis

**Senior Lectors** 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.

**Courses**

**MGRK 110a**, **Elementary Modern Greek I**  
Maria Kaliambou  
An introduction to modern Greek, with emphasis on oral expression. Use of communicative activities, graded texts, written assignments, grammar drills, audiovisual material, and contemporary documents. In-depth cultural study. Credit only on completion of MGRK 120.  

L1  
1½ Course cr
MGRK 120b, Elementary Modern Greek II  
Maria Kaliambou
Continuation of MGRK 110. Prerequisite: MGRK 110. L2  1½ Course cr

*MGRK 130a, Intermediate Modern Greek I  
Maria Kaliambou
Further development of oral and written linguistic skills, using authentic readings and audiovisual materials. Continued familiarization with contemporary Greek culture. Prerequisite: MGRK 120 or equivalent. Course includes students from Cornell University via videoconference. L3  1½ Course cr

*MGRK 140b, Intermediate Modern Greek II  
Maria Kaliambou
Further development of listening, speaking, reading, and writing skills in modern Greek. Presentation of short research projects related to modern Greece. Prerequisite: MGRK 130 or equivalent. Course includes students from Cornell University via videoconference. L4  1½ Course cr

*MGRK 150a, Greek Oral Literature  
Maria Kaliambou
An advanced language course intended to develop all four language skills. Readings include folktales, myths, legends, and ballads in standard and idiomatic modern Greek. In-depth cultural analysis. Presentation of research projects. L5

*MGRK 213a / FILM 421a / HUMS 414a / WGSS 261a, Cinema of Migration  
George Syrimis
Cinematic representations of the migrant experience in the past thirty years, with some emphasis on the post—Cold War period. Focus on southeastern Europe and its migrant populations. Topics include identity, gender, sexual exploitation and violence, and nationalism and ethnicity. WR, HU  Tr

*MGRK 216b / CLCV 216b / HUMS 214b / LITR 239b, Dionysus in Modernity  
George Syrimis
Modernity’s fascination with the myth of Dionysus. Questions of agency, identity and community, and psychological integrity and the modern constitution of the self. Manifestations of Dionysus in literature, anthropology, and music; the Apollonian-Dionysiac dichotomy; twentieth-century variations of these themes in psychoanalysis, surrealism, and magical realism. WR, HU  Tr

*MGRK 218a / FILM 243a / HUMS 206a / LITR 312a / WGSS 245a, Family in Greek Literature and Film  
George Syrimis
The structure and multiple appropriations of the family unit, with a focus on the Greek tradition. The influence of aesthetic forms, including folk literature, short stories, novels, and film, and of political ideologies such as nationalism, Marxism, and totalitarianism. Issues related to gender, sibling rivalry, dowries and other economic factors, political allegories, feminism, and sexual and social violence both within and beyond the family. WR, HU  Tr

MGRK 225a / HIST 243a, Occupied Europe during World War II  
Konstantina Maragkou
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. HU
*MGRK 230b / HIST 205jb, Greece in the Twentieth Century  Irene Karamouzis and Konstantina Maragkou
The history of modern and contemporary Greece. Recent political developments, economic and cultural aspects, and international relations.  HU

*MGRK 232b, Greece and the Balkans in the Cold War  George Syrimis and Konstantina Maragkou
The role of history in works of literature and film that engage with Greek and Balkan culture during and after the Cold War. Relations between politics, dominant ideologies, literary and cinematic aesthetic models, and popular culture. Unique elements of the Cold War experience in countries of southeastern Europe. Themes include totalitarianism, Eurocommunism, decolonization, espionage, state surveillance, and the nuclear threat.  HU

*MGRK 450a and MGRK 451b, Senior Seminar in Modern Greek Literature  George Syrimis
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.  1.5

*MGRK 481a and MGRK 482b, Independent Tutorial  Staff
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 associate program chair. 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.

History

Director of undergraduate studies: Beverly Gage, 216 HGS, 432-1355, beverly.gage@yale.edu; history.yale.edu

FACULTY OF THE DEPARTMENT OF HISTORY


Associate Professors  Bruno Cabanes, Patrick Cohrs, Kathryn Lofton, Naomi Rogers, Edward Rugemer, Paul Sabin, Marci Shore, Kerry Ward (Visiting)

Assistant Professors  Paola Bertucci, Fabian Drixler, Alejandra Dubcovsky, Marcela Echeverri, Anne Eller, Crystal Feimster, Daniel Magaziner, Joanna Radin, William Rankin, Eliyahu Stern, Jenifer Van Vleck
**Senior Lecturers**  Annping Chin, Becky Conekin, Bettyann Kevles, Stuart Semmel, Rebecca Tannenbaum

**Lecturers**  Asiya Alam, Adel Allouche, Amanda Behm, Raymond Clemens, Ziv Eisenberg, Yiftah Elazar, Jeremy Friedman, Jay Gitlin, David Huysen, Agostino Inguscio, George Levesque, Konstantina Maragkou, William Metcalf, Rachel Purvis, William Summers

History courses that do not require permission of the instructor for enrollment are open to all students in Yale College. Such 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. With a few exceptions, chiefly departmental seminars (see below), history courses are automatically open to freshmen.

Courses numbered HIST 001 to 099 are freshman seminars, with enrollment limited to 18. Courses numbered in the 100s are in the history of the United States or Canada; those in the 200s, Europe and Britain; and those in the 300s, Africa, Asia, Latin America, and the Middle East. Courses numbered in the 400s address global topics.

**The major**  History is the study of ways in which human activities in the past have shaped the contours of the present. Historians ask not only how the contemporary world came to be the way it is, but also why societies have changed and developed over time. Yale’s History department offers a wide range of courses that pursue these kinds of questions not only about the United States and Europe, but also about Latin America, East Asia, South Asia, Southeast Asia, Africa, and the Middle East. History majors learn how to read a variety of texts critically and analytically and then to write about them in engaging ways. The History major is thus an excellent preparation for careers in many fields, including law, medicine, journalism, public policy, consulting, business, and the arts.

**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.

To help students organize their course selection, the History department has developed suggested programs of study based on specific themes. Information about these thematic pathways is available from the office of the director of undergraduate studies. The combination of the History major’s distributorial requirements and thematic pathways familiarizes students with a variety of regions and epochs while also allowing them to pursue individual areas of interest.
Prerequisite  The prerequisite for the major is two term courses in history. Courses completed in fulfillment of the prerequisite may be applied toward the requirements of the major.

Requirements of the major  Twelve term courses in history are required, which may include the two courses taken as prerequisites. These twelve must include two term courses in United States or Canadian history (courses in the colonial period may fulfill this requirement); two term courses in European or British history (courses in Greek and Roman, Byzantine, and Russian history may fulfill this requirement); and three term courses in African, Asian, Latin American, or Middle Eastern history.

Two of the seven courses in the geographical categories listed above must be in preindustrial history, and they must be chosen from two different geographical categories. Preindustrial history courses are so marked in their course listings. Students may use the same courses to count toward both geographical and preindustrial requirements. Students who wish to count a course in a global topic, numbered 400–493, toward a particular geographical distribution category must apply to the director of undergraduate studies. Only in rare cases will the director of undergraduate studies approve petitions from History majors seeking geographical or chronological credit outside of a History course’s primary designation.

Departmental seminars  The major also requires two departmental seminars, normally taken during the sophomore or junior year, although students are encouraged to take more than two seminars. (For information about pre-enrollment, see the course listings for departmental seminars.) Students must choose departmental seminars from two different geographical distribution categories. Sophomores contemplating a junior term abroad are urged to consider taking at least one seminar in the sophomore year. Residential college seminars that count toward the History major do not fulfill the departmental seminar requirement.

During senior year, each student must complete a senior departmental essay written under the guidance of a member of the faculty (see below). Juniors may choose their senior essay advisers on line beginning in March.

Normally, only courses offered by the Yale Department of History may count toward the major. In some cases the director of undergraduate studies will approve credit toward the major for residential college seminars, courses taken in other departments at Yale, or courses taken at other universities. All courses in History of Science, Medicine, and Public Health count automatically toward the History major.

Library orientation  The History department requires all majors to complete an introductory research session selected from the workshops for historians offered by the Yale University Library. Several library workshops are offered at the beginning of each term. Students should register on the Yale Library Web site (http://www.library.yale.edu/instruction). For questions students should contact 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 495 and 496. They must also complete a library research workshop for the senior essay. Students should register for the workshop on the Yale Library Website (http://www.library.yale.edu/instruction).

Some graduate and professional school courses are open to qualified undergraduates with permission of the instructor and the director of graduate studies. Course descriptions may be obtained from the office of the director of graduate studies. See "Courses in the Yale Graduate and Professional Schools" in the Academic Regulations for the number of such courses that students may offer toward the bachelor’s degree.

**Advising** 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.

**Combined B.A./M.A. degree program** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in History.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** 2 term courses in hist

**Number of courses** 12 term courses (incl prereqs and senior essay)

**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 departmental sems in 2 different geographical distribution categories, as specified

**Substitution permitted** Relevant course approved by DUS
Other  Library research workshop
Senior requirement  Senior essay (HIST 495 and 496)

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Freshman Seminars

Enrollment in these seminars is limited to freshmen. Preregistration is required; see under Freshman Seminar Program.

*HIST 012b / AMST 012b, Politics and Society in the United States after World War II  Jennifer Klein
Introduction to American political and social issues from the 1940s to the present, including political economy, civil rights, class politics, and gender roles. Legacies of the New Deal as they played out after World War II; the origins, agenda, and ramifications of the Cold War; postwar urbanization and its racial dimensions; migration and immigration; cultural changes; social movements of the Right and Left; Reaganism and its legacies; the United States and the global economy.  HU

*HIST 014a, History of American Colleges and Universities  George Levesque
A survey of the history of American colleges and universities from the colonial era to the Cold War. Emphasis on changes in the profile of students, the role of faculty, and the scope of the curriculum. Particular attention to how these changes reflected larger developments in American intellectual, cultural, and social history.  HU

*HIST 023b / AMST 011b, War and Rebellion in Early America  Alejandra Dubcovsky
The role of war and rebellion in early American history, from precontact to the War of 1812. Changing roles and meanings of war and rebellion; the impact of these violent events on European, Indian, and African populations; implications of using war and rebellion as historical categories.  WR, HU

History: Preindustrial

*HIST 027b, History and Holocaust Testimony  Carolyn Dean
Introduction to the basic tools historians use to narrate and assess witness testimony, with a focus on the history and memoirs of Holocaust testimony. Questions regarding memory and history; forces historians must address when assessing memoirs, including popular culture and politics; the treatment of fraudulent memoirs.  WR

*HIST 028a, Gilded Age New York  David Huysen
New York as both nexus and antithesis of U.S. nationhood during the late nineteenth and early twentieth centuries. Aspects of the city’s social, cultural, political, and economic history. Insights offered by the study of New York on phenomena often associated with other parts of the country, including violent racism and the African American experience, political corruption and national power, and the labor movement. Sources include histories, novels, poems, film, and art. Includes a field trip to New York.  WR

*HIST 030b / EAST 030b / HUMS 083b, Tokyo  Fabian Drixler
Four centuries of Japan’s history explored through the many incarnations, destructions, and rebirths of its foremost city. Focus on the solutions found by Tokyo’s residents to the material and social challenges of concentrating such a large population in one place. Tensions between continuity and impermanence, authenticity and modernity, and social order and the culture of play.  WR, HU
HIST 038a, History of the Caribbean to 1898  Anne Eller
The fundamental role of the Caribbean in the development of the modern world from c. 1400 to 1898. Historical formation of the greater Caribbean and the lived experiences of its residents. The intersecting allegiances, identities, itineraries, and diasporas of Caribbean peoples examined in hemispheric and global context. WR, HU
History: Preindustrial

Lecture Courses

HIST 107b / AMST 133b / ER&M 187b, Introduction to American Indian History
   Ned Blackhawk
Survey of American Indian history, beginning with creation traditions and migration theories and continuing to the present day. Focus on American Indian nations whose homelands are located within the contemporary United States. Complexity and change within American Indian societies, with emphasis on creative adaptations to changing historical circumstances. HU
History: Preindustrial

HIST 108a, North America to 1763  Alejandra Dubcovsky
Significant themes in American life from 1492 to 1763, including politics, imperial rivalries, social structure, religion, race relations, gender, and popular culture. Ways in which encounters, conflicts, and compromises among Native Americans and people of African and European descent shaped culture and society. HU
History: Preindustrial

HIST 112a / AMST 190a, The Formation of Modern American Culture, 1876–1919
   Jean-Christophe Agnew
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. HU

HIST 116a, The American Revolution  Joanne Freeman
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. HU
History: Preindustrial

HIST 125b, Capitalism in American Thought, 1886–2008  David Huyssten
Debates about capitalism in the United States, from the Haymarket bombing in 1886 to the epic market collapse of 2008, and the influence of such debates on American social, political, and economic life. Capitalism’s moments of adversity and ascendency, including progressive-era industrial warfare and socialist agitation, the Great Depression, the New Deal, the rise of anticommunist politics, the Regan Revolution, the end of the Cold War, and global resurgence. HU

HIST 127a / AMST 135a / WGSS 200a, U.S. Lesbian and Gay History
   George Chauncey
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.  HU
HIST 133b / GLBL 265b / PLSC 174b, Strategic, Political, and Moral Dilemmas of the
Nuclear Age  Jonathan Schell
A chronological inquiry into the central questions raised by the invention, deployment,
and use of nuclear weapons. Topics include the effects of nuclear weapons on the theory
and practice of war, nuclear deterrence, disarmament, proliferation, preemptive war,
and the human capacity for self-extinction.  HU, SO
HIST 135b / ECON 182b, American Economic History  Staff
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 introductory microeconomics.  WR, SO
HIST 140a / HSHM 215a, Public Health in America, 1793–2000  Naomi Rogers
A survey of public health in America from the yellow fever epidemic of 1793 to AIDS
and breast cancer activism at the end of the past century. Focusing on medicine and the
state, topics include quarantines, failures and successes of medical and social welfare,
the experiences of healers and patients, and organized medicine and its critics.  HU
HIST 144b / AMST 176b / EVST 206b / HSHM 206b / HUMS 323b, Science and
Technology in the United States  Daniel Kevles
The development of science and technology in American society from the colonial
period through the late twentieth century. The rise of the United States to a world-class
scientific and technological power; the American scientific community and the tensions
it has faced in a democratic society; the role of science and technology in exploration,
agriculture, industry, national defense, religion, culture, and social change.  HU
HIST 145a / AMST 150a, Religion in Modern America, 1865–2000  Kathryn Lofton
An examination of U.S. religious history from the close of the Civil War to the present
day, a period of climactic change in the histories of capitalism, pluralism, secularization,
and globalization. Locations discussed include Indian reservations and world fairs,
auto plants and soap factories, storefront churches and stadiums; individuals include
female evangelists and talk show hosts, presidents and pariahs, traveling monks and
pop rabbis. Focus on how subjects are selected for historical inquiry.  HU
HIST 146b, Historical Perspectives on Global Health  Joanna Radin
The broader historical context of contemporary practices, policies, and values associated
with the concept of global health. Historical formations around ideas about disease,
colonialism, race, gender, science, diplomacy, security, economy, and humanitarianism;
ways in which these formations have shaped and been shaped by attempts to negotiate
problems of health and well-being that transcend geopolitical borders.  HU
HIST 147a\(^C\) / AMST 247a\(^C\) / HLTH 170a / HSHM 202a\(^C\), Media and Medicine in Modern America  John Warner and Gretchen Berland
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.  \textit{HU}

HIST 171b / AMST 271b / WGSS 201b, Women in Modern America  Joanne Meyerowitz
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.  \textit{HU}

HIST 183b / AMST 272b / ER&M 282b / WGSS 272b, Asian American History, 1800 to the Present  Mary Lui
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.  \textit{HU}

HIST 187b / AFAM 162b / AMST 162b, African American History from Emancipation to the Present  Jonathan Holloway
An examination of the African American experience since 1861. Meanings of freedom and citizenship are distilled through appraisal of race and class formations, the processes and effects of cultural consumption, and the grand narrative of the civil rights movement.  \textit{HU}

HIST 193b / HSHM 242b\(^C\), Molecules, Life, and Disease: Twentieth Century  William Summers
The emergence of the molecular vision of life and disease in the twentieth century. Topics include the role of technology and research practices, intellectual and political migrations, science policy and philanthropic foundations, constructions of risks and patenting of life, big science and biotechnology, politics of memory, and popular representation of science. Relationships to broad intellectual, social, cultural, and political changes.  \textit{HU}

HIST 202a, European Civilization, 1648–1945  John Merriman
An overview of the economic, social, political, and intellectual history of modern Europe. Topics include the rise of absolute states, the scientific revolution, the Enlightenment, the French Revolution and Napoleon, the industrial revolution, the revolutions of 1848, nationalism and national unifications, Victorian Britain, the colonization of Africa and Asia, fin-de-siècle culture and society, the Great War, the Russian Revolution, the Europe of political extremes, and World War II.  \textit{HU}

HIST 211b / HUMS 381b, The Birth of Europe, 1000–1500  Anders Winroth
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. HU

History: Preindustrial

*HIST 212b / CLCV 308b, 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. HU

*HIST 215b / RLST 283b, Reformation Europe, 1450–1650 Bruce Gordon
Examination of a series of religious revolutions in Europe between 1450 and 1650. The causes and nature of the reformation that changed the religious, political, social, and economic landscapes of early modern Europe and shaped the course of Western civilization as a whole. HU

History: Preindustrial

HIST 217a / CLCV 206a / HUMS 446a, The Roman Republic Andrew Johnston
The origins, development, and expansion of Rome from the earliest times to the deaths of Caesar and Cicero. Cultural identity and interaction; slavery, class, and the family; politics, rhetoric, and propaganda; religion; imperialism; monumentality and memory; and the perception and writing of history. Application of literary and archaeological evidence. HU

History: Preindustrial

HIST 218b / CLCV 207b, The Roman Empire Andrew Johnston
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. HU

History: Preindustrial

HIST 219aG / ER&M 219a / JDST 200aG / MMES 149a / RLST 148aG, History of the Jews and Their Diasporas to Early Modern Times Ivan Marcus
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 European or non-Western distributional credit within the History major, upon application to the director of undergraduate studies. HU RP

History: Preindustrial

HIST 221a / GBLL 281a, Military History of the West since 1500 Paul Kennedy
A study of the military history of the West since 1500, with emphasis on the relationship between armies and navies on the one hand, and technology, economics, geography, and the rise of the modern nation-state on the other. The coming of airpower in its varied manifestations. Also meets requirements for the Air Force and Naval ROTC programs. HU
III. Subjects of Instruction

*HIST 227b / SPAN 367b, The Spanish Civil War: Words and Images  Noël Valis
An introduction to the history and cultural-literary impact of the Spanish Civil War (1936–39) from national and international perspectives. Views both from within and from outside the war; women and the war; memory and the war. Authors include George Orwell, Ernest Hemingway, Javier Cercas, Alberto Méndez, Mercè Rodoreda, Ramón J. Sender, W. H. Auden, and Stephen Spender. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

HIST 231b / GMAN 209b, War in Germany, 1648–2010  J. Adam Tooze
The rise and fall of modern militarism in Germany. Individual battles, soldiers, and weapons discussed within a broader context of the justification and regulation of state violence. Germany as a European battlefield, and as a nation that has perhaps come closest to drawing a final, concluding line under its military history.  HU

HIST 234a / HSHM 235a, Epidemics and Society in the West since 1600  Frank Snowden
A study of the impact of epidemic diseases such as bubonic plague, cholera, malaria, and AIDS on society, public health, and the medical profession in comparative and international perspective. Topics include popular culture and mass hysteria, the mortality revolution, urban renewal and rebuilding, sanitation, the germ theory of disease, the emergence of scientific medicine, and debates over the biomedical model of disease.  HU

HIST 237b / HUMS 285b / RSEE 390b / RUSS 241b, Russian Culture: The Modern Age  John MacKay and Paul Bushkovitch
An interdisciplinary exploration of Russian cultural history, focusing on literature, art, religion, social and political thought, and film. 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; the impact of the Bolshevik Revolution and its aftermath.  HU

HIST 239a, Britain’s Empire  Stuart Semmel
The effect of empire on Britain’s politics, society, and culture. Ways in which politics in one part of the empire shaped events in others; how British politicians reconciled the empire’s sometimes authoritarian nature with liberalism and an expanding democracy at home; the functions of race, gender, and class in the empire.  HU

HIST 243a / MGRK 225a, Occupied Europe during World War II  Konstantina Maragkou
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.  HU
HIST 248b G / JDST 293b G / RLST 214b G, Introduction to Modern Jewish Thought
Eliyahu Stern
An overview of Jewish philosophical trends, movements, and thinkers from the
seventeenth century to the twenty-first. Topics include enlightenment, historicism,
socialism, secularism, religious radicalism, and Zionism.  HU

HIST 251a, Early Modern England: Politics, Religion, and Society under the Tudors
and Stuarts Keith Wrightson
An introduction to the development of English society in the sixteenth and seventeenth
centuries—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.  HU

History: Preindustrial

HIST 255b, The Experience of War in the Twentieth Century Bruno Cabanes
An overview of the history of war in the modern era. Examination of the actors, forms
of violence, ideological stakes, and memories of modern war. Topics include World
Wars I and II, the experience of captivity, the Vietnam War and the culture of trauma,
women at war, and genocide and ethnic cleansing.  HU

HIST 273a, Europe in the Age of Total War, 1914–1945 Jay Winter
A survey of European history that addresses the two world wars and the transformation
of European society and culture between 1914 and 1945.  HU

HIST 276b, France since 1871 John Merriman
The emergence of modern France since the Paris Commune of 1871 and the beginnings
of the Third Republic. The social, economic, political, and cultural transformation
of France; the impact of France’s revolutionary heritage, of industrialization, and of
the dislocation wrought by two world wars and decolonialization; and the political
response of the Left and the Right to changing French society, including the impact of
immigration and the emergence and challenges of the European Union. One discussion
section conducted in French; students in this section may count the course toward the
French major.  HU

HIST 277a, The Great Recession as History, 2007–2013 J. Adam Tooze
Introduction to the financial crisis that struck the United States and Europe in 2007
and that continues into the present day. Focus on how the current crisis is already being
written into history. Ways in which the events are understood as historical; narratives
of modern American and European history and models of historical change invoked by
key commentators. Works by economists, economic historians, political scientists, and
journalists.  HU

HIST 280a / HUMS 348a / RLST 160a, The Catholic Intellectual Tradition
Carlos Eire and staff
Introductory survey of the interaction between Catholicism and Western culture
from the first century to the present, with a focus on pivotal moments and crucial
developments that defined both traditions. Key beliefs, rites, and customs of the Roman
Catholic Church, and the ways in which they have found expression; interaction
between Catholics and the institution of the Church; Catholicism in its cultural and
sociopolitical matrices. Close reading of primary sources.  HU
HIST 282b / HUMS 413b / RLST 269b, Golden Age Spain  Carlos Eire
Survey of Spanish history, culture, and religion from 1500 to 1700. Emphasis on
-cultural history and the integration of various approaches to the past.  HU
History: Preindustrial

HIST 290a, Russia from the Ninth Century to 1801  Paul Bushkovitch
The mainstream of Russian history from the Kievan state to 1801. Political, social,
and economic institutions and the transition from Eastern Orthodoxy to the
Enlightenment.  HU
History: Preindustrial

HIST 303b, Japan’s Modern Revolution  Daniel Botsman
A survey of Japan’s transformation over the course of the nineteenth century from an
isolated, traditional society on the edge of northeast Asia to a modern imperial power.
Aspects of political, social, and cultural history.  HU

HIST 307a / EAST 301a, The Making of Japan’s Great Peace, 1550–1850
Fabian Drixler
Examination of how, after centuries of war in Japan and overseas, the Tokugawa
shogunate built a peace that lasted more than 200 years. Japan’s urban revolution,
the eradication of Christianity, the Japanese discovery of Europe, and the question of
whether Tokugawa Japan is a rare example of a complex and populous society that
achieved ecological sustainability.  HU
History: Preindustrial

HIST 309a / SAST 271a, History of Ancient India  David Brick
Introduction to Indian society and civilization from its earliest beginnings until c. 1000
C.E. Topics include politics, caste and class, commerce, religion, art and architecture,
literature, and science.  HU

HIST 310aC / SAST 221a, History of Modern South Asia  Juned Shaikh
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.  HU

HIST 314a / HUMS 426a, Early Sources in Chinese Intellectual Traditions
Annping Chin
Readings in translation of the basic texts of Confucianism, Taoism, and legalism.
Examination of what the early Chinese thought about the world and themselves, how
they articulated what they thought and organized what they knew, and how they
explored the irrational and issues such as fairness and moral appropriateness.  HU
History: Preindustrial

HIST 316b / EAST 320b, History of China, 1550 to the Present  Peter Perdue
Fall of the Ming and rise of the Qing dynasty. Political, economic, and cultural
changes in China compared to those in East Asia and the rest of the world. China’s
first Republic and the impact of foreign imperialism and communism. The People’s
Republic of China under Mao Zedong and Deng Xiaoping; Taiwan from Chiang Kai-
shek to the independence movement. Globalization, environmental stress, and human
rights issues in historical perspective.  HU
HIST 337b, The Mediterranean from the Crusades to Napoleon  Alan Mikhail and Francesca Trivellato
Introduction to the history of the Mediterranean from the era of the Crusades to Napoleon’s conquest of Egypt. Topics include city states and empires, religious conflict and coexistence, commerce, gender, military history, the arts, travel, piracy, and orientalism. Ways in which the study of the Mediterranean has shaped knowledge about the medieval, early modern, and modern worlds.  HU
History: Preindustrial

HIST 340b / AFST 340b, Africa in the Era of the Slave Trade  Robert Harms
Examination of the tumultuous changes experienced by African societies during the era of the Atlantic slave trade, approximately 1450–1850. Focus on the complex interaction between the internal dynamics of African societies and the impact of outside forces.  HU
History: Preindustrial

HIST 346b / MMES 144b, The Making of Modern Iran  Abbas Amanat
The political, socioreligious, and cultural history of modern Iran from the Shi’ite revolution and the rise of the Safavid Empire to the present. Discussion of Shi’ism and the state, relations with neighboring countries (the Ottoman Empire and India), Russia and Britain in Qajar Iran, the Babi-Baha’i religion, the constitutional revolution, the Pahlavi dynasty, oil, nationalism and relations with the United States, the causes and the consequences of the Islamic revolution, and Iran in the contemporary Middle East.  HU

HIST 351b / MMES 193b / RLST 155b6, The Golden Age of Islam  Gerhard Böwering
The development of Islamic civilization in the Middle East, North Africa, Spain, Iran, and India from Muhammad through the Mongol invasions to the rise of the Ottoman, Safavid, and Mughal empires (600–1500 C.E.). Emphasis on the intellectual and religious history of Islam in the age of the caliphates and during the rule of regional dynasties.  HU

HIST 352b / SAST 223b / WGSS 330b, Reinventing Gender in Modern India  Tanika Sarkar
A study of changing gender norms and practices in India in the nineteenth and early twentieth centuries. Widow immolation and remarriage, child marriage and the age of consent, arranged vs. love-based marriages, education and domestic roles, religious life, sex workers, female labor in mills and in agriculture, caste and tribes, gender behavior in political life.  WR, HU

HIST 355a / LAST 355a, Colonial Latin America  Stuart Schwartz
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.  HU
History: Preindustrial

HIST 360a / MMES 171a / NELC 402a, The Islamic Near East from Muhammad to the Mongol Invasion  Adel Allouche
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. HU

History: Preindustrial

HIST 361b / LAST 361b, History of Brazil  
Stuart Schwartz
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. HU

HIST 363b / LAST 364b, Latin America since Independence  
Marcela Echeverri Munoz
An introduction to Latin American history and its global implications, from nineteenth-century independence processes and creation of the region’s nations to the twenty-first century. Focus on ways in which the flow of ideas, technology, and people has transformed Latin American politics. Topics include nationalism, race, ethnicity, revolution, development, and democracy. HU

HIST 371a, Transnational Hispaniola  
Anne Eller
The modern-day states of the Dominican Republic and Haiti explored in their shared historical framework and in the broader context of Caribbean, Atlantic, and global histories. Focus on issues of conflict and interconnection. Hispaniola prior to European colonialism; the island’s central role in transatlantic slavery; battles for emancipation; imperial pressures of the nineteenth and twentieth centuries. HU

HIST 470a, World Finance, Mesopotamia to the Present  
Valerie Hansen and William Goetzmann
The history of finance from its earliest beginnings to the modern era, with particular attention to Mesopotamia, China, and Europe. The time value of money, including loans and interest; the negotiability of claims within a legal structure that handles claims; the ability to contract on future outcomes through life insurance and derivatives; corporations; causes and outcomes of economic bubbles. HU RP

Departmental Seminars

Juniors majoring in History must take at least two departmental seminars from two different geographical areas. 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 on Africa, Asia, Latin America, and the Middle East are 300J to 399J. Seminars numbered in the 400s address global topics; students must apply to the director of undergraduate studies in History to count a 400-level seminar toward a particular geographical distribution category. Each departmental 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 departmental seminars for the following term using the online 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 11 in the fall and by March 21 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 beforehand.

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 494 and residential college seminars that count toward the History major do not fulfill the departmental seminar requirement.

*HIST 102Jb, Slavery and Emancipation in Native American History  Rachel Purvis Captivity, slavery, and emancipation in Native American communities from the colonial period through the turn of the twentieth century. Emphasis on northeastern and southeastern societies. Issues of enslavement, race, gender, citizenship, and native sovereignty. WR, HU History: Preindustrial

*HIST 103Ja, America and Africa, 1492 to the Present  Joseph Yannielli The complex relationship between Africa and America, from the Columbian era through the recent invasion of Libya. Topics include the rise and demise of the transatlantic slave trade, piracy, zombies, religious missions, colonialism, resistance movements, and humanitarian and military interventions. Sources from film, images, letters, newspaper articles, novels, pamphlets, and travelogues. HU

*HIST 110Ja, Witchcraft and Witch-Hunting in Europe and North America  John Demos The history of witchcraft and witch-hunting in Europe and North America from classical times to the present. Focus on the European witch craze of the sixteenth and seventeenth centuries and its offshoots in colonial America. Some attention to twentieth-century American parallels, such as McCarthyism and the day-care abuse cases of the 1980s and 1990s. HU History: Preindustrial

*HIST 111Ja, Politics of Reform in America  David Huyssen History of advocacy for social and legislative change in America by reformers and reform movements from the early nineteenth century to the present. Relations between reform, radicalism, and mainstream discourse in areas of public debate such as inequality, public morality, race relations, sexual practices, and educational policy. Roles played by reform and reformers in transforming the United States; limits to what reform can achieve. HU

*HIST 117Jb, Robert Moses’s New York  David Huyssen Twentieth-century urban life in New York City explored through the life and work of Robert Moses. His public works projects, from bridges, tunnels, and highways, to parks, playgrounds, beaches, and zoos, to housing, civic centers, exhibition halls, and the 1964–65 New York World’s Fair. Themes include the origins of urban reform in the
progressive era, state and municipal politics, labor, race, and urban renewal. Research in the Robert Moses Papers in Sterling Memorial Library.  WR, HU

*HIST 130Ja, Frontiers in North America and Southern Africa  Andrew Offenburger
Comparative study of frontiers and colonial encounters in North America and southern Africa. The contours of each region’s frontiers and borderlands, including the Cape Colony, the Eastern Cape, Natal, and Rhodesia/Zimbabwe in southern Africa, and U.S.-Mexican borderlands, the far west, frontier Colorado, and the Ghost Dance movement in North America. Ways in which the United States and South Africa have shaped the frontier past for contemporary purposes. Counts toward either U.S. or non-Western distributional credit within the major, upon application to the director of undergraduate studies.  HU

*HIST 134Ja, Yale and America: Selected Topics in Social and Cultural History  Jay Gitlin
Relations 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; faith and ideology in postwar Yale and America.  WR, HU  RP

*HIST 136Ja, Liberalism and Conservatism in U.S. Politics  Beverly Gage
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.  WR, HU

*HIST 138Ja, History of U.S.-China Relations  Tao Wang
The complex bilateral relationship between China and the United States explored from the perspectives of both countries, from its beginnings in the mid-nineteenth century through the early twenty-first. Major events and significant policies in Sino-American interaction as it developed to the state of current relations. Counts toward either U.S. or non-Western distributional credit within the major, upon application to the director of undergraduate studies.  HU

*HIST 142Ja / HSHM 464a, The Cultural History of Mental Illness  Courtney Thompson
The construction of madness and mental illness in Western thought and culture. The rise and fall of the asylum system; the development of psychoanalytic theory; twentieth-century medical practices such as psychopharmaceutical treatments and lobotomy; the antipsychiatry movement; patients’ rights and contested diagnoses; portrayals of the mentally ill in society and popular culture; issues surrounding gender and sexuality.  HU

*HIST 148Jb / AFAM 210b / AMST 445b, Politics and Culture of the U.S. Color Line  Matthew Jacobson
The significance of race in U.S. political culture, from the "separate but equal" doctrine of Plessy v. Ferguson to the election of an African American president. Race as a central organizer of American political and social life.  HU  RP
*HIST 151Ja / AMST 422a / ER&M 435a, Writing Tribal Histories  Ned Blackhawk
Historical overview of American Indian tribal communities, particularly since the
creation of the United States. Challenges of working with oral histories, government
documents, and missionary records.  WR, HU

*HIST 155Jb / HSHM 424b, Science, Invention, and the Visual Arts since Darwin
Bettyann Kevles
The influence of scientific theories and technologies on the visual arts from the mid-
nineteenth century to the present. Understandings and misunderstandings of scientific
concepts and inventions as they appear in artistic works. Topics include relativity,
quantum mechanics, medical images inside the human body, and images from space.
Focus on American and European artists and art movements.  WR, HU

*HIST 159Ja / HSHM 459a / HUMS 317a, Spies, Secrets, and Science  Paola Bertucci
The relationship between secrecy, intellectual property, and science from the Middle
Ages to the Cold War. Topics include alchemy and esoteric knowledge; the Manhattan
Project and other secret scientific projects run by the state; the history of patents and
copyright laws; and scientists as spies.  WR, HU

*HIST 168Jb, Quebec and Canada from 1791 to the Present  Jay Gitlin
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.  WR, HU

*HIST 169Jb / WGSS 428b, Labor and Democracy in the Twentieth-Century United
States  Jennifer Klein
A history of work, labor relations, social movements, and labor policy in the United
States since 1890; the history of class politics and economic development in modern
America. Racial and gender hierarchies from farms to factories to sweatshops; labor
rights as part of broader struggles over citizenship rights and democracy. Topics include
various forms of labor organizing and protest, limits and possibilities of solidarity,
braceros and migrant workers, civil rights, the Cold War, politics and policy, and Wal-
Mart.  WR, HU

*HIST 170Ja, Ideas and Ideologies in U.S. International History  Patrick Cohrs
The influence of American and foreign ideas and ideologies on U.S. international
history. American assumptions about peace and international order from the days of
the early republic and the Federalist Papers to the height of the Cold War. Emphasis on
American responses to war and international crises, and on the impact of exceptionalist,
imperialist, isolationist, "exemplarist," and capitalist ideologies on U.S. policy making.
WR, HU

*HIST 185Jb / AMST 404b / ER&M 348b, Latina/o Histories  Stephen Pitti
Survey of two hundred years of Mexican American, Puerto Rican, Central American,
and Cuban American history in the United States. Transnational politics; legacies of
European colonialism; labor history; the rise of ethnic nationalism.  WR, HU
*HIST 191Ja / WGSS 354a, Women, Gender, and Grassroots Politics in the United States after World War II  Jennifer Klein
American politics and grassroots social movements from 1945 to the present explored through women’s activism and through gender politics more broadly. Ideas about gender identities, gender roles, and family in the shaping of social movements; strategies used on the local, regional, national, and international levels. Connections between organizing and policy, public and private, state and family, and migration, immigration, and empire.  WR, HU

*HIST 200Jb, Medieval Saints  N. Clemens
The lives and cults of saints in Western Christian culture from the late antique period to c. 1500. Saints’ attributes, special abilities, and relationships with a transcendent power; differences between hagiographers’ accounts of men and women; the role of relics, including their treatment and perceived powers, as well as methods used for determining their identity and authenticity.  HU
History: Preindustrial

*HIST 201Ja / CLSS 444a, Documents of Roman History  William Metcalf
An introduction to principal documents, preserved primarily on stone or in metal, that bear on Roman history from the fifth century B.C. to the fourth century A.D. Selected documents are either themselves important (e.g., the Twelve Tables) or are paradigmatic for occurrences that are extensive in time and space (e.g., imperial rescripts, city and colonial charters). Documents are in either Latin or Greek, and are accompanied by English translations.  WR, HU
History: Preindustrial

*HIST 205Jb / MGRK 230b, Greece in the Twentieth Century  Irene Karamouzis and Konstantina Maragkou
The history of modern and contemporary Greece. Recent political developments, economic and cultural aspects, and international relations.  HU

*HIST 211Jb / NEJC 380b, / RLST 253b, The Making of Monasticism  Bentley Layton
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. Readings in translation. (Formerly RLST 420)  HU
History: Preindustrial

*HIST 215Jb, The Art of Biography  John Gaddis
A comparative examination of successful as well as unsuccessful biographies, intended to identify both principles and pitfalls.  WR, HU

*HIST 221Jb, Memoirs of Twentieth-Century Europe  Laura Engelstein
Exploration of how men and women of twentieth-century Europe (including Russia) made sense of their lives in the context of war, revolution, and cultural conflict. Focus on first-person narratives, some by professional writers, others by ordinary people searching for personal and cultural identity.  WR, HU
*HIST 223Jb, The Cultural History of the First World War  Bruno Cabanes
A survey of the cultural history of World War I. Topics include violence and its impact on soldiers and civilians, shell shock, women at war, literature and cinema, mourning, and memory.  WR, HU

*HIST 224Jb / JDST 334b, Jewish Emancipation in the Modern Era  Michael Silber
The expansion of the rights of Jewish people in Europe and the United States from the late eighteenth century through the early twentieth. The influence of factors such as capitalism, citizenship, nationalism, and social and economic developments. Case studies used to compare the emancipation process in different nations and societies.  HU

*HIST 228Ja / HUMS 412a, Venice and the Mediterranean, 1400–1700  Francesca Trivellato
Major issues in the history of Venice and the Mediterranean in the early modern period. Topics include the organization of trade, relations between East and West, slavery, Venetian politics and society, women and gender roles, ethnic and religious minorities, foreign travelers, and the seeds of Orientalism.  WR, HU

History: Preindustrial

*HIST 229Ja / JDST 333a, Orthodox Jewry in Modern Times  Michael Silber
The history of Orthodox Jewry from the mid-eighteenth century to the present. Innovations introduced by the Jewish Enlightenment, and the traditional establishment’s responses to them; the mainstream, neoradical, and ultraorthodox wings of the Reform movement; issues of identity and culture surrounding Jewish nationalism, the Zionist movement, and the emergence of the State of Israel.  HU

*HIST 231Ja, The Dark Years: Collaboration and Resistance in Vichy France  John Merriman and Bruno Cabanes
The concomitants of collaboration and resistance during Vichy France, 1940–44. Topics include the fall of France in 1940; the return of Pétain’s "National Revolution" and its continuities with the French Right during the Third Republic; the extent and nature of resistance (in the context of pre–World War II politics); and the memory of the Vichy years and its influence on subsequent French political life.  WR, HU

*HIST 234Ja, 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.  WR, HU

*HIST 236Jb, Information Technology, 300–1600  Anders Winroth and Aaron Vanides
Techniques and technologies of communication and information management in Europe and the Mediterranean world, from the later Roman Empire through the end of the sixteenth century. Topics include book production, educational systems, scholarly and nonscholarly finding tools, publicity techniques, speech, and methods of information retrieval.  HU

History: Preindustrial
**HIST 239Ja / HUMS 313a / PHIL 421a / PLSC 317a, John Locke in Historical Context**  
Steven Pincus

Locke’s thinking about political resistance, religious toleration, and political economy examined in light of the writings and activities of his contemporaries. Introduction to methodological questions in the history of political thought.  WR, HU

History: Preindustrial

**HIST 247Ja, The Invention of Modern Democracy**  
Yiftah Elazar

The reinvention of the classical idea of democracy as both a political institution and an ideal, from the seventeenth to the nineteenth century. Classical and neoclassical critiques of democratic government; revival and conceptual transformation in the Puritan, American, and French revolutions. Readings focus on Anglo-American political thought of the period, including its relation to classical, humanist, and contemporary continental sources. Counts toward either European or U.S. distributional credit within the History major, upon application to the director of undergraduate studies.  HU

History: Preindustrial

**HIST 250Jb, The Contested Idea of Liberty**  
Yiftah Elazar

The meaning and value of liberty in the seventeenth and eighteenth centuries, with a focus on the anglophone world. The relation of liberty to concepts such as virtue, reason, conscience, nature, law, property, arms, security, and independence; its contested role in debates on democratic participation, religious toleration, the corrective influence of commerce, the American Revolution, slavery, and the subjection of women; recent debates on liberty. Counts toward either European or U.S. distributional credit within the History major, upon application to the director of undergraduate studies.  HU

History: Preindustrial

**HIST 254Jb, Time and Place in Early Modern England**  
Keith Wrightson

Perceptions of time and place in England and their relationships to personal and social identity, c. 1500 to 1800. Cartography, chorography, antiquarianism, conventions of timekeeping, perceptions of the life course, the creation of social memory and historical narratives, representations of social place, the effects of the Reformation, iconic places, and perceptions of previously unknown places and peoples. Use of visual and textual primary sources.  WR, HU

History: Preindustrial

**HIST 257Jb / HSHM 460b / HUMS 356b, Art, Technology, and Science from Antiquity to 1800**  
Paola Bertucci

Changes in the notions of art and science in the West through 1800. The association of the term "art" with the fine arts as a legacy of the Enlightenment; implications of this semantic shift for early modern European culture. Visual and material cultures of science, including anatomical and natural history illustrations, curiosity cabinets and Wunderkammern, microscopy and astronomy, Greek and Roman military technology and warfare, and Leonardo and the engineers of the Renaissance. Use of rare books, manuscripts, and historical scientific instruments from library and museum collections at Yale.  WR, HU

History: Preindustrial
*HIST 258JbG / JDST 278bG / RLST 227bG, Jewish Citizenship in Modern Europe  
Eliyahu Stern  
Seventeenth- to twentieth-century responses to Jewish citizenship in modern European states. Religious law; modern Jewish identity; Zionism; Judaism as a religion vs. a nation; the place of minorities in contemporary Europe.  
WR, HU

*HIST 273Jb, Anglo-American Relations, 1939-1989  
Irene Karamouzis and Konstantina Maragkou  
Anglo-American relations from World War I through the Reagan presidency, with attention to politics, diplomacy, economics, defense, and intelligence. The nature of the special relationship between the two nations; the importance of personalities in strengthening and weakening the alliance; responses of the American and British governments to major events in world history.  
HU

*HIST 279Jb, History of British Cuisine  
Paul Freedman and Becky Conekin  
The history of British food from the Middle Ages to the present. Particular characteristics and specialties; ways in which the expansion of the British Empire, economic changes, and recent wars and globalization have influenced the cuisine. Representations of food, agriculture, celebration, and hunger in British culture.  
WR, HU

History: Preindustrial

*HIST 311Jb / EAST 422b, History and Nationalism in East Asia  
Hyung-Wook Kim  
Modern conflicts among East Asian countries over the temporal and spatial boundaries and the ownership of the region’s ancient kingdoms. The role of such conflicts in contemporary territorial disputes; issues surrounding historical fact and interpretation; the presentation of sovereignty in early national histories; relations between nationalism, collective memory, and public commemoration.  
HU

*HIST 312Ja / EAST 430a, Japanese Nationalism in Global Context  
Nathan Hopson  
The history and global context of modern nationalism; related questions regarding cultural identity in modern political contexts. Focus on Japan as a case study. The intersections of intellectual and cultural history with the complex politics of the modern world.  
HU

*HIST 313Ja / EAST 425a / EVST 420a, Asian Environments and Frontiers  
Peter Perdue and Kwangmin Kim  
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.  
WR, HU

*HIST 320Jb, Non-Chinese Dynasties’ Defeat of China, 1004-1911  
Valerie Hansen  
Study of four dynasties whose emperors were ethnically non-Chinese: the Kitan, the Jurchen, the Mongols, and the Manchu. Ways in which they shaped the last 1000 years of China’s dynastic history. Focus on techniques used by these dynasties to exploit traditional China’s weaknesses, including military strategy, the use of Chinese collaborators and technologies, and cultural adaptivity.  
HU

History: Preindustrial
*HIST 327b / EAST 321b, Navigating Life in Nineteenth-Century Japan  
Fabian Drixler  
A study of the joys and sorrows of life in nineteenth-century Japan. Topics include finding a mate, becoming a parent, making and keeping friends, seeing the world, and coping with bereavement.  WR, HU  
History: Preindustrial

*HIST 343JaG / MMES 344a / NELC 316a / RLST 313aG, Iran’s Prophets of Protest  
Abbas Amanat  
Iranian messianic movements from ancient to modern. Emphasis on continuity in patterns of dissent, social impact and challenges to religious and political establishments, and influences on the Islamic world and beyond. Zoroastrian apocalyptic origins, Manichean moral community and Mazdakite protocommunism, emergence of the Mahdi and Shi’i movements from Isma’ilis to Safavids, "Universal Peace" from Mughal India to Babi-Baha’i modernity, and messianic trends from the Islamic Revolution to contemporary Iran.  HU

*HIST 347Ja / MMES 147a, The Ottoman Empire  
Alan Mikhail  
Major trends in Ottoman history and historiography. The political and imperial history of the ruling Ottoman elite; the culture, politics, and realities of marginal groups such as peasants, women, and minorities. The complex web of relationships between the state and its bureaucrats, peasants, judges, families, and merchants.  WR, HU

*HIST 351Jb, The Cuban Revolution  
Michael Bustamante  
Forces that have shaped Cuba’s revolutionary process and Cuban society from 1959 to the present. The revolutionary government’s conflicting legacies of citizen empowerment and repression; the politics of race, gender, and culture; the degrees to which U.S. policies, the Cold War international context, and internal dynamics bear responsibility for pushing the revolutionary government into new diplomatic alliances and toward increasingly radical positions; the evolution of Cuban expatriate politics.  HU

*HIST 362Ja, Cold War in the Third World  
Jeremy Friedman  
The collapse of colonial empires and the emergence of Asia, Africa, and Latin America during the Cold War. Attempts to develop political and economic systems while negotiating factors such as revolution, socialism, religion, and geopolitics. Conceptual discourses within and without the developing world surrounding issues such as independence, nationalism, racial identity, violence, social and political order, and economic justice and growth.

*HIST 372Ja / ER&M 342a / LAST 372a, Revolutionary Change and Cold War in Latin America  
Gilbert Joseph  
Analysis of revolutionary movements in Latin America against the backdrop of the Cold War. Critical examination of popular images and orthodox interpretations. An interdisciplinary study of the process of revolutionary change and cold war at the grassroots level.  WR, HU

*HIST 377Ja, Freedom and Abolition in Latin America  
Marcela Echeverri Munoz  
The history of freedom in Latin America, with a focus on issues surrounding slavery and abolition. The rise of slavery and slave societies across the region, including context within the founding of European empires in the Americas. Ways in which the lives of freed slaves in Latin America represented a practical freedom that preceded the
emergence of Enlightenment abolitionism in the nineteenth century. Relations between black politics, revolution, liberalism, and opposition to slavery. WR, HU

History: Preindustrial

*HIST 379Ja / HSHM 447a, History of Chinese Science  William Summers
Major themes in Chinese scientific thinking from antiquity to the twentieth century. Non-Western concepts of nature and the development of science in China; East-West scientific exchanges; and China’s role in modern science. WR, HU  RP

*HIST 380Ju / EALL 283b / EAST 426b, Hiroshima and Global Memory  Ran Zwigenberg
The creation of local and transnational collective memories of World War II and its aftermath. Focus on three major traumatic events of the period: the Holocaust, the atomic bombing of Hiroshima and Nagasaki, and decolonization. Ways in which various societies have remembered, understood, and commemorated these events; the influences that different communities’ memories and histories have on each other. HU

*HIST 384Ja / MMES 172b / NELC 403b, The Middle East between Crusaders and Mongols  Adel Allouche
The impact of the Crusades and the Mongol conquests on the Islamic Middle East. Political, social, and economic changes in the region from the eleventh century to the middle of the fourteenth. Emphasis on the rise of new dynasties as a result of changes in the ethnic mosaic of the Middle East. WR, HU

History: Preindustrial

*HIST 385Ja, The Middle East and the West: A Cultural Encounter  Abbas Amanat
The Orient and the Occident as cultural constructs; encounters with Islam and the Middle East since the eighteenth century; evolving Muslim attitudes toward the West; orientalism and representations of the Middle East in Western literature and media; images of the United States; clash or dialogue of civilizations. WR, HU

*HIST 387Ja / AFST 487a, West African Islam: Jihad Tradition and Its Pacifist Opponents  Lamin Sanneh
The influence 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. WR, HU

*HIST 388Ja / AFST 486a, Slavery and the Slave Trade in Africa  Robert Harms
The slave trade from the African perspective. Analysis of why slavery developed in Africa and how it operated. The long-term social, political, and economic effects of the Atlantic slave trade. WR, HU

History: Preindustrial

*HIST 398Jb / MMES 173b / NELC 404b, Mamluk Egypt  Adel Allouche
A study of the Mamluks, manumitted slaves initially imported to Egypt for military service 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 conquest by the Ottoman Turks. WR, HU

History: Preindustrial
*HIST 400Ja, Writing History  Carolyn Dean
Introduction to the oft-contested ways in which historians have thought about the writing of history. Conceptual frameworks and debates in which historians have engaged, from narrative history to the so-called linguistic turn. Readings from classics of historiography, as well as from more recent work on gender and on colonization.
WR, HU

*HIST 416Ja, Modern Slavery and Human Trafficking  Kerry Ward
Introduction to debates and sources on historical and contemporary human trafficking. The transformation of the slave trade and of slavery in the nineteenth century; forms of unfree labor that existed beyond the formal end of slavery; the emergence of illegal and clandestine slave trades in the wake of emancipation; the role of gender in contemporary trafficking; human rights discourses, international human rights law, immigration patterns and policies, and social activism from the late nineteenth century to the present. May count toward geographical distributional credit within the History major for any region studied, upon application to the director of undergraduate studies.
HU

*HIST 422Ja, Human Rights in History  Carolyn Dean
The history of human rights, from their origins in the European Enlightenment to current arguments about their global expansion, their evolution, and their meaning in both theory and practice. May count toward geographical distributional credit within the History major for any region studied, upon application to the director of undergraduate studies.  HU

*HIST 435Jb / HSHM 437b6, The Global Crisis of Malaria  Frank Snowden
The global crisis of malaria examined in comparative and historical context. The mosquito theory of transmission and other developments in scientific understanding of the disease; World Health Organization strategies to eradicate malaria since 1955; the development of tools such as insecticides, medication, and bed nets; the attempt to create an effective vaccine.  WR, HU

*HIST 449Jb, The United States and the International System, 1776–1920  
Patrick Cohrs
The transformation of the modern international system and of America’s role in this system from the American Revolution to the Paris peace conference. Underlying causes of international conflicts; the Vienna and Versailles peace settlements; the Monroe Doctrine; international relations in the era of imperialism; the emergence of the United States as a world power; Woodrow Wilson’s pursuit of a "peace to end all wars."  WR, HU

*HIST 472Jb / HUMS 314b, Historical Method  Valerie Hansen
Exploration of writings by historians whose main goal was to explain how their particular world was taking shape. Readings include works by Herodotus (Greece), Polybius (Rome), Sima Qian (China), al-Tabari (the Islamic world), and Marx and Weber (Europe). Examination of different historical methods, including the evaluation of primary and secondary sources. How to organize disconnected bits of evidence into persuasive narratives. Priority to sophomores.  HU  RP
Writing Tutorial and Senior Essay Courses

*HIST 494a or b, Individual Writing Tutorial*  Beverly Gage
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 the following materials to the director of undergraduate studies on the Friday before schedules are due: a prospectus of the work proposed, a bibliography, and a letter of support from a member of the History department faculty who will direct the tutorial. A form to simplify this process is available from the office of the director of undergraduate studies.

*HIST 495a and HIST 496b, The Senior Essay*  Valerie Hansen
There will be a mandatory senior essay meeting on Monday, September 9, 2013, in 114 SSS at 4 p.m. Preparation of the required senior departmental essay under the supervision of a member of the faculty. Students expecting to graduate in May enroll in HIST 495a during the fall term and complete their essays in HIST 496b in the spring term. December graduates enroll in HIST 495b in the spring term and complete their essays in HIST 496a during the following fall term; students planning to begin their essay in the spring term should notify the senior essay director by December 2, 2013. 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 16, 2013 (for HIST 495a), or January 17, 2014 (for 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. Students writing a senior essay must attend a library workshop for historians (http://www.library.yale.edu/instruction/hist). Students enrolled in HIST 495 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 2, 2013 (495a), or May 5, 2014 (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 495. Students enrolled in HIST 496 must submit a completed essay to 211 HGS no later than 5 p.m. on April 7, 2014, in the spring term, or no later than 5 p.m. on December 2, 2013, 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.

Related Course in Another Department

**GLBL 318a / EAST 338a / ECON 338a, The Next China**  Stephen Roach
Economic development in China since the late 1970s. Emphasis on factors pushing China toward a transition from its modern export- and investment-led development model to a pro-consumption model. The possibility of a resulting identity crisis, underscored by China’s need to embrace political reform and by the West’s long-standing misperceptions of China. Prerequisite: introductory macroeconomics.  SO Global Affairs: Development

**History of Art**

Director of undergraduate studies: Mimi Yiengpruksawan, 653 LORIA, 432-2682, mimi.yiengpruksawan@yale.edu; arthistory.yale.edu

**FACULTY OF THE DEPARTMENT OF HISTORY OF ART**

**Professors**  Carol Armstrong, Tim Barringer, Edward Cooke, Jr., Diana Kleiner, Kobena Mercer, Amy Meyers (Adjunct), Mary Miller, Robert Nelson, Jock Reynolds (Adjunct), Vincent Scully (Emeritus), Robert Thompson, Christopher Wood, Mimi Yiengpruksawan

**Associate Professors**  Milette Gaifman, Jacqueline Jung, Kishwar Rizvi

**Assistant Professors**  J. D. Connor, Erica James, Joost Keizer, Youn-mi Kim, Tamara Sears, Sebastian Zeidler

**Lecturers**  Öğüi Dalgıç, Theresa Fairbanks-Harris, Karen Foster, Mia Reinoso Genoni, John Stuart Gordon, Ian McClure, Margaret Olin, David Sensabaugh

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**  Twelve course credits are required to complete the major: two introductory courses at the 100 level; four intermediate and advanced courses at the 200–300 level; two seminars at the 400 level; a methods seminar, HSAR 401; two electives; and the senior essay, HSAR 499.

100-level courses are broad introductory surveys that address basic art history from a number of regional and thematic perspectives. Prospective majors are encouraged to take the surveys as early in their course of study as possible. Students who have taken the Advanced Placement test in art history may earn acceleration credit and, in consultation with the director of undergraduate studies, may place out of a 100-level course.

Intermediate and advanced courses, numbered above 200, encompass more specialized surveys and themes in art history. The major requires six courses numbered above 200, of which two must be seminars numbered above 400; the six courses must satisfy
both a geographical and a chronological distributional requirement. The geographical requirement is divided into five areas: Africa and the Pacific; the Americas; Asia and the Near East; Europe; and trans-regional. The chronological requirement is similarly divided into five segments: earliest times to 800; 800–1500; 1500–1800; 1800 to the present; and trans-chronological. The six intermediate and advanced courses must be chosen from four different geographical areas and four different time periods; a single course can fulfill both a geographical and a chronological requirement.

The methods seminar HSAR 401, Critical Approaches to Art History, is a wide-ranging introduction to the practices of the art historian and the history of the discipline. It is to be taken during the fall or spring term of the junior year.

Electives may include courses from other departments if they have direct relevance to the major program of study. Approval of the director of undergraduate studies is required.

History of Art majors are urged to study foreign languages. Students considering graduate work should discuss with their advisers the appropriate language training for their field of interest.

**Senior essay** The senior essay is a research paper written usually in one term in HSAR 499. 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. It is also possible to write a two-term senior essay, with permission of the director of undergraduate studies. Students wishing to write a two-term essay must submit a petition to the director of undergraduate studies and the prospective adviser, normally by the first week after spring break of the junior year.

**Credit/D/Fail courses** Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**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:

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<th>BK</th>
<th>K. Rizvi</th>
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<td>BR</td>
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<td>T. Barringer</td>
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**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 in the Jeffrey Loria Center, 190 York Street.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** None

**Number of courses** 12 course credits
III. Subjects of Instruction

**Distribution of courses** 2 courses at 100 level; 6 courses numbered above 200, 2 of which must be 400-level seminars, fulfilling distributional requirements in 4 geographical and 4 chronological categories; 2 electives

**Specific course required** HSAR 401

**Substitution permitted** With DUS permission, 2 electives from related depts

**Senior requirement** Senior essay (HSAR 499)

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**Courses**

*HSAR 002a / AMST 007a, Furniture and American Life*  
Edward Cooke, Jr.

In-depth study and interpretation of American furniture from the past four centuries. Hands-on experience with furniture in the collection of the Yale University Art Gallery to explore such topics as materials, techniques, styles, use, and meaning. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
WR, HU RP

*HSAR 004a, Visualized Communities*  
Margaret Olin

An introduction to visual culture. Focus on visual means of creating community, including photographs, signage, gesture, exhibitions, and Web sites. Local examples of visual communities; discussions of the nature of visual rhetoric. Field trips and collaborative research. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
WR, HU

*HSAR 006a / AFAM 006a, Identities in Contemporary Art*  
Kobena Mercer

Introduction to changing conceptions of selfhood in art since 1960. Portraiture and images of the body in painting, sculpture, performance, and film; relations between the formal qualities of art and social contexts in which distinctions of race, gender, and nationality have undergone global transformation over the past fifty years; contributions made by art to changing perceptions of both individual and collective identity. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
HU

**HSAR 110b / ARCG 110b, Introduction to the History of Art: Global Decorative Arts**  
Edward Cooke, Jr.

Global history of the decorative arts from antiquity to the present. The materials and techniques of ceramics, textiles, metals, furniture, and glass. Consideration of forms, imagery, decoration, and workmanship. Themes linking geography and time, such as trade and exchange, simulation, identity, and symbolic value.  
HU

**HSAR 112a, Introduction to the History of Art: Prehistory to the Renaissance**  
Milette Gaifman

Form as meaning in architecture, sculpture, and painting. Selected studies in these arts from prehistory to the Renaissance. Source readings in translation.  
HU

**HSAR 142a / RLST 187a / SAST 265a, Introduction to the History of Art: The Classical Buddhist World**  
Mimi Yiengpruksawan

Buddhist art and architecture of India, Pakistan, Afghanistan, and central Asia from earliest beginnings to the tenth century, and including Greco-Roman, Persian, and Islamic contact.  
HU
HSAR 143b / RLST 188b / SAST 260b, Introduction to the History of Art: Buddhist Art and Architecture, 900 to 1600  Mimi Yiengpruksawan
Buddhist art and architecture of East Asia, Southeast Asia, and Tibet from the tenth century to the early modern period. Emphasis on cross-regional engagements including the impact of Islam.  HU

HSAR 218La / MB&B 218La, Art and Biomolecular Recognition Laboratory  
Andrew Miranker and staff
The chemical basis of artists’ materials, both modern and historical, examined through applied techniques in biomolecular recognition. Guided technical examination of works from Yale University Art Gallery collections. Students design their own assays and experiments. Intended for non-science majors.  SC

HSAR 234a / ARCG 221a G / NELC 120a G, Egyptomania  Colleen Manassa
Conceptual underpinnings of the use of ancient Egyptian motifs in architecture, painting, sculpture, and decorative arts throughout western Europe, the Middle East, and North America from antiquity to the present. Coordinated with the exhibit Egyptomania at the Peabody Museum.  HU

HSAR 235b / ARCG 235b / HUMS 245b / NELC 106b, The Worlds of Homer  Karen Foster
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.  HU

HSAR 237a / ARCG 237a / NELC 108a, Ancient Painting and Mosaics  Karen Foster
Developments in wall painting, vase painting, and mosaics as seen in ancient Egypt, the Aegean Bronze Age, and the Greek, Etruscan, and Roman world.  HU

HSAR 243b / ARCG 243b / CLCV 160b, Greek Art and Architecture  Milette Gaifman
Monuments of Greek art and architecture from the late Geometric period (c. 760 B.C.) to Alexander the Great (c. 323 B.C.). Emphasis on social and historical contexts.  HU

HSAR 250a / ARCG 170a / CLCV 170a, Roman Art: Empire, Identity, and Society  Diana Kleiner
Masterpieces of Roman art from the Republic to Constantine studied in their historical and social contexts. The great Romans and the monuments they commissioned—portraits, triumphal arches, columns, and historical reliefs. The concept of empire and imperial identity, politics and portraiture, the making and unmaking of history through art, and the art of women, children, freedmen, and slaves.  HU

*HSAR 251b / FREN 366b, Writers and Artists in Paris, 1780–1914  Marie-Hélène Girard
Ways in which the transformation of Paris shaped the representation of artists who lived and worked in the French capital from the end of the Old Regime until the eve of World War I. The emergence of Paris as a cultural marker; the role played by the image of the bohemian or the artiste maudit. Authors and artists include David, Balzac, Delacroix, Baudelaire, Manet, Mallarmé, impressionist painters, and Picasso.  L5, HU
HSAR 252b / ARCG 252b / CLCV 175b, Roman Architecture  Diana Kleiner
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.  HU

*HSAR 266a / ARCH 271a / HUMS 450a / MMES 126a / SAST 266a, Introduction to
Islamic Architecture  Kishwar Rizvi
Introduction to the architecture of the Islamic world from the seventh century to the
present, encompassing regions of Asia, North Africa, and Europe. A variety of sources
and media, from architecture to urbanism and from travelogues to paintings, are used
in an attempt to understand the diversity and richness of Islamic architecture. Field trip
to the Metropolitan Museum of Art in New York.  HU

HSAR 277b, Religion and Visual Culture in the Eastern Mediterranean, 313–800 C.E.
Öğün Dalgıç
The use of art and architecture for both competition and communication in religions of
the eastern Mediterranean, from Constantine through the rise of Islam. Forms of visual
expression during the period; ways in which images of the divine shaped and reinforced
cultural and social structures.  HU

*HSAR 280a / FREN 347a / HUMS 213a, Ekphrasis  Thomas C. Connolly
An exploration of ekphrasis, understood both as the verbal representation of visual
representation and, more broadly, as the way in which one artistic discourse represents,
critiques, or transgresses another. Manifestations of this rhetorical device in both
Western and non-Western cultures from antiquity to the present. Readings and
discussion in English.  HU  Tr

HSAR 285b, Italian Renaissance Art, 1300–1500  Joost Keizer
Italian Renaissance art from 1300 to 1500, including painting, sculpture, drawing, and
print. Focus on problems and issues specific to the time and place of the artworks.
Important episodes in the history of Italian Renaissance art are viewed from the
perspectives of selected painters and sculptors.  HU

*HSAR 287b / ENGL 175b / RLST 267b, Sacred and Profane in Late Medieval Europe
Jessica Brantley and Christopher Wood
The interdependence and collaborations of the sacred and the profane in late medieval
European literature and visual art. Close reading of primary texts; analysis of paintings,
sculptures, manuscripts, printed books, and prints in Yale University collections. Ways
in which disciplinary difference matters to the understanding of culture.  WR, HU

HSAR 288a, Renaissance and Baroque Drawing  Joost Keizer
The history of drawing from its first systematic application in the early fifteenth
century through the late seventeenth century. Focus on southern and northern
European artists. Transregional comparison of the development and use of drawing;
different functions of drawing, from the invention of the quick sketch to highly detailed
work; drawing techniques, from pen to charcoal. Artists include van Eyck, Leonardo,
Raphael, Michelangelo, Dürer, Poussin, Velazquez, and Rembrandt. Includes visits to
museums in New York.  HU

HSAR 291b / HUMS 235b, Buildings and Power in Italy  Mia Reinoso Genoni
Investigation of how architecture and monumental sculpture are expressions of power
in Italy, c. 1220–1660. Focus on works built by civil and religious authorities. Ways in
which buildings create or solidify power; strategies available to rulers and authorities; relations between patron and architect; demonstrations of changes in power through the use of both traditional and innovative architectural idioms; contemporary interpretations, understandings, and rejections of monumental statements of power.  

*HSAR 310b / HUMS 270b, Futurism: The Shock of the New  
Amerigo Fabbri  
Cultural and intellectual shifts in literature, philosophy, and the arts at the end of the nineteenth century, marking the rise of modernism. Futurism, surrealism, and other avant-garde movements that transformed into art the dramatic challenges of a new technological and psychological reality.  HU

HSAR 315a, Nineteenth-Century French Art  
Carol Armstrong  
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.  HU

HSAR 319a / AMST 212a / FILM 272a, John F. Kennedy’s Assassination and Its Aftermath  
J. D. Connor  
Introduction to the materials and methods of cultural studies, with a focus on the Kennedy assassination. Written and visual narratives of the events in official accounts, scholarly and pseudoscholarly reconstructions, and artistic reappropriations. The assassination in literature, film, and other arts. Attention to the moral responsibility of documentary and of fiction, ideas of mourning and trauma, and aestheticization and catharsis.  HU

HSAR 320a, Western Art since 1950  
David Joselit  
A survey of major European and American art movements after World War II, including abstract expressionism, pop art, and conceptual art, which has led to wholly new ways of understanding the art object. Consideration of very recent art from the early twenty-first century.  HU

HSAR 323a, Early Twentieth-Century Art  
Sebastian Zeidler  
Modern art in Europe and America, c. 1880–1945. Topics include individual artists (Rodin, Brancusi), historical avant-gardes (Dadaism, surrealism), the transformation of traditional media such as painting and sculpture, and the invention of collage and photomontage.  HU

*HSAR 325b / ARCH 261b, History of Architecture II: The Eighteenth Century to the Millennium  
Eeva-Liisa Pelkonen  
Modern architecture and urbanism from the eighteenth century to the end of the twentieth. Genesis and meaning of architectural form, applying national, cultural, and international contexts.  HU

HSAR 333a, Korean Art and Culture  
Youn-mi Kim and Se-woong Koo  
The history of Korea from ancient times to the present, with a focus on art and culture. Intersections of art, religion, and politics, as well as interaction with Chinese and Japanese cultures. The transmission of Buddhism and the formation of early Korean kingdoms; controversies regarding national identity; the premodern porcelain industry; Buddhism and Confucianism in politics and aesthetics; religion and art of
the Japanese colonial period; contemporary popular culture. Includes a visit to the Metropolitan Museum of Art in New York. HU

HSAR 354b / HUMS 451b, East-West Encounters in Chinese Art  Youn-mi Kim
Cultural exchanges between Europe, North America, and Asia from the seventeenth to twenty-first centuries, with a focus on Chinese arts and crafts. The influence of Chinese porcelain, decorative art, and architecture on interior and garden design in Europe; the role of Japanese woodblock prints in European and American art; Chinese artists, the Western oil painting tradition, and the tension between tradition and modernization; contemporary works that evoke the past. HU

HSAR 372a / AFAM 221a, Art of the Harlem Renaissance  Erica James
The emergence of the modern movement known as the Harlem Renaissance and its impact on American and global black culture. Key ideas and concepts explored through visual and performance art of the period. The development of black subjectivity; black visual and racial aesthetics; the rise of Pan-Africanism; the representation of race, gender, and sexualities. Use of art and archival resources from the collections of the Beinecke Library and the Yale University Art Gallery. HU

HSAR 373b / AFAM 215b, African American Art, 1663 to the Present  Erica James
Modern African American artistic production explored in the context of American art and social history. Critical race theory and artistic discourse from the Spiral group in 1963, to the Black Arts Movement and the culture wars, to current readings in American and postblack art. The complicated relations between African American art and politics. Use of art objects from the Yale University Art Gallery. HU

HSAR 378b / AFAM 178b / AFST 188b / ER&M 278b, From West Africa to the Black Americas: The Black Atlantic Visual Tradition  Robert Thompson
Art, music, and dance in the history of key classical civilizations south of the Sahara—Mali, Asante, Dahomey, Yorubá, Ejahgam, 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. HU

HSAR 379a / AFAM 112a, New York Mambo: Microcosm of Black Creativity  Robert Thompson
The rise, development, and philosophic achievement of the world of New York mambo and salsa. Emphasis on Palmieri, Cortijo, Roena, Harlow, and Colón. Examination of parallel traditions, e.g., New York Haitian art, Dominican merengue, reggae and rastas of Jamaican Brooklyn, and the New York school of Brazilian capoeira. HU

HSAR 383b / SAST 256b, Art of India, 300 B.C.—A.D. 1650  Tamara Sears
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. HU

*HSAR 401a or b, Critical Approaches to Art History  Tamara Sears [F] and Kishwar Rizvi [Sp]
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. HU
*HSAR 403a, Observation and Analysis  Theresa Fairbanks-Harris
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. HU RP

*HSAR 423a / CLCV 268a, The Art of Dionysos: Drink, Drama, and Ecstasy
Milette Gaifman
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 theatre 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. HU

*HSAR 424b / ARCG 424b / CLCV 230b, eClavia: Women in Ancient Rome
Diana Kleiner
The contributions of Roman women to one of the greatest cities—and one of the greatest empires—in world history. Lost stories of real-life Roman women recovered from public and residential buildings, portraits, paintings, and other works of Roman art and architecture. HU RP

*HSAR 426a, American Silver  John Stuart Gordon
Objects made of silver as important markers of taste and social position in America from the beginning of colonial settlement to the present. The progression of styles, associated technologies, uses, political meanings, and cultural contexts of American silver. Use of objects from the American silver collection of the Yale University Art Gallery. HU

*HSAR 429a / ANTH 324a, Anthropology of Art  David Odo
An anthropological approach to the study of art, with a focus on visual art from the collections of the Yale University Art Gallery. Theoretical framework as well as direct experience researching museum objects. Ethnographic objects in the art museum context; the politics of exhibition; body art, including modification and adornment; gendered objects; devotional objects and their recontextualization in museums; colonial and postcolonial collecting practices. SO

*HSAR 434a / HUMS 273a, Michelangelo  Joost Keizer
Central problems of current research on Italian Renaissance art approached both through the works of Michelangelo, the Renaissance artist who reflected most profoundly on the nature of art, and through their historiography. Includes a daylong excursion to New York City to view works by Michelangelo. HU

*HSAR 466b, The Technical Examination of Art  Ian McClure
Introduction to methods used in the technical examination of works of art, including critical assessment of the information such methods provide. What technical examination can reveal about the materials and techniques used in a particular work’s creation and about its subsequent history.

*HSAR 473a / AFAM 219a, Historicizing Caribbean Art: Haiti  Erica James
Analysis of art and visual culture in the Republic of Haiti. The transatlantic formation and global relations of Haitian artistic practices and philosophies. Use of archival
resources and art collections in the Yale University Art Gallery, the Peabody Museum, and other institutions in the region. HU

*HSAR 475b, Chinese Painting in the Seventeenth Century*  David Sensabaugh
Chinese painting from the masters of the late Ming period to the individualist and orthodox masters of the early Qing dynasty. Issues of art based on either art or nature. Attention to paintings from the period in the Yale University Art Gallery collection. HU

*HSAR 477a / RLST 382a / SAST 462a, Yoga in Art, Text, and Practice*  Tamara Sears and Andrew Quintman
Critical investigation of texts, images, and the practice of yoga, focusing on Indian traditions of Hinduism, Buddhism, and Jainism, as well as modern manifestations in the West. Themes include contemplative practices, bodily disciplines, ritual, narrative painting, architecture, and the role of yoga in tantra. Readings emphasize primary sources and theoretical frameworks. HU

*HSAR 479a or b / ANTH 317a / EAST 363a / SAST 363a, Chinese Painting in the Seventeenth Century*  Mark Turin
Chinese painting from the masters of the late Ming period to the individualist and orthodox masters of the early Qing dynasty. Issues of art based on either art or nature. Attention to paintings from the period in the Yale University Art Gallery collection. HU

*HSAR 480a, The Arts of Nomads in China, 900–1400*  Youn-mi Kim
Visual culture of the nomadic Kitans and Mongols, ranging from gold death masks and murals excavated from tombs to religious artworks that reflect hybrid and diverse religious practices. Arts produced during the empires founded by the Liao (907–1125) and Yuan (1279–1368) located in a broad transregional context, including their role in the cultural and political landscapes of East, Central, and South Asia from the tenth century to the fifteenth. HU

*HSAR 484b / EAST 474b, Japanese Screens*  Mimi Yiengpruksawan and Sadako Ohki
The screen-painting tradition in Japan, particularly as it emerged in the sixteenth and seventeenth centuries. The format, techniques, and functions of screen painting; poetic and literary connections, as well as studio practices and politics, of the principal lineages of painters; aesthetics and styles associated with varying classes of patronage, from the shoguns to Buddhist monks to the Japanese court. Includes site visits in Tokyo and Kyoto during the spring recess. HU

*HSAR 487a / SAST 370a, Visualizing Stories in India*  Tamara Sears
Modes of visual narratives in India. Case studies drawn from Hindu, Buddhist, and Jain traditions in a variety of media: stone sculpture, illustrated manuscripts, painted scrolls, comics, and film. HU

*HSAR 490b / FILM 320b, Close Analysis of Film*  J. D. Connor
Ways in which traditional genres and alternative film forms establish or subvert convention and expectation and express thematic and ideological concerns. The balancing of narrative containment and excess, as well as action and image. Use of body and voice, space and music. Examples include films by Antonioni, Zhang, Ozu, and Hitchcock. Prerequisite: FILM 150. HU
*HSAR 496b, Art of the Surrealist Avant-Garde*  Sebastian Zeidler
The major figures of the French surrealist movement, c. 1924–25, including all visual media—painting, sculpture, photography, collage, frottage, the "exquisite corpse," and the "found object." Topics include surrealism and psychoanalysis; primitivism; eroticism and the construction of gender; and the art-theoretical schism between Breton and Bataille, the movement’s preeminent thinkers.  HU

*HSAR 498a or b, Independent Tutorial*  Mimi Yiengpruksawan
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*  Mimi Yiengpruksawan
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 499 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 13; for those in the spring term, January 24. Senior essays written in the fall term are due on December 6; those in the spring term on April 25. 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.

**History of Science, Medicine, and Public Health**

Director of undergraduate studies: Joanna Radin, L 214 SHM, 785-4258, joanna.radin@yale.edu; hshm.yale.edu

**FACULTY ASSOCIATED WITH THE PROGRAM OF HISTORY OF SCIENCE, MEDICINE, AND PUBLIC HEALTH**

**Professors**  Daniel Kevles, Frank Snowden, William Summers, John Warner
Associate Professor  Naomi Rogers

Assistant Professors  Paola Bertucci, Joanna Radin, William Rankin

Senior Lecturers  Bettyann Kevles, Rebecca Tannenbaum

Affiliated Faculty  Toby Appel (Yale University Library), Bruno Cabanes (History), Dimitri Gutas (Near Eastern Languages & Civilizations), Jennifer Klein (History), Joanne Meyerowitz (History), Amy Meyers (Yale Center for British Art), Alan Mikhail (History), Sherwin Nuland (School of Medicine), Kevin Repp (Yale University Library), Cynthia Russett (History), Paul Sabin (History), Gordon Shepherd (School of Medicine), Jenifer Van Vleck (History)

History of Science, Medicine, and Public Health is an interdisciplinary program of study that explores the development of science, technology, medicine, and public health and their interactions with each other and with society. Its course offerings range broadly in topics and geographical scope, including the Scientific Revolution, the relationships of medicine and the media in modern America, the development of the physical, earth, and life sciences, the interplay of science, technology, and the state, and public health and epidemics in global perspective. Students in the major combine courses in History of Science, Medicine, and Public Health with courses from other relevant disciplines in the natural sciences, the social sciences, and the humanities.

The program offers students considering a career in medicine, public health, or other health care fields a way to combine the requirements of their professional training with a broad liberal arts education. It also provides excellent preparation for many other careers, including law, business, journalism, museum work, public policy, and government, in which a contextualized understanding of science, technology, and medicine is advantageous.

The major for the Class of 2014  Students in the Class of 2014 may fulfill the requirements of the major in History of Science, History of Medicine that were in place when they entered it, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS). Alternatively, they may fulfill the requirements of the major in History of Science, Medicine, and Public Health as described below for the Class of 2015 and subsequent classes.

Requirements of the major for the Class of 2015 and subsequent classes  The major in History of Science, Medicine, and Public Health requires twelve term courses, including the two-term senior requirement. Students select a pathway of seven courses that guides them through an area of specialization. The seven pathway courses must include two courses in History of Science, Medicine, and Public Health; one seminar numbered 100 or above in History of Science, Medicine, and Public Health or in History; one science course; and three electives chosen from relevant courses in any department.

The five standard pathways in the major are medicine and public health; global health; science, technology, and power; gender and sexuality; and arts and media. Students may also design customized pathways in consultation with the director of undergraduate studies. No later than the beginning of the junior year, students in the major must select a standard pathway or indicate that they wish to design their own.
Beyond the seven pathway courses, students must complete three additional electives in History of Science, Medicine, and Public Health. One of the electives must be a seminar, and one must be chosen from a pathway other than the one selected for the major. All courses for the major are chosen in collaboration with the student’s adviser.

**Senior requirement** By the end of the reading period in the spring term of the junior year, students choose whether they will work toward a yearlong or a one-term senior project. Yearlong senior projects are completed in HSHM 490, 491; one-term projects are completed in HSHM 492. Students who choose a one-term project must take an additional seminar in History of Science, Medicine, and Public Health during the final term of the senior year. Distinction in the Major is awarded only to students who complete a yearlong senior project.

For both the one-term and yearlong senior projects, students select a project adviser, propose a tentative topic and title, and submit a proposal to the senior project director. The final product of the senior requirement may be a written essay or an alternative project such as a film, exhibition, catalog, atlas, or historical data reconstruction. In the case of an alternative project, the student must identify a second reader in addition to the adviser before the project is approved by the senior project director. Either the adviser or the second reader must be a member of the faculty in History of Science, Medicine, and Public Health. A written component to the senior project must illustrate sources and the intellectual significance of the project. For more details about requirements and deadlines, majors should consult the HSHM Senior Project Handbook; copies are available from the senior project director and on the program’s Web site (http://hshm.yale.edu).

**Credit/D/Fail** Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** None

**Number of courses** 12 term courses (incl senior req)

**Distribution of courses** 7 courses in pathway, incl 2 HSHM courses, 1 sem in HSHM or Hist, 1 science course, and 3 electives; 3 addtl HSHM electives, incl 1 sem and 1 course outside major pathway

**Senior requirement** Yearlong project (HSHM 490, 491), or one-term project (HSHM 492) and 1 addtl HSHM sem

**Courses**

*HSHM 007a / HUMS 076a, Epidemics in Global Perspective*  William Summers
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.  HU, SO
HSHM 202a^G / AMST 247a^G / HIST 147a^G / HLTH 170a, Media and Medicine in Modern America  John Warner and Gretchen Berland
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.  HU

HSHM 206b / AMST 176b / EVST 206b / HIST 144b / HUMS 323b, Science and Technology in the United States  Daniel Kevles
The development of science and technology in American society from the colonial period through the late twentieth century. The rise of the United States to a world-class scientific and technological power; the American scientific community and the tensions it has faced in a democratic society; the role of science and technology in exploration, agriculture, industry, national defense, religion, culture, and social change.  HU

HSHM 212b^G / HIST 146b^G / HLTH 280b, Historical Perspectives on Global Health  Joanna Radin
The broader historical context of contemporary practices, policies, and values associated with the concept of global health. Historical formations around ideas about disease, colonialism, race, gender, science, diplomacy, security, economy, and humanitarianism; ways in which these formations have shaped and been shaped by attempts to negotiate problems of health and well-being that transcend geopolitical borders.  HU

HSHM 215a^G / HIST 140a, Public Health in America, 1793–2000  Naomi Rogers
A survey of public health in America from the yellow fever epidemic of 1793 to AIDS and breast cancer activism at the end of the past century. Focusing on medicine and the state, topics include quarantines, failures and successes of medical and social welfare, the experiences of healers and patients, and organized medicine and its critics.  HU

HSHM 235a / HIST 234a, Epidemics and Society in the West since 1600  Frank Snowden
A study of the impact of epidemic diseases such as bubonic plague, cholera, malaria, and AIDS on society, public health, and the medical profession in comparative and international perspective. Topics include popular culture and mass hysteria, the mortality revolution, urban renewal and rebuilding, sanitation, the germ theory of disease, the emergence of scientific medicine, and debates over the biomedical model of disease.  HU

HSHM 242b^G / HIST 193b, Molecules, Life, and Disease: Twentieth Century  William Summers
The emergence of the molecular vision of life and disease in the twentieth century. Topics include the role of technology and research practices, intellectual and political migrations, science policy and philanthropic foundations, constructions of risks and patenting of life, big science and biotechnology, politics of memory, and popular representation of science. Relationships to broad intellectual, social, cultural, and political changes.  HU
*HSHM 424b / HIST 155Jb, Science, Invention, and the Visual Arts since Darwin  
Bettyann Kevles
The influence of scientific theories and technologies on the visual arts from the mid-nineteenth century to the present. Understandings and misunderstandings of scientific concepts and inventions as they appear in artistic works. Topics include relativity, quantum mechanics, medical images inside the human body, and images from space. Focus on American and European artists and art movements.  WR, HU

*HSHM 437bG / HIST 435Jb, The Global Crisis of Malaria  
Frank Snowden
The global crisis of malaria examined in comparative and historical context. The mosquito theory of transmission and other developments in scientific understanding of the disease; World Health Organization strategies to eradicate malaria since 1955; the development of tools such as insecticides, medication, and bed nets; the attempt to create an effective vaccine.  WR, HU

*HSHM 447aG / HIST 379Ja, History of Chinese Science  
William Summers
Major themes in Chinese scientific thinking from antiquity to the twentieth century. Non-Western concepts of nature and the development of science in China; East-West scientific exchanges; and China’s role in modern science.  WR, HU RP

*HSHM 459a / HIST 159Ja / HUMS 317a, Spies, Secrets, and Science  
Paola Bertucci
The relationship between secrecy, intellectual property, and science from the Middle Ages to the Cold War. Topics include alchemy and esoteric knowledge; the Manhattan Project and other secret scientific projects run by the state; the history of patents and copyright laws; and scientists as spies.  WR, HU

*HSHM 460b / HIST 257Jb / HUMS 356b, Art, Technology, and Science from Antiquity to 1800  
Paola Bertucci
Changes in the notions of art and science in the West through 1800. The association of the term "art" with the fine arts as a legacy of the Enlightenment; implications of this semantic shift for early modern European culture. Visual and material cultures of science, including anatomical and natural history illustrations, curiosity cabinets and Wunderkammern, microscopy and astronomy, Greek and Roman military technology and warfare, and Leonardo and the engineers of the Renaissance. Use of rare books, manuscripts, and historical scientific instruments from library and museum collections at Yale.  WR, HU

*HSHM 464a / HIST 142Ja, The Cultural History of Mental Illness  
Courtney Thompson
The construction of madness and mental illness in Western thought and culture. The rise and fall of the asylum system; the development of psychoanalytic theory; twentieth-century medical practices such as psychopharmaceutical treatments and lobotomy; the antipsychiatry movement; patients’ rights and contested diagnoses; portrayals of the mentally ill in society and popular culture; issues surrounding gender and sexuality.  HU

*HSHM 470a and HSHM 471b, Directed Reading  
Joanna Radin
Readings directed by members of the faculty on topics in the history of science, medicine, or public health not covered by regular course offerings. Subjects depend on the interests of students and faculty. Weekly conferences; required papers.
*HSHM 490a and HSHM 491b, Yearlong Senior Project*  Joanna Radin
Preparation of a yearlong senior project under the supervision of a member of the faculty. There will be a mandatory meeting at the beginning of the term for students who have chosen the yearlong senior project; students will be notified of the time and location by e-mail before classes begin. Majors planning to begin their projects who do not receive this notice should contact the senior project director. Students expecting to graduate in May enroll in HSHM 490 during the fall term and complete their projects in HSHM 491 in the spring term. December graduates enroll in HSHM 490 in the spring term and complete their projects in HSHM 491 during the following fall term. Majors planning to begin their projects in the spring term should notify the senior project director by the last day of classes in the fall term. Students must meet progress requirements by specific deadlines throughout the first term to receive a temporary grade of SAT for HSHM 490, which will be changed to the grade received by the project upon the project’s completion. Failure to meet any requirement may result in the student’s being asked to withdraw from HSHM 490. For details about project requirements and deadlines, consult the HSHM Senior Project Handbook. Students enrolled in HSHM 491 must submit a completed project to 211 HGS no later than 5 p.m. on April 7, 2014, in the spring term, or no later than 5 p.m. on December 2, 2013, in the fall term. Projects submitted after 5 p.m. on the due date without an excuse from the student’s residential college dean will be subject to grade penalties. Credit for HSHM 490 only on completion of HSHM 491.

*HSHM 492a or b, One-Term Senior Project*  Joanna Radin
Preparation of a one-term senior project under the supervision of an HSHM faculty member, or of an affiliated faculty member with approval of the director of undergraduate studies. There will be a mandatory meeting at the beginning of the term for students who have chosen the one-term senior project; students will be notified of the time and location by e-mail before classes begin. Majors planning to begin their projects who do not receive this notice should contact the senior project director. Students expecting to graduate in May enroll in HSHM 492 during the fall term. December graduates enroll in HSHM 492 in the preceding spring term. Students planning to begin their project in the spring should notify the senior essay director by the last day of classes in the fall term. Majors must submit a completed Statement of Intention form signed by the faculty member who has agreed to supervise the project to the HSHM administrator in 207 HGS no later than September 13, 2013 (HSHM 492a), or January 13, 2014 (HSHM 492b). Blank statement forms are available in 207 HGS and in the HSHM Senior Project Handbook. Students enrolled in HSHM 492 must submit a completed senior project to 211 HGS no later than 5 p.m. on December 9, 2013, in the fall term, or no later than 5 p.m. on April 28, 2014, in the spring term. Projects submitted after 5 p.m. on the due date without an excuse from the student’s residential college dean will be subject to grade penalties.

**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; www.yale.edu/humanities
FACULTY ASSOCIATED WITH THE PROGRAM OF HUMANITIES

Professors  Jeffrey Alexander (Sociology), R. Howard Bloch (French), Harold Bloom (Humanities), David Bromwich (English), Rüdiger Campe (German), Francesco Casetti (Humanities), Carlos Eire (History, Religious Studies), Benjamin Foster (Near Eastern Languages & Civilizations), Paul Franks (Philosophy, Religious Studies), Paul Freedman (History), Kirk Freudenburg (Classics), Bryan Garsten (Political Science), David Gelernter (Computer Science), Phyllis Granoff (Religious Studies), Emily Greenwood (Classics), Beatrice Gruendler (Near Eastern Languages & Civilizations), Valerie Hansen (History), Karsten Harries (Philosophy), Christine Hayes (Religious Studies, Judaic Studies), Margaret Homans (English, Women’s, Gender, & Sexuality Studies), Carol Jacobs (German), Edward Kamens (East Asian Languages & Literatures), Alice Kaplan (French), Daniel Kevles (History, American Studies, History of Medicine), Tina Lu (East Asian Languages & Literatures), John MacKay (Slavic Languages & Literatures), Ivan Marcus (History, Religious Studies), Stefanie Markovits (English), Giuseppe Mazzotta (Italian), Steven Pincus (History), Leon Plantinga (Emeritus) (Music), Richard Prum (Ecology & Evolutionary Biology), Steven Smith (Political Science, Philosophy), William Summers (History of Medicine), Henry Sussman (Visiting) (German), Gary Tomlinson (Music, Humanities), Francesca Trivellato (History), Katie Trumpener (Comparative Literature), Jing Tsu (East Asian Languages & Literatures), Miroslav Volf (Divinity School), Anders Winroth (History), Craig Wright (Music)

Associate Professors  Toni Dorfman (Theater Studies), Martin Hägglund (Comparative Literature, Humanities), Karuna Mantena (Political Science), Hindy Najman (Religious Studies), Kishwar Rizvi (History of Art), Marci Shore (History), Kirk Wetter (German)

Assistant Professors  Paola Bertucci (History, History of Medicine), Joshua Billings (Humanities), Molly Brunson (Slavic Languages & Literatures), Thomas C. Connolly (French), Fabian Drixler (History), Emily Erikson (Sociology), David Gabriel (Comparative Literature), Bella Grigoryan (Slavic Languages & Literatures), Paul Grimstad (English), Michael Hunter (East Asian Languages & Literatures), Andrew Johnston (Classics), Joost Keizer (History of Art), Youn-mi Kim (History of Art), Paul North (German), Shital Pravinchandra (English), Barbara Sattler (Philosophy, Classics, Humanities), Sam See (English, American Studies), Elyahu Stern (Religious Studies, History), Yue Zhuo (French)

Senior Lecturers  Annping Chin (History), Charles Hill (Humanities), Koichi Shinohara (Religious Studies, East Asian Languages & Literatures), Norma Thompson (Humanities)

Lecturers  Mark Bauer (Humanities), Jeffrey Brenzel (Yale College), Peter Cole (Judaic Studies), Loubna El Amine (Humanities), Karla Britton (Divinity School), Amerigo Fabbri (Humanities), Hilary Fink (Slavic Languages & Literatures), Karen Foster (Near Eastern Languages & Civilizations), Mia Reinoso Genoni (History of Art), David Goldman (Humanities), Virginia Jewiss (Humanities), Dominika Laster (Theater Studies), Camille Lizarribar (Humanities), Judith Malafronte (Music), Sherwin Nuland (School of Medicine), Pamela Schirmeister (English), Kathryn Slanski (Humanities, Near Eastern Languages & Civilizations), George Syrimis (Hellenic Studies), Cecelia Watson (Philosophy, Humanities)

Senior Lectors II  Risa Sodi (Italian)
The interdisciplinary program in Humanities is designed to contribute to an integrated understanding of the Western cultural tradition. Selected works of European literature, music, philosophy, and visual arts are studied in relation to each other and to the history of ideas and political institutions. The varied program of study offers many 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 in 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 are 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 444, 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 Humanities program Web site (http://www.yale.edu/humanities/summer.html) and the Yale Summer Session Web site (http://summer.yale.edu).
REQUIREMENTS OF THE MAJOR

Prerequisite  Directed Studies, or 2 courses in classical civ or ancient Near Eastern civ
Number of courses  13 term courses beyond prereq (incl senior essay)
Distribution of courses  2 core sems in 1 area of concentration; 5 Humanities electives,
at least 1 in each of 3 areas of concentration; 5 addtl electives
Senior requirement  Senior essay (HUMS 491)

Seminars for Freshmen

*HUMS 075a, History of Scientific Medicine  Sherwin Nuland
The development of scientific medicine traced from classical antiquity to the dawning
of the modern biomedical era. Focus on the biographies of major contributors and on
cultural and intellectual currents affecting discovery. Enrollment limited to freshmen.
Preregistration required; see under Freshman Seminar Program. HU RP

*HUMS 076a / HSHM 007a, Epidemics in Global Perspective  William Summers
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. HU, SO

*HUMS 078a, Shakespeare and Music  Judith Malafonte
The use of music in Shakespeare’s plays, from the original stagings and seventeenth-
century adaptations to modern productions. Consideration of operatic versions of the
plays from the nineteenth, twentieth, and twenty-first centuries. Includes a field trip
to New York City. Enrollment limited to freshmen. Preregistration required; see under
Freshman Seminar Program. HU

*HUMS 083b / EAST 030b / HIST 030b, Tokyo  Fabian Drixler
Four centuries of Japan’s history explored through the many incarnations, destructions,
and rebirths of its foremost city. Focus on the solutions found by Tokyo’s residents
to the material and social challenges of concentrating such a large population in one
place. Tensions between continuity and impermanence, authenticity and modernity,
and social order and the culture of play. WR, HU

*HUMS 099a / CLCV 051a, Performance and Society in Ancient Greece
Pauline LeVen
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.
WR, HU
The Arts in the Humanities

*HUMS 198a or b / ENGL 129a or b / LITR 168a or b, Tragedy in the European Literary Tradition  Margaret Homans
The genre of tragedy from its origins in ancient Greece and Rome through the European Renaissance to the present day. Themes of justice, religion, free will, family, gender, race, and drammaturgy. Works include Homer’s *Iliad* and plays by Aeschylus, Sophocles, Euripides, Seneca, Shakespeare, Racine, Ibsen, Chekhov, Brecht, Beckett, and Soyinka. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

*HUMS 199a or b / ENGL 130a or b / LITR 169a or b, Epic in the European Literary Tradition  Stefanie Markovits
The epic tradition traced from its foundations in ancient Greece and Rome to the modern novel. The creation of cultural values and identities; exile and homecoming; the heroic in times of war and of peace; the role of the individual within society; memory and history; politics of gender, race, and religion. Works include Homer’s *Odyssey*, Vergil’s *Aeneid*, Dante’s *Inferno*, Cervantes’s *Don Quixote*, and Joyce’s *Ulysses*. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

*HUMS 200b, Treasures of Yale  R. Howard Bloch
Objects in Yale collections explored as a means of understanding the history, limits, and relation of academic disciplines, and of discovering underutilized materials with the senior thesis in mind. Resources include the Yale Art Gallery, Yale Center for British Art, Beinecke Library, Sterling Library, libraries at the School of Medicine, the Peabody Museum, and the Collection of Musical Instruments.  HU

HUMS 201a / FREN 240a / LITR 214a, The Modern French Novel  Alice Kaplan and Maurice Samuels
A survey of major French novels, considering style and story, literary and intellectual movements, and historical contexts. Writers include Balzac, Flaubert, Proust, Camus, and Sartre. Readings in translation. One section conducted in French.  HU  Tr

*HUMS 203b / RUSS 253b, Masterpieces of Russian Literature II  Marijeta Bozovic
A survey of major writers and literary movements, focusing on the intersection of art and revolution in twentieth-century Russian literature. 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; contemporary literary rebellions against the political and artistic legacies of the past. Works by Chekhov, Bely, Babel, Akhmatova, Bulgakov, Pasternak, and Pelevin. Readings and discussion in English.  HU  Tr

*HUMS 205a, Bodies in Law and Literature  Camille Lizarribar
The representation of the human body in law and literature. Bodies as physical structures that inhabit multiple realms, including material, cultural, historical, and symbolic. Ways in which humans think about and give meaning to their bodies in relationship to themselves and to others. Additional sources include film, television, and journalism.  WR, HU
*HUMS 206a / FILM 243a / LITR 312a / MGRK 218a / WGSS 245a, Family in Greek Literature and Film  George Syrimis
The structure and multiple appropriations of the family unit, with a focus on the Greek tradition. The influence of aesthetic forms, including folk literature, short stories, novels, and film, and of political ideologies such as nationalism, Marxism, and totalitarianism. Issues related to gender, sibling rivalry, dowries and other economic factors, political allegories, feminism, and sexual and social violence both within and beyond the family.  WR, HU  Tr

*HUMS 208a / THST 399a, Politics of Performance  Dominika Laster
The political strands of modern and postmodern theater and performance. Overtly political performance trends in the twentieth century, such as Soviet agitprop, Italian futurism, and the work of Bertolt Brecht, Augusto Boal, and Ngugi wa Thiong'o. Sociopolitical activism of contemporary performance artists and collectives; performative strategies of activist and resistance movements such as Madres de Plaza de Mayo, Orange Alternative, culture jamming, hactivism, and subvertising. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

*HUMS 212a / LITR 205a / RUSS 321a, Capitalism and the Nineteenth-Century European Novel  Bella Grigoryan and Vadim Shneyder
The cultural significance and literary representations of capitalism in nineteenth-century Europe. Labor and leisure; material culture and consumerism; social and geographic mobility; constitution of the modern self; the public sphere; private life; economics and literary form. Works by Balzac, Gogol, Dickens, Flaubert, Dostoevsky, Tolstoy, and Zola supplemented by selections from theoretical writings. Readings and discussion in English.  WR, HU  Tr

*HUMS 213a / FREN 347a / HSAR 280a, Ekphrasis  Thomas C. Connolly
An exploration of ekphrasis, understood both as the verbal representation of visual representation and, more broadly, as the way in which one artistic discourse represents, critiques, or transgresses another. Manifestations of this rhetorical device in both Western and non-Western cultures from antiquity to the present. Readings and discussion in English.  HU  Tr

*HUMS 214b / CLCV 216b / LITR 239b / MGRK 216b, Dionysus in Modernity  George Syrimis
Modernity’s fascination with the myth of Dionysus. Questions of agency, identity and community, and psychological integrity and the modern constitution of the self. Manifestations of Dionysus in literature, anthropology, and music; the Apollonian-Dionysiac dichotomy; twentieth-century variations of these themes in psychoanalysis, surrealism, and magical realism.  WR, HU  Tr

HUMS 216a / FILM 312aG / LITR 354a, Theory of Media  Francesco Casetti
Introduction to key issues in media studies. Relationships between commodity, artwork, and networks of exchange; media and public sphere; the analysis of radio and television; alternative or counter-hegemonic conceptions of media; and the viability of the concept ”media” itself.  HU
HUMS 217b / MUSI 107b, Exploring the Nature of Genius  Craig Wright
The changing meanings of the term "genius" in Western culture; discussion as to whether genius is a reality. Focus on the special talents needed to respond to and shape the world in a defining fashion, and the quirky patterns of thought exemplified by great minds, principally Leonardo da Vinci, Newton, Mozart, Woolf, Beethoven, van Gogh, Picasso, Joyce, and Hitler. Recent developments in neurobiology that suggest future lines of research into the minds of exceptional individuals.  WR, HU

HUMS 218a, Shakespearian Character: Falstaff, Hamlet, Iago, Cleopatra  Harold Bloom
A close study of four of Shakespeare’s most compelling characters: Iago (from Othello), Cleopatra (from Antony and Cleopatra), Falstaff (from Henry IV), and the title character Hamlet.  HU

HUMS 219b, Shakespeare: Four Late Masterworks  Harold Bloom
A close study of King Lear, Macbeth, The Winter’s Tale, and The Tempest.  HU

HUMS 221a, Whitman, Melville, Dickinson  Harold Bloom
A close reading of works by two major American poets and of Melville’s great American novel, Moby-Dick. Selections from Ralph Waldo Emerson’s prose serve as a starting point.  HU

HUMS 224b, Wallace Stevens and Hart Crane  Harold Bloom
A close reading of the poetry and prose of Wallace Stevens and Hart Crane.  HU

HUMS 225b / LITR 241b / RUSS 323b, City and Country in the Nineteenth-Century Novel  Molly Brunson
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.  HU  Tr

HUMS 226a / GMST 378a G / LITR 307a, Walter Benjamin and the Modernization of Nineteenth-Century Paris  Henry Sussman
The radical modernization of Paris under the Second Empire (1851–70) as seen through the eyes of Walter Benjamin. Focus on Benjamin’s Arcades Project, a compendium that charted developments such as Parisian mass transit and streamlined traffic, the construction of apartment houses, and the dissemination of mass media. Readings from other literary texts on the same events include works by Balzac, Zola, and Aragon.  HU

Introduction to Germany’s “classical” period, from the 1790s to the 1830s, with attention to literature, philosophy, art, and culture. The close connection between literature and philosophy of the period; the theoretical foundations of European Romanticism and of later backlashes against it. Some attention to twentieth-century theory.  HU
*HUMS 231b / MUSI 435b, Music in European Thought: Three Moments in the Modern Era  Leon Plantinga
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.  HU

HUMS 235b / HSAR 291b, Buildings and Power in Italy  Mia Reinoso Genoni
Investigation of how architecture and monumental sculpture are expressions of power in Italy, c. 1220–1660. Focus on works built by civil and religious authorities. Ways in which buildings create or solidify power; strategies available to rulers and authorities; relations between patron and architect; demonstrations of changes in power through the use of both traditional and innovative architectural idioms; contemporary interpretations, understandings, and rejections of monumental statements of power.  HU

*HUMS 236a / FREN 302a / LITR 192a, Medieval Humor  R. Howard Bloch
Introduction to the fabliau, or Old French comic tale, and to the medieval sense of humor more generally. Close reading of a representative sample of extant fabliaux, with attention to the literary, historical, and social context of the tales. Readings and discussion in English; texts available in Old French.  HU  Tr

*HUMS 237b / GMAN 345bC / LITR 344b, Fiction and Knowledge  Carol Jacobs
Fiction and related prose pieces in which the relationships between narration, fiction, understanding, and knowing play a critical role. Focus on works by Western writers of the nineteenth through the twenty-first century. The texts’ theoretical implications and implicit self-definitions; the import of concepts such as truth, fiction, self-consciousness, perception, science, and narrative. Readings and discussion in English; texts available in the original German or French.  HU  Tr

The origins of the German novel. The historical and cultural context of the later eighteenth century, including the Enlightenment and revolutions; literary history of the period; the significance of the authors for the literary and intellectual currents of their time. Discussion in English; readings in German or English.  HU  Tr

*HUMS 242b / FILM 440b / LITR 313b / THST 384b, Modernism in Northern Europe, 1880–1918  Katie Trumpener and Carolyn Sinsky
The roots of modernism in Scandinavia, Russia, Germany, and Ireland from 1880 to 1918. Experiments with artistic forms, cultural institutions, and social theories such as feminism, Marxism, and psychoanalysis. Works from experimental theater, cinema, fiction, poetry, and the visual arts.  HU

HUMS 245b / ARCG 235b / HSAR 235b / NELC 106b, The Worlds of Homer  Karen Foster
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.  HU
HUMS 246b / CLCV 257b, Cultural Introduction to the Romans  Kirk Freudenburg
An introduction to ancient Roman culture. Focus on the ideals of elite identity and
on the lives that were lived on the margins of those ideals, by slaves, prostitutes,
freedmen, gladiators, foreigners, and the urban poor. Rome both as a city of grandeur
and pageantry and as a place of unthinkable cruelty and injustice.  HU

*HUMS 247a / SOCY 352a, Material Culture and Iconic Consciousness
Jeffrey Alexander
Exploration of how and why modern and postmodern societies have continued to
sustain material symbolism and iconic consciousness. Theoretical approaches to debates
about icons and symbols in philosophy, sociology, linguistics, psychoanalysis, and
semiotics. Iconography in advertisements and branding, food and bodies, nature,
fashion, celebrities, popular culture, art, architecture, and politics.  HU, SO

*HUMS 248a / ENGL 277a, The Age of Lincoln and Whitman  David Bromwich
Ideas of the self, the nature of democracy, and the relationship between slavery
and constitutional liberty in the years 1840–70. Extensive readings in Lincoln and
Whitman, as well as Emerson, Thoreau, Douglass, Webster, Dickinson, and Melville.
WR, HU

*HUMS 249b / J DST 312b, Hebrew Poetry in Muslim Spain  Peter Cole
Introduction to the Golden Age of Hebrew poetry in Muslim Andalusia from the
tenth century through the twelfth. Major figures of the period and the cultural
and philosophical questions they confronted. The Judeo-Arabic social context in
which the poetry emerged; critical issues pertaining to the study and transmission
of this literature. Readings from the works of several poets. Readings in translation.
Additional readings in Hebrew available.  HU  Tr

*HUMS 255a / GMAN 361a / GMST 361a, Visions of the End and Representations of
Transcendence  Kirk Wettters
The end as a formal feature of narrative and temporal forms, and as an opening to
an uncertain beyond. The complex relation between finality and transcendence in Goethe’s
Faust II, Mahler’s symphonic works, twentieth-century German and Austrian literature
(Broch, Ransmayr, Sebald), and Beckett’s Endgame. Discussion in English; readings in
German or English.  HU  Tr

*HUMS 270b / HSAR 310b, Futurism: The Shock of the New  Amerigo Fabbri
Cultural and intellectual shifts in literature, philosophy, and the arts at the end of the
nineteenth century, marking the rise of modernism. Futurism, surrealism, and other
avant-garde movements that transformed into art the dramatic challenges of a new
 technological and psychological reality.  HU

*HUMS 271b / ITAL 360b / J DST 288b, Primo Levi and Holocaust Writing  Risa Sodi
and staff
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.  WR, HU  Tr
*HUMS 273a / HSAR 434a, Michelangelo  Joost Keizer
Central problems of current research on Italian Renaissance art approached both through the works of Michelangelo, the Renaissance artist who reflected most profoundly on the nature of art, and through their historiography. Includes a daylong excursion to New York City to view works by Michelangelo.  HU

*HUMS 274b / ENGL 347b / LITR 264b / SAST 362b, South Asian Anglophone Literature  Shital Pravinchandra
Introduction to key works, concepts, and issues in twentieth-century South Asian writing in English. Focus on literature from and about India, Pakistan, Sri Lanka, and Bangladesh. The status of English on the Indian subcontinent; the current popularity of South Asian Anglophone literature; the relation of South Asian literature written in English to literature written in other South Asian languages.  WR, HU

*HUMS 276a / RUSS 250a, Masterpieces of Russian Literature I  Molly Brunson
Introduction to major texts of the nineteenth-century Russian literary tradition. Works by Pushkin, Gogol, Lermontov, Turgenev, Dostoevsky, Tolstoy, and Chekhov examined in their social and historical contexts. Emphasis on the authors’ use of genre, language, and literary devices to explore pressing questions posed by Russian modernity. Readings and discussion in English.  HU  Tr

HUMS 285b / HIST 237b / RSEE 390b / RUSS 241b, Russian Culture: The Modern Age  John MacKay and Paul Bushkovitch
An interdisciplinary exploration of Russian cultural history, focusing on literature, art, religion, social and political thought, and film. Conceptions of Russian nationhood; the myths of St. Petersburg; dissent and persecution; the role of social and cultural elites; attitudes toward the common people; conflicting appeals of rationality, spirituality, and idealism; the politicization of personal life; the impact of the Bolshevik Revolution and its aftermath.  HU

*HUMS 288a / ENGL 350a / WGSS 408a, Queer Mythologies  Sam See
The use of mythology and mythopoeia (myth-making) by twentieth-century British and American writers to develop queer literary and historical communities. Texts include classical, biblical, Yorùbá, and Aztec myths as background for readings in modernist and postmodernist literature. Authors include Sigmund Freud, Hilda Doolittle, Jeanette Winterson, Tony Kushner, and Tarell Alvin McCraney.  WR, HU

*HUMS 295a / ENGL 353a / LITR 463a, Medieval Celtic Literature  David Gabriel
Major texts of Celtic literature, focusing on works from the birth of vernacular literature in the Middle Ages to the early modern period. Cultural, historical, and literary issues surrounding works in the Irish and Welsh languages; literary culture in Breton, Cornish, Scottish Gaelic, and Manx. Genres include lyric and bardic poetry, heroic and religious narrative, and early Arthurian works. Readings in English translation; no knowledge of Celtic languages assumed.  HU  Tr

*HUMS 297a / ITAL 305a / LITR 337a, Italian Food and Literature  Risa Sodi
The intersection of food and literature in Italy from the Middle Ages and the Renaissance (Dante, Boccaccio, and the earliest cookbooks) to the modern age (the futurists, Calvino, and others). Discussion of foodways, or how food is tied to religions, holidays, gender roles and identities, and domestic economies. Consideration of film.  HU  Tr
III. Subjects of Instruction

Intellectual History

*HUMS 300b, Oratory in Statecraft  Charles Hill
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. 

HUMS 302a / PLSC 290a / SOCY 151a, Foundations of Modern Social Theory  Emily Erikson
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, Kant, Adam Smith, Marx, Freud, Peirce, Weber, and Durkheim.

*HUMS 304b / PHIL 460b, Theories of Punishment  David Goldman
The nature, function, and justification of punishment as understood by thinkers such as Plato, Bentham, and Hegel. The significance of criminal wrongdoing to which punishment is a response; the social roles that punishment might or does serve; relations between political authority and the justification of criminal punishment; specific practices, such as the lex talionis and capital punishment; the twentieth-century debate between utilitarians and retributionists.

*HUMS 305b / EALL 308bG / PHIL 410b, Sages of the Ancient World  Michael Hunter
Comparative survey of ancient discourses about wisdom from China, India, the Near East, Egypt, Greece, and Rome. Topics include teaching, scheming, and dying.

*HUMS 308b, Philosophical Dialogue from Socrates to the Present  Mark Bauer
Exploration of the philosophical dialogue and its close relatives since Plato. Marginalization and adaption of the dialogue form after the Enlightenment. Questions of reality, belief, and knowledge; politics, beauty, and how to live. Radio, film, and new media forms of dialogue. Readings from Plato to Iris Murdoch, Galileo to Giulio Tononi.

*HUMS 310a, Aristotelian Statecraft  Charles Hill
Connections between working practices and governance from Aristotle to Aquinas to Arendt. Statecraft as a practical art to be understood and informed by the structures and methods of agriculture, navigation, fishing, hunting, cooking, mountaineering, flying, athletics, and shipbuilding. Ways in which actions produce ideas transferable to such matters of statecraft as law and diplomacy.

HUMS 312b / PLSC 318bG, Lincoln’s Statecraft and Rhetoric  Steven Smith
Close reading of major speeches and letters by Abraham Lincoln, with a focus on his views concerning slavery, equality, and race in American society. The relation of words to deeds in Lincoln’s practice of statecraft; his place in the history and theory of statesmanship. The emergence of Lincoln’s thought from an engagement with views of the American founders; ways in which his vision of American democracy both drew upon and transformed the founders’ vision.
*HUMS 313a / HIST 239Ja / PHIL 421a / PLSC 317a, John Locke in Historical Context
Steven Pincus
Locke’s thinking about political resistance, religious toleration, and political economy examined in light of the writings and activities of his contemporaries. Introduction to methodological questions in the history of political thought. WR, HU

*HUMS 314b / HIST 472Jb, Historical Method
Valerie Hansen
Exploration of writings by historians whose main goal was to explain how their particular world was taking shape. Readings include works by Herodotus (Greece), Polybius (Rome), Sima Qian (China), al-Tabari (the Islamic world), and Marx and Weber (Europe). Examination of different historical methods, including the evaluation of primary and secondary sources. How to organize disconnected bits of evidence into persuasive narratives. Priority to sophomores. HU RP

*HUMS 315b, The Making of Character
Norma Thompson
Human nature and its plasticity explored through literature and philosophy. The level of rational control humans can exert over their own character formation; the extent to which character depends on upbringing and education; possibilities for improvement or radical change; the relation of individual and national character formations. HU

*HUMS 317a / HIST 159Ja / HSHM 459a, Spies, Secrets, and Science
Paola Bertucci
The relationship between secrecy, intellectual property, and science from the Middle Ages to the Cold War. Topics include alchemy and esoteric knowledge; the Manhattan Project and other secret scientific projects run by the state; the history of patents and copyright laws; and scientists as spies. WR, HU

*HUMS 321a / CLCV 406aG, The Classics and Modern Theory
Joshua Billings

HUMS 323b / AMST 176b / EVST 206b / HIST 144b / HSHM 206b, Science and Technology in the United States
Daniel Kevles
The development of science and technology in American society from the colonial period through the late twentieth century. The rise of the United States to a world-class scientific and technological power; the American scientific community and the tensions it has faced in a democratic society; the role of science and technology in exploration, agriculture, industry, national defense, religion, culture, and social change. HU

*HUMS 324a / LITR 422a, Death in Philosophy and Literature
Martin Hägglund
A study of major works in the philosophical and literary tradition that address the problem of death, from Plato and Epicurus to Montaigne, Shakespeare, Rousseau, Nietzsche, Freud, Borges, and de Beauvoir. Topics include the conceptual definition of death, the psychological fear of death, the nature of care, the notion of loss, the dream of immortality, and the problem of mourning. HU

*HUMS 326b / CLCV 237b, Socrates
Joshua Billings
The figure of Socrates from ancient Athens to the present. The question of the historical Socrates and appropriations by Plato and later philosophers. Socratic themes of
ignorance, irony, writing, and the state. Readings from works by Aristophanes, Xenophon, Plato, Cicero, Ficino, Hegel, Kierkegaard, Nietzsche, and Derrida. HU

*HUMS 327a / RLST 206a, Secularism from the Enlightenment to the Present
Eliahu Stern
The historical construction of secularism from the eighteenth century to the twentieth. Attention to recent scholarship on the formation of secular ideologies and their effect on conceptions of time, space, and knowledge. Readings include works by Jose Casanova, Reinhart Koselleck, Charles Taylor, and Talal Asad. HU

*HUMS 329a / PHIL 456a / PLSC 296a, Contemporary Theory: Berlin, Oakeshott, and Strauss
Steven Smith
Close reading of works by three major figures in twentieth-century political philosophy—Isaiah Berlin, Michael Oakeshott, and Leo Strauss. The authors’ critiques of social science, and their views on the Enlightenment and on the role of the university in a free society. SO

HUMS 330b / GMST 212b / PHIL 261b, Realism, Idealism, and Romanticism
Paul Franks
Investigation of the possibility of individual agency and absolute reason in modernity. Introduction to figures from classical German philosophy such as Kant, Goethe, Mendelssohn, Jacobi, Fichte, Schelling, Schlegel, and Hegel. Themes include realism, idealism, romanticism, skepticism, nihilism, freedom, individuality, systematicity, and romantic irony. HU

*HUMS 332b / GMAN 302b / RLST 312b, Faith and Knowledge in Hegel and Derrida
Paul North
Examination of the frequently opposed human capacities of faith and knowledge through close reading of essays by Hegel and Derrida. Differences between conceptualizations of the two concepts and of human capacities at these two points in the history of philosophy. Some attention to contemporary background materials and to literary texts by Hölderlin and Kafka that offer strong counterpoints to the philosophical accounts. Discussion in English; readings in German or English. HU TR

HUMS 333b / PHIL 208b, Four Condemnations: Philosophy and Religion in Conflict
Karsten Harries
An examination of four famous condemnations: the Condemnation of 1277; the condemnation of Meister Eckhart in 1328; the condemnation and execution of Giordano Bruno in 1600; and the condemnation of Galileo Galilei in 1633. Demonstration that the issue in each case was the shape and legitimacy of the modern age. HU

*HUMS 334b, Shakespeare’s Political Plays
David Bromwich
Reading and interpretation of selected histories and tragedies from Richard II to Coriolanus. Prerequisite: a previous course in Shakespeare. WR, HU

*HUMS 335b / SOCY 202b, Cultural Sociology
Jeffrey Alexander
Collective meanings that make a profound difference in modern societies; that are symbolic but also sensual, emotional, and moral; that inspire ritual as well as creative performance and strategy. Examination of codes, narratives, icons, and metaphors to analyze how cultural structures energize capitalism, direct politics, create institutions, inspire social movements, and motivate war and peace. SO
HUMS 348a / HIST 280a / RLST 160a, The Catholic Intellectual Tradition
Carlos Eire and staff
Introductory survey of the interaction between Catholicism and Western culture from the first century to the present, with a focus on pivotal moments and crucial developments that defined both traditions. Key beliefs, rites, and customs of the Roman Catholic Church, and the ways in which they have found expression; interaction between Catholics and the institution of the Church; Catholicism in its cultural and sociopolitical matrices. Close reading of primary sources.  HU

*HUMS 349a / JDST 110a / RLST 145a, The Bible  Christine Hayes
The writings common to both Jewish and Christian scripture examined as diverse and often conflicting expressions of the religious life and thought of ancient Israel. The works' cultural and historical setting in the ancient Near East; the interpretive history of selected passages influential in Western culture. Introduction to a wide range of critical and literary approaches to biblical studies. Students view course lectures, which survey the entire Bible, on line; class time focuses on specific biblical passages and their subsequent interpretation in Jewish and Christian culture.  HU

*HUMS 354a / ENGL 276a, Ways of Knowing in Nineteenth-Century American Literature  Pamela Schirmeister
An examination of the ways in which nineteenth-century literary texts embody and express contested philosophical, epistemological, and historical claims about the developing American nation. Works by Brockden Brown, Poe, Emerson, Hawthorne, Melville, Thoreau, Henry James, and William James, with some attention to concurrent historical materials such as the Federalist Papers, the Journals of Lewis and Clark, and political speeches.  WR, HU

*HUMS 356b / HIST 257b / HSHM 460b, Art, Technology, and Science from Antiquity to 1800  Paola Bertucci
Changes in the notions of art and science in the West through 1800. The association of the term "art" with the fine arts as a legacy of the Enlightenment; implications of this semantic shift for early modern European culture. Visual and material cultures of science, including anatomical and natural history illustrations, curiosity cabinets and Wunderkammern, microscopy and astronomy, Greek and Roman military technology and warfare, and Leonardo and the engineers of the Renaissance. Use of rare books, manuscripts, and historical scientific instruments from library and museum collections at Yale.  WR, HU

*HUMS 362b / FREN 397b / LITR 339b, French Theory from Sartre to Derrida  Yue Zhuo
A survey of French thought from the end of World War II to the present, from existentialism and Marxism to structuralism and poststructuralism. Authors include Sartre, de Beauvoir, Barthes, Lévi-Strauss, Foucault, Bataille, Deleuze, Kofman, and Derrida. Readings and discussion in English.  HU  Tr

HUMS 381b / HIST 211b, The Birth of Europe, 1000–1500  Anders Winroth
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.  HU
**HUMS 382a / EAST 221a, Chinese Political Thought**  Loubna Amine
Classical works of Chinese political thought, their historical importance for the Chinese tradition, and their use in current academic and political debates. Readings from Confucianism, Mohism, and Taoism, as well as writings on statecraft and the art of war. Contemporary debates on the compatibility of Confucianism and democracy and on the East Asian challenge to the idea of human rights.  HU

**HUMS 407a / CPSC 150a, Computer Science and the Modern Intellectual Agenda**  David Gelernter
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.  WR, HU

**HUMS 408b / CPSC 151b, The Graphical User Interface**  David Gelernter
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.  WR

**The West and Its Encounters**

**HUMS 410a / GMAN 388aG / GMST 369aG / LITR 327a / RLST 322aG, Translating the Sacred**  Hindy Najman and Kirk Wettters
Historical dynamics of cultural transfer, translation, reinterpretation of religious revelations, and foundational narratives from antiquity to modernity. Readings from ancient scripture, modern literary works, and theoretical reflections.  HU

**HUMS 411b, Life Worth Living**  Miroslav Volf and Ryan McAnnally-Linz
Comparative exploration of the shape of the life advocated by several of the world’s normative traditions, both religious and nonreligious. Concrete instantiations of these traditions explored through contemporary exemplars drawn from outside the professional religious or philosophical spheres. Readings from the founding texts of Buddhism, Judaism, Christianity, Islam, Marxism, and utilitarianism.  HU

**HUMS 412a / HIST 228Ja, Venice and the Mediterranean, 1400–1700**  Francesca Trivellato
Major issues in the history of Venice and the Mediterranean in the early modern period. Topics include the organization of trade, relations between East and West, slavery, Venetian politics and society, women and gender roles, ethnic and religious minorities, foreign travelers, and the seeds of Orientalism.  WR, HU

**HUMS 413b / HIST 282b / RLST 269b, Golden Age Spain**  Carlos Eire
Survey of Spanish history, culture, and religion from 1500 to 1700. Emphasis on cultural history and the integration of various approaches to the past.  HU

**HUMS 414a / FILM 421a / MGRK 213a / WGSS 261a, Cinema of Migration**  George Syrimis
Cinematic representations of the migrant experience in the past thirty years, with some emphasis on the post–Cold War period. Focus on southeastern Europe and its migrant
populations. Topics include identity, gender, sexual exploitation and violence, and nationalism and ethnicity. **WR, HU**  **Tr**

*HUMS 418a / EALL 241a / RLST 130a / SAST 367a, Traditional Literature of India, China, and Japan*  Koichi Shinozawa and Phyllis Granoff
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. **HU**  **Tr**

*HUMS 419a / ENGL 343a / ER&M 353a / LITR 268a / SAST 371a, Postcolonial Studies*  Shital Pravinchandra
Introduction to key writers, literary works, concepts, and issues in the field of postcolonial studies. Definitions of the term "postcolonial," including to whom it can be applied; the cultural, psychological, and political consequences of colonization; opinions of non-Western writers about current cultural and political climates and the historical processes that shaped them. **HU**

**HUMS 420a / LITR 178a / MMES 201a / NELC 156a, Classics of the Arabic-Islamic World**  Beatrice Gruendl
Survey of the literary tradition of the Arabic-Islamic world (West Asia, North Africa, and Muslim Spain), a textual conversation among diverse authors from late antiquity to the Mamluk period. 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. **HU**  **Tr**

*HUMS 425b / LITR 465b, Travel and Quests in Early World Literature*  David Gabriel
Journeys of all types—Viking voyage of discovery, saintly pilgrimage, Zen journey to enlightenment, knightly quest—that speak to the core of the human experience. Literature of travel, journeys, and quests in the ancient and medieval world; focus on the motivation behind travel and on the repercussions of translating such journeys into literary form. **HU**

**HUMS 426a / HIST 314a, Early Sources in Chinese Intellectual Traditions**  Annping Chin
Readings in translation of the basic texts of Confucianism, Taoism, and legalism. Examination of what the early Chinese thought about the world and themselves, how they articulated what they thought and organized what they knew, and how they explored the irrational and issues such as fairness and moral appropriateness. **HU**

*HUMS 427b / JDST 316b / LITR 348b, The Practice of Literary Translation*  Peter Cole
Intensive readings in the history and theory of translation paired with practice in translating. Case studies from ancient languages (the Bible, Greek and Latin classics), medieval languages (classical Arabic literature), and modern languages (poetic texts). **HU**

*HUMS 431a / EALL 206a / LITR 175a, Japan’s Classics in Text and Image*  Edward Kamens
Fiction, poetry, and plays from the eighth century through the nineteenth, studied alongside related works of art and illustrated books housed in collections at Yale. An
introduction to the Japanese classics as well as an example of interdisciplinary study in
the humanities. No knowledge of Japanese required. Formerly JAPN 200. WR, HU Tr

*HUMS 438b / NELC 101b, Origins of Western Civilization: The Near East from
Alexander 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. HU

HUMS 440a / MMES 102a / NELC 102a, Introduction to the Middle East
Benjamin Foster
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. HU

*HUMS 442b / CLCV 312b / NELC 315b, Translating the Hero  Kathryn Slanski
Relationships between masterworks of ancient Near Eastern and Greek literature
and their reworkings by Western authors and artists. Traditional notions of heroism,
such as the righteous sufferer, the epic hero, and the tragic hero. Adaptation and
transformation of ancient heroic themes in modern literature and film. Manipulation
of ancient sources in the retelling of stories and themes; the mechanics of transmission
and borrowing; questions of archetype. HU

*HUMS 444b, The City of Rome  Virginia Jewiss
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. HU

*HUMS 445a / CLCV 256a, Ancient Athenian Civilization  Emily Greenwood
Introduction to the city of ancient Athens and its political institutions, culture, society,
and history from 510 to 323 B.C. Topics include politics, law, economics, intellectual
culture, drama and performance, sex and reproduction, immigration, warfare, and the
environment. The creation of political and cultural forms that continue to influence
contemporary debates. HU

HUMS 446a / CLCV 206a / HIST 217a, The Roman Republic  Andrew Johnston
The origins, development, and expansion of Rome from the earliest times to the deaths
of Caesar and Cicero. Cultural identity and interaction; slavery, class, and the family;
politics, rhetoric, and propaganda; religion; imperialism; monumentality and memory;
and the perception and writing of history. Application of literary and archaeological
evidence. HU

*HUMS 447aG, Sacred Architecture and the Contemporary City  Karla Britton
Study of sacred architecture in urban contexts from World War II to the present. Ways
in which the sacred has been given expression in material form in complex urban
societies. The religious building as a representation of cultural heritage, challenges of
faith, and civic space in a pluralistic world. Case studies from the United States, the
Middle East, Japan, Europe, and Latin America.
*HUMS 449b / RLST 190b / SAST 466b, Narrative Space in Asian Religions
Phyllis Granoff and Koichi Shinohara
The many spaces of Asian religious practice, good and bad, real and imaginary, explored through readings from Indian, Chinese, and Japanese texts in translation.  HU

*HUMS 450a / ARCH 271a / HSAR 266a / MMES 126a / SAST 266a, Introduction to Islamic Architecture  Kishwar Rizvi
Introduction to the architecture of the Islamic world from the seventh century to the present, encompassing regions of Asia, North Africa, and Europe. A variety of sources and media, from architecture to urbanism and from travelogues to paintings, are used in an attempt to understand the diversity and richness of Islamic architecture. Field trip to the Metropolitan Museum of Art in New York.  HU

HUMS 451b / HSAR 354b, East-West Encounters in Chinese Art  Youn-mi Kim
Cultural exchanges between Europe, North America, and Asia from the seventeenth to twenty-first centuries, with a focus on Chinese arts and crafts. The influence of Chinese porcelain, decorative art, and architecture on interior and garden design in Europe; the role of Japanese woodblock prints in European and American art; Chinese artists, the Western oil painting tradition, and the tension between tradition and modernization; contemporary works that evoke the past.  HU

*HUMS 452a / FILM 409a / LITR 306a / RSEE 327a / RUSS 327a, The Danube in History and Culture  Marijeta Bozovic
The Danube River in the film, art, and literature of various Danubian cultural traditions, from the late nineteenth century to the present. Geography and history of the region that includes the river’s shores and watershed; physical, historical, and metaphorical uses of the Danube; the region as a contested multilingual, multicultural, and multinational space, and as a quintessential site of cross-cultural engagement.  HU

The Franke Seminar

*HUMS 467a / ENGL 430a / GMAN 277a / GMST 294a / LITR 331a, Nietzsche and Emerson  Paul North and Paul Grimstad
Comparative introduction to the central writings of Nietzsche and Emerson, with reference to the historical relationship between the two men. Overlap and antagonism on themes such as power, fate, nature, language, and writing; concepts that underwent radical shifts in each thinker’s work; ways in which philosophical style and ideas of style shaped and complicated the writers’ thinking.  HU

The Shulman Seminar

*HUMS 464b / GMST 222b, The Question of Evidence  Rüdiger Campe
Ideas of what constitutes evidence and their role in shaping difference, strife, and parallels between science and humanities in Western culture. Key texts and authors in the debate, from ancient rhetoric to current philosophy and history of science. Evidence as a concept and a practice; forms of evidence, including persuasion, inference, conviction, and visualization; contemporary debates on definitive arguments.  HU
Individual Research and Senior Essay Courses

*HUMS 470a and HUMS 471b, Special Studies in the Humanities

Norma Thompson

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

Staff

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 15, 2013, if the essay is to be submitted during the spring term, by April 25, 2014, for yearlong or fall-term essays. A rough draft of the essay is due at noon on March 24, 2014, for spring-term essays or on November 1, 2013, for fall-term essays. The final essay is due at noon on April 11, 2014, for spring-term essays or on December 6, 2013, for fall-term essays; late essays will be penalized by a lower grade. RP

Italian

Director of undergraduate studies: Christiana Purdy Moudarres, 82–90 Wall St., 432-8299, christianapurdy@yale.edu, italian.yale.edu

FACULTY OF THE DEPARTMENT OF ITALIAN

Professors  Millicent Marcus, Giuseppe Mazzotta (Chair)

Assistant Professors  Angela Capodivacca, Christiana Purdy Moudaress

Senior Lectors II  Risa Sodi

Senior Lectors  Michael Farina, Monica Georgeo, Anna Iacovella

The major in Italian explores Italy’s vital role in the formation of Western thought and culture. The core language courses bring students to a high level of aural, spoken, and written proficiency, provide a solid literary and historical background in the language, and prepare students for study in Italy. Other offerings build on the core courses to explore Italian literature, film, history, culture, and art. The Italian major is of particular relevance to the fields of art, economics, film studies, history, history of art, international relations, linguistics, literature, philosophy, and theology.

Prerequisite  Candidates for the major should have completed a course in Italian at the level of 130 (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.

Requirements of the major  The major normally consists of eleven term courses beyond the prerequisite. 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 courses in the department must include either ITAL 150 or 151
and a course on Dante’s *Divine Comedy* (ITAL 310 or equivalent), as well as four courses covering different periods in Italian literature: one in the Middle Ages (in addition to the course 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 491. 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 under Special Divisional Majors.

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 information about the Year or Term Abroad program, see under "Special Arrangements" in the Academic Regulations.

**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; see the Calendar for the Opening Days of College and the departmental Web site (http://italian.yale.edu/placement-test) for details.

REQUIREMENTS OF THE MAJOR

**Prerequisite**  ITAL 130 or equivalent

**Number of courses**  11 term courses beyond prereq (incl senior req)

**Specific courses required**  ITAL 150 or 151; ITAL 310 or equivalent

**Distribution of courses**  8 term courses in Italian dept numbered 140 or above, incl 1 in Middle Ages (in addition to ITAL 310), 1 in Renaissance, and 2 in Italian lit after 1600, at least 5 of these conducted in Italian; 2 courses in other langs or lits, hist of art, hist, or phil approved by DUS

**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 491) and oral interview

### Group A Courses

**ITAL 110a, Elementary Italian I**  Staff
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 120.  L1 1½ Course cr

**ITAL 120a or b, Elementary Italian II**  Risa Sodi and staff
Continuation of ITAL 110.  L2 1½ Course cr

**ITAL 125b, Intensive Elementary Italian**  Risa Sodi and Michael Farina
An accelerated beginning course in Italian that covers in one term the material taught in ITAL 110 and 120. Admits to ITAL 130 or 145. Enrollment limited to 15.  L1, L2 2 Course cr

**ITAL 130a, Intermediate Italian I**  Risa Sodi and staff
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 140. Conducted in Italian. Prerequisite: ITAL 120 or equivalent.  L3 1½ Course cr

**ITAL 140b, Intermediate Italian II**  Risa Sodi and staff
Continuation of ITAL 130. 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.  L4

**ITAL 145a or b, Intensive Intermediate Italian**  Risa Sodi and staff
An accelerated intermediate course in Italian that covers in one term the material taught in ITAL 130 and 140. 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 120 or 125.  L3, L4 2 Course cr
Group B Courses

Group B courses have readings in Italian and are usually conducted in Italian. They are open to students who have passed ITAL 140 or 145 and to others with the consent of the director of undergraduate studies and the instructor.

**ITAL 150a, Advanced Composition and Conversation**  Risa Sodi and staff
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.  1.5

*ITAL 151b, Advanced Italian Workshop: Writing and Translation**  Michael Farina
Development of advanced writing and speaking skills. Close readings and extensive practice writing in a variety of genres, which may include autobiography, biography, joke, 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.  1.5

*ITAL 153b, Theater Practicum: Pirandello ** Monica George
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.  1.5, HU

*ITAL 271b, Science and Creation in Italy, 1870–1929 ** Christiana Purdy
The cultural legacy of Italy’s secular interregnum, from the pope’s loss of temporal power over Rome to Mussolini’s truce with the Vatican. Focus on the subjugation of the papacy amidst the rise of evolutionary thought, and alternatives to the Christian story of creation that this confluence inspired. The fascination in Italian culture of the period with the origin of the human species. Readings in Italian and English.

*ITAL 470a and ITAL 471b, Special Studies in Italian Literature ** Millicent Marcus and Christiana Purdy
A series of tutorials to direct students in special interests and requirements. Students meet regularly with a faculty member.

*ITAL 491a or b, The Senior Essay ** Millicent Marcus and staff
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 305a / HUMS 297a / LITR 337a, Italian Food and Literature ** Risa Sodi
The intersection of food and literature in Italy from the Middle Ages and the Renaissance (Dante, Boccaccio, and the earliest cookbooks) to the modern age (the futurists, Calvino, and others). Discussion of foodways, or how food is tied to religions,
holidays, gender roles and identities, and domestic economies. Consideration of film.

**ITAL 310a / LITR 183a, Dante in Translation**  Giuseppe Mazzotta
and Christiana Purdy
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.  **HU  Tr**

**ITAL 314b, Memory from Antiquity to Dante**  Giuseppe Mazzotta
and Eleonora Buonocore
The concept of memory as it was used in philosophical and literary texts from the
Greco-Roman period to Dante. Medieval encyclopedic thought as an art of memory;
the metaphor of memory in the formation of Italian vernacular literature; relations
between memory and forgetfulness; memory as the basis for literature and for
knowledge in general.  **HU  Tr**

**ITAL 317b, Women in the Middle Ages**  Christiana Purdy
Medieval understandings of womanhood examined through analysis of writings
by and/or about women, from antiquity through the Middle Ages. Introduction to
the premodern Western canon and assessment of the role that women played in its
construction.  **Tr**

**ITAL 324b, Italian American Literature and Film**  Millicent Marcus
and Taylor Papallo
An exploration of the lives of Italian Americans as depicted in a series of literary texts
and films of the twentieth and twenty-first centuries. Topics include questions of
identity, multiculturalism, stereotypes, the experiences of Italian American women, and
the complex relationship between new world and motherland.  **HU  Tr**

**ITAL 360b / HUMS 271b / JDST 288b, Primo Levi and Holocaust Writing**  Risa Sodi
and staff
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
Mauensig, and Oliver Sacks.  **WR, HU  Tr**

**Judaic Studies**

Director of undergraduate studies: Eliyahu Stern, 451 College St., 432-0841,
eliyahu.stern@yale.edu; judaicstudies.yale.edu

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

**Professors**  Leslie Brisman (*English*), Steven Fraade (*Chair, Religious Studies*), Paul
Franks (*Philosophy*), Christine Hayes (*Religious Studies*), Aharon Maman (*Religious
Studies* (*Visiting*), Ivan Marcus (*History, Religious Studies*), Michael Silber (*History
(*Visiting*), Yuval Sinai (*Religious Studies, Law School* (*Visiting*), Steven Smith (*Political
Science, Philosophy), Laura Wexler (Women’s, Gender, & Sexuality Studies, American Studies), Robert Wilson (Religious Studies)

**Associate Professors** Hindy Najman (Religious Studies), Marci Shore (History)

**Assistant Professors** Joel Baden (Divinity School), Eliyahu Stern (Religious Studies, History)

**Senior Lecturer** Peter Cole (Comparative Literature)

**Lecturers** Gabriel Citron (Philosophy), Yishai Kiel (Religious Studies), Eve Krakowski (Religious Studies), Margaret Olin (Divinity School, History of Art, Religious Studies)

**Senior Lectors** Ayala Dvoretzky

**Senior Lectors** Shiri Goren, Dina Roginsky

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 century 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** Prerequisite or corequisite to the major in Judaic Studies are two terms of elementary modern Hebrew (HEBR 110, 120) or the equivalent. The major requires thirteen term courses beyond the prerequisites, including a Hebrew language and literature requirement, a set of core requirements, two areas of concentration, and the senior requirement.

**Hebrew language and literature** Each student majoring in Judaic Studies must attain the equivalent of the second year of modern Hebrew (HEBR 130, 140). In addition, each student must take two term courses in which Hebrew literature is studied in Hebrew, for which HEBR 130 and 140 (but not HEBR 110 or 120) may count. Students who fulfill the Hebrew language requirement by passing an examination rather than by enrolling in HEBR 130 and 140 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 requirement.

Core requirements Each student must elect at least three from the following: (1) a course in Hebrew Bible; (2) a course in rabbinic literature; (3) JDST 200, History of the Jews and Their Diasporas to Early Modern Times; (4) a course in modern Jewish history or thought; (5) a 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 the 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 491 and 492). 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.

Courses in the Graduate School Qualified students may elect 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 toward the degree 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" under "Special Arrangements" in the Academic Regulations.) A list of relevant graduate and professional school courses is available from the director of undergraduate studies.

REQUIREMENTS OF THE MAJOR

Prerequisites HEBR 110, 120 or equivalents
Number of courses 13 term courses (incl senior req)
Specific courses required  HEBR 130 and 140, or two courses in Hebrew lit as specified
Distribution of courses  3 courses from (1) Hebrew Bible, (2) rabbinic lit, (3) JDST 200, (4) modern Jewish history or thought, (5) 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 130, 140 or equivalents for students with an area of concentration in Hebrew Bible
Senior requirement  Two-term senior essay (JDST 491, 492), or one-term senior essay and addtl sem

Core Course

JDST 200aG / ER&M 219a / HIST 219aG / MMES 149a / RLST 148aG, History of the Jews and Their Diasporas to Early Modern Times  Ivan Marcus
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 European or non-Western distributional credit within the History major, upon application to the director of undergraduate studies.  HU  RP

Special Project and Senior Essay Courses

*JDST 471a or b, Individual Tutorial  Elyahu Stern
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.

*JDST 491a and JDST 492b, The Senior Essay  Elyahu Stern
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

*JDST 110a / HUMS 349a / RLST 145a, The Bible  Christine Hayes
The writings common to both Jewish and Christian scripture examined as diverse and often conflicting expressions of the religious life and thought of ancient Israel. The works’ cultural and historical setting in the ancient Near East; the interpretive history of selected passages influential in Western culture. Introduction to a wide range of critical and literary approaches to biblical studies. Students view course lectures, which survey the entire Bible, on line; class time focuses on specific biblical passages and their subsequent interpretation in Jewish and Christian culture.  HU
CLASSICAL PERIOD

*JDST 235bG / RLST 147bG, Introduction to Judaism in the Ancient World
Steven Fraade
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 sacrificial cult; interpretations of scriptures; law and life; the rabbi; the synagogue; faith in reason; Sabbath and festivals; history and its redemption. No prior background in Jewish history assumed. HU

*JDST 239aG / RLST 255aG, Paths of Purity in Ancient Judaism
Yishai Kiel
The cultural and ideological underpinnings and the social and religious functions of purity systems in ancient Judaism, from biblical systems and their ancient Near Eastern context, through the purity debates of the Second Temple period, to rabbinic and early Christian discussions. The distinct religious realms associated with purity, including ritual purity, moral purity, holiness, and eating taboos; insights from recent scholarship in the field. HU

*JDST 260a / RLST 400a, The Dead Sea Scrolls and the History of Ancient Judaism: The Damascus Document
Steven Fraade
Study of the Damascus Document, one of the most important of the Dead Sea Scrolls. Attention to the document’s 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. L5, HU

*JDST 302bG / RLST 405bG, Mishnah Seminar: Tractate Rosh HaShanah
Steven Fraade
Close study of a tractate of the Mishnah, the earliest digest of rabbinic law, and its accompanying Tosefta, dealing with rules for the establishment of New Moons, the intercalation of the lunar calendar, the testimony and examination of witnesses, the festival of the New Year (Rosh HaShanah), and the sounding of the Shofar. Dual attention to the historical significance of the legal and ritual institutions represented and to the cultural significance of the rhetoric of that representation, including the interplay of law and narrative. Prerequisite: reading fluency in ancient Hebrew. L5, HU

*JDST 414bG / RLST 425bG, Talmudic Narratives in Context
Yishai Kiel
Critical study of Talmudic narrative through analysis of selected stories from the Babylonian Talmud. Historical, literary, cultural, philological, comparative, and theological perspectives on the narratives. The role of the Babylonian redactors and storytellers and the significance of their cultural context in the formation of Talmudic stories; implications of the narratives for historical reconstructions; tools of theoretical and methodological analysis used in the field of Talmudic studies. Prerequisite: HEBR 140 or equivalent. HU

MEDIEVAL AND EARLY MODERN PERIODS

JDST 272a / PHIL 220a, Medieval Philosophy
Paul Franks and Stephen Ogden
Introduction to central problems and themes in medieval philosophy. The confrontation between Greek philosophy and the Abrahamic or scriptural religions of Judaism, Christianity, and Islam; conceptions in metaphysics, epistemology,
philosophy of mind, and ethics to which the encounter gave rise. Philosophers include Augustine, Saadiah, al-Farabi, al-Ghazali, Maimonides, ibn-Rushd, Aquinas, Crescas, and Ockham.  

**JDST 275b / PHIL 213b, The Philosophy of Maimonides**  
Gabriel Citron  
Introduction to the thought of the medieval Jewish philosopher Moses Maimonides. His radically nonanthropomorphic conception of God; his resultant understanding of the nature of man and the ends of life; ways in which his views on ethics, religion, and politics are structured to support his philosophical system. Recommended preparation: an introductory course in philosophy or Judaic studies.  

**JDST 312b / HUMS 249b, Hebrew Poetry in Muslim Spain**  
Peter Cole  
Introduction to the Golden Age of Hebrew poetry in Muslim Andalusia from the tenth century through the twelfth. Major figures of the period and the cultural and philosophical questions they confronted. The Judeo-Arabic social context in which the poetry emerged; critical issues pertaining to the study and transmission of this literature. Readings from the works of several poets. Readings in translation. Additional readings in Hebrew available.  

**MODERN PERIOD**

**JDST 278b / HIST 258Jb / RLST 227b, Jewish Citizenship in Modern Europe**  
Eliyahu Stern  
Seventeenth- to twentieth-century responses to Jewish citizenship in modern European states. Religious law; modern Jewish identity; Zionism; Judaism as a religion vs. a nation; the place of minorities in contemporary Europe.  

**JDST 288b / HUMS 271b / ITAL 360b, Primo Levi and Holocaust Writing**  
Risa Sodi and staff  
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.  

**JDST 293b / HIST 248b / RLST 214b, Introduction to Modern Jewish Thought**  
Eliyahu Stern  
An overview of Jewish philosophical trends, movements, and thinkers from the seventeenth century to the twenty-first. Topics include enlightenment, historicism, socialism, secularism, religious radicalism, and Zionism.  

**JDST 306a / MMES 157a / NELC 157a, Israeli Narratives**  
Shiri Goren  
Close reading of major Israeli novels in translation with attention to how their themes and forms relate to the Israeli condition. Theories of war and peace, migration, nationalism, and gender. Authors include Yehoshua, Grossman, Matalon, Castel-Bloom, and Kashua. No knowledge of Hebrew required.  

**JDST 323b / MMES 160b / NELC 155b, State and Society in Israel**  
Dina Roginsky  
The interplay between the state and society in Israel. Current Israeli discourse on controversial issues such as civil rights in a Jewish-democratic state, Jewish-Arab relations, and right and left politics. Issues of orthodoxy, military service, globalization,
and multiculturalism in Israel. Sociopolitical changes that have taken place in Israel since the establishment of the state in 1948 and that have led to the reshaping of Israeli Zionist ideology. HU

*JDST 330bG / MMES 350b / RLST 330bG, Multiculturalism and Jewish Law in Israel
Yuval Sinai
Introduction to the history of pluralism and multicultural models in the Jewish legal tradition. The role of Jewish law in contemporary Israeli society; tensions between Jewish law and secular law; possible reconciliation of these tensions in light of both Jewish legal tradition and the realities of the modern Jewish and democratic state of Israel. HU

*JDST 331aG / MMES 351a / RLST 331aG, Jewish Law in the State of Israel
Yuval Sinai
A historical study of Jewish law as the basis for modern Israeli law. Examination of cases in Israeli secular civil courts and in rabbinical courts. Attention to the wide range of subjects in which Jewish law has been utilized: public law, war and peace, criminal law, torts and biomedical law, morality, employment, judicial processes of procedure and evidence, and civil rights. HU

*JDST 333aG / HIST 220JaG, Orthodox Jewry in Modern Times
Michael Silber
The history of Orthodox Jewry from the mid-eighteenth century to the present. Innovations introduced by the Jewish Enlightenment, and the traditional establishment's responses to them; the mainstream, neoorthodox, and ultraorthodox wings of the Reform movement; issues of identity and culture surrounding Jewish nationalism, the Zionist movement, and the emergence of the State of Israel. HU

*JDST 334bG / HIST 224JbG, Jewish Emancipation in the Modern Era
Michael Silber
The expansion of the rights of Jewish people in Europe and the United States from the late eighteenth century through the early twentieth. The influence of factors such as capitalism, citizenship, nationalism, and social and economic developments. Case studies used to compare the emancipation process in different nations and societies. HU

JDST 335a / PHIL 274a, Concepts of God in Jewish Philosophy
Gabriel Citron
Introduction to Jewish philosophy, from Philo to Maimonides and Spinoza to Levinas. Focus on different conceptions of God and their interrelations. Corporeal views of God and their culmination in pantheism and panentheism; incorporeal conceptions of God and their apotheosis in negative theology; contemporary existential understandings of God. HU

Language and Literature

*JDST 305a / HEBR 158aG, Contemporary Israeli Society in Film
Shiri Goren
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 140 or permission of instructor. L5, HU RP
*JDST 316b / HUMS 427b / LITR 348b, The Practice of Literary Translation
  Peter Cole
  Intensive readings in the history and theory of translation paired with practice in translating. Case studies from ancient languages (the Bible, Greek and Latin classics), medieval languages (classical Arabic literature), and modern languages (poetic texts).
  HU

*JDST 360a / HEBR 160a, Hebrew in a Changing World
  Dina Roginsky
  Sociological aspects of Modern Hebrew as the language is used in Israel to construct norms, expectations, and daily experiences. Readings and class discussions address changes in Israeli society and culture at large. Prerequisite: HEBR 140. 15

JDST 407b / HEBR 161b / MMES 156b, Israeli Popular Music
  Dina Roginsky
  Changes in the development of popular music in Israel explored as representations of changing Israeli society and culture. The interaction of music and cultural identity; modern popular music and social conventions; songs of commemoration and heroism; popular representation of the Holocaust; Mizrahi and Arab music; feminism, sexuality, and gender; class and musical consumption; criticism, protest, and globalization. Conducted in Hebrew. Prerequisite: HEBR 140 or equivalent. 15

*JDST 409a / HEBR 159a, Conversational Hebrew: Israeli Media
  Shiri Goren
  An advanced Hebrew course for students interested in practicing and enhancing conversational skills. Focus on listening comprehension and on various forms of discussion, including practical situations, online interactions, and content analysis. Prerequisite: HEBR 140 or permission of instructor. 15 RP

*JDST 413a / NELC 165a / RLST 411a, Biblical, Qumranic, and Targumic Aramaic
  Aharon Maman
  Survey of the historical and philological aspects of biblical, Qumranic, and Targumic Aramaic. Comparison of the dialects’ grammar and historical development; some attention to topics in comparative Semitic philology and historical linguistics; the influence of Hebrew and Aramaic on one another over time. Reading and extensive philological analysis of texts in each of the three dialects. Prerequisite: HEBR 140 or equivalent. HU

Latin American Studies

Director of undergraduate studies: Aníbal González, Rm. 226, 82–90 Wall St., 432-1149, anibal.gonzalez@yale.edu; www.yale.edu/macmillan/lais

FACULTY ASSOCIATED WITH THE PROGRAM OF LATIN AMERICAN STUDIES

Professors  Rolena Adorno (Spanish & Portuguese), Ned Blackhawk (History, American Studies), Garry Brewer (Emeritus) (School of Management), Richard Burger (Anthropology), Hazel Carby (African American Studies, American Studies), Thad Dunning (Political Science), Carlos Eire (History, Religious Studies), Eduardo Engel (Economics), Paul Freedman (History), Aníbal González (Spanish & Portuguese), Roberto González Echevarria (Spanish & Portuguese), K. David Jackson (Spanish & Portuguese), Gilbert Joseph (History), Stathis Kalyvas (Political Science), Daniel Markovits (Law), Mary Miller (History of Art), Stephen Pitti (History, American Studies), Susan Rose-
Ackerman (*Law, Political Science*), Alicia Schmidt Camacho (*American Studies*), T. Paul Schultz (*Economics*), Stuart Schwartz (*History*), Susan Stokes (*Political Science*), Robert Thompson (*History of Art*), Noël Valis (*Spanish & Portuguese*), Elisabeth Wood (*Political Science*)

**Associate Professors**  Susan Byrne (*Spanish & Portuguese*), Moira Fradinger (*Comparative Literature*), Paulo Moreira (*Spanish & Portuguese*)

**Assistant Professors**  Jafari Allen (*Anthropology, African American Studies*), Robert Bailis (*Forestry & Environmental Studies*), Sean Brotherton (*Anthropology*), Rodrigo Canales (*School of Management*), Oswaldo Chinchilla (*Anthropology*), Ana De La O (*Political Science*), Marcela Echeverri (*History*), Mariola Espinosa (*School of Medicine*), Leslie Harkema (*Spanish & Portuguese*), Paulina Ochoa Espejo (*Political Science*), Kevin Poole (*Spanish & Portuguese*)

**Senior Lectors II**  Margherita Tortora, Sonia Valle

**Senior Lectors**  Sybil Alexandrov, Marta Almeida, Pilar Asensio, Teresa Carballal, Mercedes Carreras, Ame Cividanes, Sebastián Díaz, Maripaz García, Oscar González Barreto, María Jordán, Rosamaria León, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Barbara Safille, Terry Seymour

The major in Latin American Studies is designed to further understanding of the societies and cultures of Latin America as viewed from regional and global perspectives. The Latin American Studies major builds on a foundation of language and literature, history, history of art, theater studies, humanities, and the social sciences; its faculty is drawn from many departments and professional schools of the University.

**The major**  The major in Latin American Studies is interdisciplinary. With two goals in mind – intellectual coherence and individual growth – the student proposes a course of study that must satisfy the requirements listed below. The proposed course of study must be approved by the director of undergraduate studies. Though all students choose courses in both the humanities and the social sciences, they are expected to concentrate on one or the other.

Prerequisite to the major is knowledge of the two dominant languages of the region, Spanish and Portuguese. Depending on their interests, students select one language for two years of instruction and the other for one. Other languages necessary for research may in appropriate circumstances be substituted for the second language with the consent of the director of undergraduate studies. Students are encouraged to meet the language requirements as early as possible. Courses used to satisfy the language prerequisite may not be counted toward the major.

The major itself requires twelve term courses: one introductory course approved by the director of undergraduate studies; eight courses related to Latin America from departmental offerings or from a provided list of electives; two additional electives; and the senior essay, LAST 491. The eight Latin American content courses should include courses from the following categories: two courses in the social sciences (anthropology, economics, or political science), two courses in history, two courses in Spanish American or Brazilian literatures beyond the language requirement, and one course in art, architecture, film studies, music, or theater studies. Students wishing to
count toward the major courses that do not appear in the program’s course offerings should consult with the director of undergraduate studies.

Students must enroll in three seminars or upper-level courses during their junior and senior years. Elective seminars must be approved by the director of undergraduate studies, who can provide a list of appropriate courses.

**The senior essay**  The senior essay is a research paper written usually in one term in LAST 491. 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, Latin American Studies majors may undertake field research in Latin America. Students are encouraged to apply for summer travel grants through the Council on Latin American and Iberian Studies to conduct field research for their senior thesis. The Albert Bildner Travel Prize is awarded to an outstanding junior who submits an application in Spanish or Portuguese in addition to the English application essay. Information about these and other grants is available on the Yale Student Grants & Fellowships Web site (http://studentgrants.yale.edu).

**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 and in the Council on Latin American and Iberian 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 or professional school registrar and the director of undergraduate studies.

**Study abroad**  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 courses beyond prereqs (incl senior essay)

**Distribution of courses**  1 intro course approved by DUS; 8 courses related to Latin America in specified fields; 2 electives; 3 sems or upper-level courses in junior and senior years

**Senior requirement**  Senior essay (LAST 491)

**Electives within the major**

Students wishing to count toward the major courses that do not appear on this list should consult with the director of undergraduate studies.

*AFAM 352b / AMST 438b / ER&M 291b / LITR 295b / WGSS 343b, 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. HU

*ANTH 357a, Anthropology of the Body  Sean Brotherton
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. SO
Anthropology: Sociocultural

*ANTH 427b, Topics in Medical Anthropology  Sean Brotherton
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 <114> or equivalent. SO
Anthropology: Sociocultural

*ER&M 311b / AMST 311b, Latina/o New Haven  Alicia Schmidt Camacho
Introduction to the field of Latina/o studies, with a focus on community-based research in New Haven. Training in interdisciplinary methods of social research, including oral history, interviews, archival research, cultural analysis, and social documentation. Students design collaborative research projects. SO

*ER&M 348b / AMST 404b / HIST 185Jb, Latina/o Histories  Stephen Pitti
Survey of two hundred years of Mexican American, Puerto Rican, Central American, and Cuban American history in the United States. Transnational politics; legacies of European colonialism; labor history; the rise of ethnic nationalism. WR, HU

*ER&M 422b / AMST 320b, Latino New York  Albert Laguna
The historical presence of Latinas and Latinos in New York City from the late nineteenth century to the present. Differences and similarities among Puerto Rican, Mexican, Cuban, and Dominican communities in the context of New York City history. Complex cultural dynamics as illustrated in novels, poetry, music, and film. HU

*EVST 345a / ANTH 382a / F&ES 384a, Environmental Anthropology  Michael Dove
History of the anthropological study of the environment: nature-culture dichotomy, ecology and social organization, methodological debates, politics of the environment, and knowing the environment. SO

*HIST 038a, History of the Caribbean to 1898  Anne Eller
The fundamental role of the Caribbean in the development of the modern world from c. 1400 to 1898. Historical formation of the greater Caribbean and the lived experiences of its residents. The intersecting allegiances, identities, itineraries, and diasporas of Caribbean peoples examined in hemispheric and global context. WR, HU
History: Preindustrial

HSAR 378b / AFAM 178b / AFST 188b / ER&M 278b, From West Africa to the Black Americas: The Black Atlantic Visual Tradition  Robert Thompson
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 / AFAM 112a, New York Mambo: Microcosm of Black Creativity**  
Robert Thompson  

**LAST 001b / PORT 001b / SPAN 050b, Latin American Short Fiction**  
Paulo Moreira  
Introduction to Latin American literature through one of its highest achievements: the short narrative from Brazil and Spanish America. Works of Brazilian authors (Machado de Assis, Guimarães Rosa, Graciliano Ramos, Clarice Lispector) compared with short stories from Spanish America (Quiroga, Rulfo, Carpentier, Borges) and the United States (Faulkner, Ellison, Chopin). Narrative structure and expressive qualities of the texts; literary currents; and social, psychological, and existential themes. Readings and discussion in English; texts available in the original languages. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  

**LAST 168b / PLSC 168b, Law and Politics of Globalization**  
Alec Stone Sweet  
The relationship between globalization (primarily economic activity across national borders) and national, international, supranational, and transnational legal systems. Topics include global trade and the World Trade Organization, European integration, the new *lex mercatoria*, and corporate responsibility for violations of human rights and environmental law.  

**LAST 214b / PLSC 378b / SOCY 170b, Contesting Injustice**  
Elisabeth Wood  
Exploration of why, when, and how people organize collectively to challenge political, social, and economic injustice. Cross-national comparison of the extent, causes, and consequences of inequality. Analysis of mobilizations for social justice in both U.S. and international settings. Intended primarily for freshmen and sophomores.  

**LAST 222a / SPAN 222a, Legal Spanish**  
Mercedes Carreras  
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  

**LAST 223b / SPAN 223b, Spanish in Film: An Introduction to the New Latin American Cinema**  
Margherita Tortora  
Development of proficiency in Spanish through analysis of critically acclaimed Latin American films. Includes basic vocabulary of film criticism in Spanish as well as discussion and language exercises. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.
*LAST 225b / SPAN 225b, Spanish for the Medical Professions  Mercedes Carreras
Topics in health and welfare. Conversation, reading, and writing about medical issues for advanced Spanish-language students, including those considering careers in medical professions. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*LAST 227a / SPAN 227a, Creative Writing  María Jordán
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*LAST 243a or b / SPAN 243a or b, Advanced Spanish Grammar  Terry Seymour
A comprehensive, in-depth study of grammar intended to improve students’ spoken and written command of Spanish. Linguistic analysis of literary selections; some English-to-Spanish translation. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*LAST 247b / PORT 247b / SPAN 247b, Introduction to the Cultures of Latin America  Paulo Moreira
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. May count toward the major in Portuguese, with written permission of the director of undergraduate studies.  L5, HU

LAST 261a / SPAN 261a, Studies in Spanish Literature I  Kevin Poole
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, and works by Miguel de Cervantes and Calderón de la Barca. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish.  L5, HU

*LAST 262b / SPAN 262b, Studies in Spanish Literature II  Leslie Harkema
An introduction to Spanish prose, drama, and lyric poetry from the eighteenth century to the present, centered on the conflict between modernity and tradition and on the quest for national identity. Texts by Bécquer, Unamuno, Lorca, Sender, Machado, and Cernuda. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish.  L5, HU

*LAST 308a / PLSC 426a, Brazil: Land of the Future  Brian Fried
Analysis of political, social, and economic development in Brazil. Focus on the country’s recent progress in democratic representation, social justice, prosperity, and equality. Explanations for this progress, as well as its potential for sustainability. The rise of
identity politics and affirmative action; the role of civil society in addressing political and social ills; Brazil's growing presence on the world stage.  

*LAST 318a / ARCH 341a, Globalization Space  
Keller Easterling  
Infrastructure space as a primary medium of change in global polity. Networks of trade, energy, communication, transportation, spatial products, finance, management, and labor, as well as new strains of political opportunity that reside within their spatial disposition. Case studies include free zones and automated ports around the world, satellite urbanism in South Asia, high-speed rail in Japan and the Middle East, agropoles in southern Spain, fiber optic submarine cable in East Africa, spatial products of tourism in North Korea, and management platforms of the International Organization for Standardization.  

HU

*LAST 344a / SPAN 344a, Narrative and Music in Hispanic Caribbean Culture  
Aníbal González  
The development of the narrative genre in Cuba, the Dominican Republic, and Puerto Rico from its origins in the nineteenth century to the present. Focus on how music is represented and incorporated into the discourse of Hispanic Caribbean novels and stories. Authors include Villaverde, Carpenter, Cabrera Infante, Nicolás Guillén, Ana Lydia Vega, and Luis Palés Matos. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  

L5, HU

LAST 348a / AFST 347a / GLBL 243a / PLSC 347a, Post-Conflict Politics  
David Simon  
Consideration of a range of issues and challenges faced by countries emerging from domestic conflict. Focus on elements of peace-building—demilitarization, post-conflict elections, institution-building, and reconstruction—as well as modes of transitional justice and mechanisms for truth and reconciliation.  

SO

*LAST 351a / SPAN 350a, Borges: Literature and Power  
Aníbal González  
An introduction to the work of Jorge Luis Borges, focusing on the relation between literature and power as portrayed in selected stories, essays, and poems. Topics include Borges and postmodernity; writing and ethics; and Borges’s politics. Works include Ficciones, Otras inquisiciones, El aleph, El hacedor, El informe de Brodie, and Obra poética. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  

L5, HU

*LAST 353a / EVST 353a, Sustainability in Latin America  
Garry Brewer  
The concept of sustainability applied to five topics of high priority in Latin America: biodiversity, payments for environmental services, eco-efficiency, social enterprises and entrepreneurship, and capacity building. Added support provided by visiting scholars from the University of the Andes.  

SO

LAST 355a / HIST 355a, Colonial Latin America  
Stuart Schwartz  
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.  

HU
LAST 361b / HIST 361b, History of Brazil  Stuart Schwartz
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.  HU

*LAST 362b / SPAN 327bG, Religion and Literature in the Spanish Middle Ages  Kevin Poole
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  HU

*LAST 363b / SPAN 363b, History of the Spanish Language  Kevin Poole
The linguistic evolution of Spanish from Latin in the Middle Ages. The development of Spanish into a language of political, ecclesiastic, and literary prestige during the modern period. Phonetics, syntax, dialectology, sociolinguistic theory, and the relation of these elements to the literature of Spain and Hispanic America. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

LAST 364b / HIST 363b, Latin America since Independence  Marcela Echeverri Munoz
An introduction to Latin American history and its global implications, from nineteenth-century independence processes and creation of the region’s nations to the twenty-first century. Focus on ways in which the flow of ideas, technology, and people has transformed Latin American politics. Topics include nationalism, race, ethnicity, revolution, development, and democracy.  HU

*LAST 372a / ER&M 342a / HIST 372Ja, Revolutionary Change and Cold War in Latin America  Gilbert Joseph
Analysis of revolutionary movements in Latin America against the backdrop of the Cold War. Critical examination of popular images and orthodox interpretations. An interdisciplinary study of the process of revolutionary change and cold war at the grassroots level.  WR, HU

*LAST 392a / LITR 296a / PORT 392a, Brazil’s Modern Art Movement  K. David Jackson
A study of Brazilian modernism in literature and the arts, centered on São Paulo’s "Modern Art Week" of 1922 from the perspective of the European avant-gardes (cubism, futurism, surrealism). The Cannibal Manifesto and cultural independence from Europe; avant-garde practices in literature and the arts from the 1920s to the construction of Brasilia. Reading knowledge of French and Portuguese helpful but not required.  WR, HU Tr

LAST 396a / LITR 292a / PORT 396a, Modern Brazilian Literature in Translation  K. David Jackson
Study of major writers, movements, and works in Brazilian literature, including drama, poetry, essay, manifesto, memoir, and fiction. Introduction to canonical writers, works, and movements, including naturalism, realism, modernism, social realism, innovative
writing, and postmodern trends. General introduction to key concepts in Brazilian civilization. Conducted in English. WR, HU, TR

*LAST 406a / AFST 420a / EP&E 246a / PLSC 430a, The Politics of Development Assistance  David Simon
Study of development assistance, a dominant feature of the political economies of some of the world’s poorest countries. The motivations and politics of aid from donors’ perspectives; the political and economic impact of aid on developing countries. Proposals to make aid a more effective instrument of development. SO

*LAST 410b / ECON 462b / EP&E 228b / GLBL 316b, The Economics of Human Capital in Latin America  Douglas McKee
Economic issues related to a population’s education, skills, and health; focus on contemporary Latin American societies. Determinants of health and education; evaluation of human capital development policies; the role of human capital in a variety of economic contexts, including the labor market, immigration, child investment, intrahousehold bargaining, inequality, and poverty. Prerequisites: intermediate microeconomics and econometrics. SO

*SPAN 075b, Golden Age Theater  Susan Byrne
Theater as a social and cultural phenomenon in sixteenth- and seventeenth-century Spain. Analysis of the written scripts of canonical works; semiotics of staged productions, including acting, staging, sound, and wardrobe. Works by Juan de la Cueva, Miguel de Cervantes, Lope de Vega, Tirso de Molina, and Calderón de la Barca. Theoretical views on what theater is and should be. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the requirements of the Spanish major with permission of the director of undergraduate studies. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. L5, HU

*SPAN 354b, Indigenism in Spanish-American Literature and Culture  Aníbal González and Mariana Melo-Vega
Study of Indigenismo, a cultural movement from the 1930s to the 1950s that upheld the rights and dignity of Spanish America’s indigenous peoples. The roots of indigenism in the works of colonial mestizo writers and nineteenth-century reformists, its flowering in twentieth-century visual art and narration, and its echoes in contemporary political movements, popular music, and film in South America. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major. L5, HU

Directed reading and senior essay courses

*LAST 471a or b, Directed Reading  Aníbal González
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**  Aníbal González
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.

**Linguistics**

Director of undergraduate studies: Raffaella Zanuttini, Rm. 209, 370 Temple St., 432-2452, raffaella.zanuttini@yale.edu; ling.yale.edu

**FACULTY OF THE DEPARTMENT OF LINGUISTICS**

**Professors**  Stephen Anderson, Robert Frank (Chair), Roberta Frank, Laurence Horn, Frank Keil, Zoltán Szabó, Raffaella Zanuttini

**Associate Professors**  Claire Bowern, Ashwini Deo, Gaja Jarosz, Maria Piñango

**Assistant Professor**  Ryan Bennet

**Lecturers**  Ben George, Jim Wood

Linguistics is the scientific study of language. The major in Linguistics offers a program of study leading toward an understanding of phonological, grammatical, and semantic structure and of various approaches to descriptive, experimental, and historical linguistics. 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.

Students with no previous background in linguistics are encouraged to approach the field by taking a freshman seminar or a 100-level course.

The major requires twelve term courses in linguistics and related areas, distributed as follows:

1. **Breadth requirement (four courses).** All majors must take a course in each of the core areas of phonology (LING 232) and syntax (LING 253). In addition, at least one course must be taken in any two of the six remaining core areas of linguistics: 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 of linguistics, students must take two additional courses beyond the introductory level.

3. **Electives (four courses).** Four additional courses relating to linguistics are required, at least one of which must be at the 200 level or above. Electives may be chosen from
courses offered by the Linguistics department or, with approval of the director of undergraduate studies, from related courses in programs such as Anthropology, Classics, Cognitive Science, Computer Science, English, Philosophy, Psychology, or foreign languages.

4. Research requirement (one course). LING 490, Research Methods in Linguistics, is required and is usually taken in the fall term of the senior year.

5. Senior requirement (one course). Students attend a research colloquium and write a senior essay in LING 491 during the spring term of the senior year.

**Combined B.A./M.A. degree program** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in Linguistics.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** None  
**Number of courses** 12 term courses (incl senior req)  
**Specific courses required** LING 232, 253, 490  
**Distribution of courses** 1 course each in 2 addtl core areas, as specified; 2 addtl courses beyond intro level in 1 core area; 4 electives, at least 1 at the 200 level or above  
**Senior requirement** LING 491

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**Introductory Courses**

Courses in this group do not require previous study of linguistics.

*LING 006b, Languages of the World* Claire Bowern
Introduction to the study of the world’s languages, including core concepts in the field of linguistics and tools for linguistic analysis. The number of languages that exist and ways in which they vary; universals of language; loss of linguistic diversity, and the effects of that loss both on science and on language speakers. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  

*LING 018b, Acquiring a First Language* Maria Piñango
Current debates and areas of consensus in the field of language acquisition. The logical problem of language acquisition; phonological, morphological, and syntactic milestones; the bootstrapping problem; acquisition under special circumstances; acquiring a second language; language loss. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  

**LING 110a**, Language: Introduction to Linguistics  Ryan Bennett
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 112a\(^G\), **Historical Linguistics**  Claire Bowern
Introduction to language change and language history. 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. The role of language contact in language
change. Evidence from language in prehistory.  HU

*LING 115a\(^G\) / SKRT 110a, **Introductory Sanskrit I**  David Brick
An introduction to Sanskrit language and grammar. Focus on learning to read and
translate basic Sanskrit sentences in Devanagari script. No prior background in Sanskrit
assumed.  L1  1½ Course cr

LING 116b / CGSC 216b, **Cognitive Science of Language**  Robert Frank
The study of language from the perspective of cognitive science. Exploration of
mental structures that underlie the human ability to learn and process language,
drawing on studies of normal and atypical language development and processing,
brain imaging, neuropsychology, and computational modeling. Innate linguistic
structure vs. determination by experience and culture; the relation between linguistic
and nonlinguistic cognition in the domains of decision making, social cognition, and
musical cognition; the degree to which language shapes perceptions of color, number,
space, and gender.  SO

LING 117a\(^G\) / PSYC 137a, **Language and Mind**  Maria Piñango
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.  SO

LING 125b\(^G\) / SKRT 120b\(^G\), **Introductory Sanskrit II**  David Brick
Continuation of SKRT 110. Focus on the basics of Sanskrit grammar; readings from
classical Sanskrit texts written in Devanagari script. After SKRT 110.  L2  1½ Course cr

LING 130a\(^G\) / PSYC 322a, **Evolution of Language**  Stephen Anderson
The origin and evolution of human language from an interdisciplinary perspective.
Topics include the design features of language, the structure of evolutionary theory,
elementary molecular genetics and genetic evidence for language evolution, cognitive
continuity and discontinuity with other species, hominid evolutionary history, domain
specificity and generality of the language faculty, evidence for evolutionary shaping of
physical and cognitive structures.

LING 138a / SKRT 130a\(^G\), **Intermediate Sanskrit I**  David Brick
The first half of a two-semester sequence aimed at helping students develop the skills
necessary to read texts written in Sanskrit. Readings include selections from the
Hitopadesa, Kathasaritasagara, Mahabharata, and Bhagavadgita. After SKRT 120 or
equivalent.  L3  1½ Course cr

LING 148b\(^G\) / SKRT 140b\(^G\), **Intermediate Sanskrit II**  David Brick
Continuation of SKRT 130, focusing on Sanskrit literature from the \textit{kavya} genre.
Readings include selections from the Jatakamala of Aryasura and the opening verses of
Kalidasa’s \textit{Kumarasambhava}. After SKRT 130 or equivalent.  L4  1½ Course cr
*LING 169b* / PHIL 436b, **Meaning**  Laurence Horn and Benjamin George
Analysis of selected classic readings in the study of meaning. Problems of sense and reference, presupposition, speaker intention, semantics of descriptions, names, and natural kinds. Historical tensions concerning the relationship between logical formalism and ordinary language; debates about the role of context in theories of meaning. Readings from works by Frege, Russell, Strawson, Donnellan, Austin, Grice, Kripke, and Putnam.  

**Intermediate Courses**

Some courses in this group have prerequisites; others do not, and may be taken as a student’s first course in linguistics.

*LING 211b, Grammatical Diversity in U.S. English*  Raffaella Zanuttini and Laurence Horn
Study of differences among varieties of English spoken in North America, focusing in particular on morphosyntactic variation: double modals ("I might could go to the store"), negative inversion ("Don't nobody want to ride the bus"), aspect marking ("Bruce be running," "I done pushed it"), "drama SO" ("I am SO not going to study tonight"), personal datives ("I need me a new printer"), positive "anymore" ("Gas is expensive anymore"). Emphasis on the grammatical richness and complexity of each variety. Debunking of the prejudice against examples of a natural grammatical diversity. Prerequisite: at least one 100-level course in Linguistics, or permission of instructor.  

**LING 220b** / PSYC 318b, **General Phonetics**  Jelena Krivokapic
Investigation of possible ways to describe the speech sounds of human languages. Acoustics and physiology of speech; computer synthesis of speech; practical exercises in producing and transcribing sounds. (Formerly LING 120)  

*LING 224b, Formal Foundations of Linguistic Theories*  Robert Frank
Study of formal systems that play an important role in the scientific study of language. Exploration of a range of mathematical structures and techniques; demonstrations of their application in theories of grammatical competence and performance including set theory, graphs and discrete structures, algebras, formal language, and automata theory. Evaluation of strengths and weaknesses of existing formal theories of linguistic knowledge; formulation of students' own theories.  

**LING 227b** / PSYC 327b, **Language and Computation**  Gaja Jarosz
Design and analysis of computational models of language. Topics include finite state tools, computational morphology and phonology, grammar and parsing, lexical semantics, and the use of linguistic models in applied problems. Prerequisite: Prior programming experience or permission of instructor. (Formerly LING 141)  

**LING 231b** / PSYC 331b, **Neurolinguistics**  Maria Piñango
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 232a, Introduction to Phonological Analysis  Ryan Bennett
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 220, or a grade of B or above in LING 110. (Formerly LING 132)  so

*LING 235b, Phonological Theory  Ryan Bennett
Topics in the architecture of a theory of sound structure. Motivations for replacing
a system of ordered rules with a system of ranked constraints. Optimality theory:
universals, violability, constraint types and their interactions. Interaction of phonology
and morphology, as well as the relationship of phonological theory to language
acquisition and learnability. Opacity, lexical phonology, and serial versions of optimality
theory. Prerequisite: LING 232 or permission of instructor. (Formerly LING 135)  so
rp

*LING 241b, Field Methods  Claire Bowern
Principles of phonetics, phonology, morphology, syntax, and semantics applied to the
collection and interpretation of novel linguistic data. Data are collected and analyzed
by the class as a group, working directly with a speaker of a relatively undocumented
language. Open to majors in Linguistics, and to others with permission of instructor.  so

*LING 248a, SAST 379a, Indo-Aryan Languages  Ashwini Deo
Introduction to the Indo-Aryan language family, its linguistic context, and its evolution
from the ancient period to the present. Focus on comparative morphosyntax and
semantic phenomena, with some attention to issues of classification and contact.  so

LING 253a, 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
the structure of clauses and noun phrases, movement operations, and the notion of
parameter. (Formerly LING 153)  so

LING 254b, Syntax II  Robert Frank
Recent developments in the principles and parameters approach to syntactic theory.
In-depth exploration of theoretical and empirical issues in long-distance dependencies
(island effects, dependency types, movement vs. binding), the character of syntactic
structure (constituency, thematic mapping, functional categories), and the architecture
of grammatical derivations (logical form, operations for structure building, anaphora).
Prerequisite: LING 253.  so

LING 263a, Semantics  Ashwini Deo
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.  qr, so

LING 271a, PHIL 271a, Philosophy of Language  Zoltán Szabó
An introduction to contemporary philosophy of language, organized around four broad
topics: meaning, reference, context, and communication. Introduction to the use of
logical notation.  hu
*LING 280b, Morphology  Stephen Anderson
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 232 and 253, or permission of instructor.  so

Advanced Courses/Seminars

*LING 341b, Topics in Phonology: Prosody at the Interfaces  Ryan Bennett
Topics in prosodic structure at the word level and above. Direct vs. indirect reference; how prosodic structure is computed from morphosyntactic structure; the extent to which prosodic constituents are isomorphic to syntactic constituents; whether prosody or other aspects of phonology can influence syntactic or morphological structures. Prerequisites: LING 232 and 235 or equivalents.  so  RP

*LING 342a, Topics in Phonology: Underlying Representations  Stephen Anderson
The concept of abstract phonological representations of the sound structure of linguistic forms, as distinct from their surface phonetic realization. Historical background and motivation for this notion; phonological theories on the status of underlying forms. Prerequisite: LING 232. Recommended preparation: LING 235.  so

*LING 361a / PSYC 360a, Topics in Syntax: The Mental Lexicon  Maria Piñango
Definitions of lexical knowledge; views of the lexicon as a repository of information vs. a "generative" system; the case of idioms; the lexicon and the grammar-conceptual structure interface; acquisition of the lexicon. (Formerly LING 260)  so

*LING 362a, Imperatives and Politeness  Raffaella Zanuttini
The notion of clause type, with a special focus on imperatives. The characteristic properties of imperative clauses across languages; the differences between embedding, quotation, and mixed quotation; the determinants of restrictions on embedding; the encoding of speech style and politeness in morphology and syntax. Prerequisite: LING 254.  so

*LING 377b, Case and Voice  Jim Wood
The syntax of case-marking systems and the interaction of case-marking with voice alternations such as active, passive, and middle. The distinction between structural and inherent/quirky case; dependent case versus the case filter; voice-related alternations between dative and nominative; the passive of reflexive verbs in Germanic; genitive of negation in Slavic; antipassives in ergative-absolutive languages; split ergativity.  so

*LING 390a, Negation and Polarity  Laurence Horn
Meaning and expression of negation and negative polarity. Asymmetry of negation vs. affirmation. Semantic and pragmatic factors in the meaning of negative sentences: contradictory vs. contrary opposition; metalinguistic vs. descriptive uses of negation. Cross-linguistic expression of affixal negation, negative polarity, and negative concord. The roles of configuration, scope, entailment, and implicature in the licensing of polarity items. (Formerly LING 290)  so  RP

*LING 391a / PHIL 429a, Problems in Semantics: Quantification  Benjamin George
Topics in the semantics of quantification, with a focus on the expressive power of quantification in natural language. Analysis of quantifiers such as some, every, no,
many, fewer, and most; generalizations about and possible universals of quantification
in natural language; implications for mathematical and philosophical properties of
logics that are suitable for modeling natural language semantics; plural quantification.

**Research Courses**

*LING 471a and LING 472b, Special Projects*  Raffaella Zanuttini
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 may be offered toward
the major; two terms may be offered toward the bachelor's degree.

*LING 490a, Research Methods in Linguistics*  Raffaella Zanuttini
Development of skills in linguistics research, writing, and presentation. Choosing
a research area, identifying good research questions, developing hypotheses, and
presenting ideas clearly and effectively, both orally and in writing; methodological
issues; the balance between building on existing literature and making a novel
contribution. Prepares for the writing of the senior essay.

*LING 491b, The Senior Essay*  Raffaella Zanuttini
Research and writing of the senior essay under the guidance of a faculty adviser.
Students present research related to their essays in a weekly colloquium. Prerequisite:
LING 490.

**Related Courses**

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

*CHLD 128b / EDST 128b / PSYC 128b, Language, Literacy, and Play*  Nancy Close
and Carla Horwitz
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.  WR, SO  RP

**CPSC 430a**, **Formal Semantics**  Zhong Shao
Introduction to formal approaches to programming language design and
implementation. Topics include 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 202 and 323.  QR

**CPSC 470a**, **Artificial Intelligence**  Brian Scassellati
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 201 and 202.  QR

*ENGL 152b, Anglo-Saxon Literature*  Roberta Frank
Close reading in translation of selected works composed in Anglo-Saxon England,
c. 700–1100. Genres include heroic poems, monster treatises, travelogues, biblical
translations and adaptations, histories, saints’ lives, catalog poems, prayers, and riddle collections. Later uses and appropriations of this literature from the Norman Conquest to Tolkien, Auden, and Heaney. HU

English: Pre-1800 Lit
English: Junior Seminar

**GREK 390a**<sup>G</sup>, **Greek Syntax and Stylistics**  Victor Bers
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. 15, HU

**LATN 390b**<sup>G</sup>, **Latin Syntax and Stylistics**  Joseph Solodow
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. 15, HU

**MUSI 343a / CGSC 343a, Music Cognition**  Ian Quinn
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 110 or familiarity with music notation. 30

**PHIL 115a**, **First-Order Logic**  Bruno Whittle
An introduction to formal logic. Study of the formal deductive systems and semantics for both propositional and predicate logic. Some discussion of metatheory. QR

**PHIL 267b**, **Mathematical Logic**  Sun-Joo Shin
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Introduction to the basic concepts of set theory. Prerequisite: PHIL 115 or permission of instructor. QR
Math: Logic/Foundations

**PHIL 427b**<sup>G</sup>, **Computability and Logic**  Sun-Joo Shin
A technical exposition of Gödel’s first and second incompleteness theorems and of some of their consequences in proof theory and model theory, such as Löb’s theorem, Tarski’s undefinability of truth, provability logic, and nonstandard models of arithmetic. Prerequisite: PHIL 267 or permission of instructor. QR, HU
Math: Logic/Foundations

**Literature**

Director of undergraduate studies: Moira Fradinger, Rm. 102, 451 College St., 432-4750, maryjane.stevens@yale.edu

**FACULTY OF THE LITERATURE MAJOR**

**Professors**  Dudley Andrew, Peter Brooks (*Emeritus*), Katerina Clark, Roberto González Echevarría, Benjamin Harshav (*Emeritus*), Geoffrey Hartman (*Emeritus*), Hannan
Hever, Michael Holquist (Emeritus), Carol Jacobs, Rainer Nägele, David Quint (Chair), Katie Trumpener

**Associate Professors** Moira Fradinger, Martin Hägglund

**Assistant Professors** Benjamin Conisbee Baer, David Gabriel, Ayesha Ramachandran

**Senior Lecturer** Peter Cole

**Lecturers** Stefan Esposito, Jan Hagens, Barbara Harshav

**Senior Lectors** Candace Skorupa, Howard Stern

**Affiliated Faculty** Rolena Adorno (Spanish & Portuguese), R. Howard Bloch (French), Rüdiger Campe (German), Francesco Casetti (Film Studies), Kang-i Sun Chang (East Asian Languages & Literatures), Peter Demetz (Emeritus) (German), Michael Denning (American Studies), Wai Chee Dimock (English), Shoshana Felman (Emeritus) (French), Paul Fry (English), Beatrice Gruendler (Near Eastern Languages & Civilizations), Karsten Harries (Philosophy), Pericles Lewis (Yale-NUS College), Tina Lu (East Asian Languages & Literatures), John MacKay (Slavic Languages & Literatures), Giuseppe Mazzotta (Italian), Christopher L. Miller (French), Joseph Roach (English), Maurice Samuels (French), Henry Sussman (German) (Visiting), Christopher Wood (History of Art), Ruth Yeazell (English)

The Literature Major allows students to address fundamental questions about the nature, function, and value of literature in a broadly comparative context. Majors read and write about a wide variety of literary works across periods, genres, and national traditions. They investigate traditional and contemporary approaches to literary study, ancient and modern literary theory, and the relationship of literature to film and to other branches of the arts and sciences.

The Literature Major offers students the freedom to construct a program of study that reflects their intellectual goals. All students planning to major in Literature should register with the director of undergraduate studies, who will work with them to develop a coherent, well-focused sequence of courses suited to their individual interests.

The major offers a number of its own courses, which constitute the core of the program. Other courses are normally chosen from different language and literature programs, many of which offer courses on literature and film in translation. Among these programs are African American Studies, Classics, East Asian Languages and Literatures, English, Film Studies, French, German, Italian, Near Eastern Languages and Civilizations, Portuguese, Slavic Languages and Literatures, and Spanish. Courses in film studies count toward the major in the same way as courses in literature. Students with a particular interest in film or in translation studies may wish to elect the film track or translation track within the Literature 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 120, Introduction to Narrative, and 122, World Poetry and Performance. These courses may be taken in either order.

The standard major Beyond the prerequisites, the Literature Major requires twelve term courses. These include LITR 300, Introduction to Theory of Literature, which should be taken in the sophomore or junior year. They also include two core seminars, one pre-1800 course, one course in drama or poetry, three courses in a foreign literature with readings in the original language, three elective courses, and the senior essay. The three elective courses may be taken in any literature department and may include two courses in a related discipline that has direct bearing on the student’s program in literature, such as history of art, philosophy, anthropology, music, or theater studies. One of the elective courses may be in creative writing.

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 122 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.

Foreign literature requirement 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 114, 120, or 450 may take three additional English literature courses to fulfill the foreign literature requirement of the Literature Major, or they may fulfill the major requirements in a third language.

**The senior essay**  In the senior essay, required of all majors, students develop a research topic of their choice and work closely with a faculty adviser. Normally, the essay makes use of texts in the language of their original composition. Any exceptions must be approved by the director of undergraduate studies. Deadlines for the prospectus, the rough draft, and the completed essay are listed in the course descriptions of the senior essay course (LITR 491 and 492, 493).

The senior essay may be written over one term (LITR 491) or over two terms (LITR 492, 493). 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 credit is 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 director of undergraduate studies 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 492 during the fall term and complete their essays in 493 in the spring term. December graduates enroll in 492 in the spring term and complete their essays in 493 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.

**Credit/D/Fail option**  For the Class of 2016 and subsequent classes, a maximum of one course taken Credit/D/Fail may count toward the major with permission of the director of undergraduate studies.

**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 143, World Cinema, instead of LITR 122 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 must choose their three electives from courses in film studies.

**Translation track**  Students may elect to pursue a translation concentration within the Literature Major. Students in the translation track must fulfill the same requirements as those in the standard Literature track, with the following exceptions. Instead of LITR 122, translation-track students take as one of the prerequisites to the major LITR 348, *The Practice of Literary Translation*, or another course in the theory and practice of translation approved by the director of undergraduate studies. Translation-
track students must also choose their three electives from courses that engage with some aspect of translation studies; the office of the director of undergraduate studies maintains a list of qualifying courses.

**Intensive major**  Students in the intensive major complete three courses each in two non-anglophone literatures, in all of which the literature is read in the original language. Three of these courses take the place of the three electives in the non-intensive major. Intensive majors must also demonstrate proficiency at the L5 level in one of their languages and at the L4 or above in the other. Students taking the intensive major in three national literatures must take two courses each in two national literatures and three in a third. They must demonstrate proficiency at the L5 level in the language of their principal literature, and at the L4 level or above in the other two.

**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.

**Foreign literature courses**  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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<tbody>
<tr>
<td>Arabic</td>
<td>ARBC 150, 151</td>
<td>ARBC 161 or 165</td>
</tr>
<tr>
<td>Chinese</td>
<td>CHNS 150, 151</td>
<td>CHNS 170 or 171</td>
</tr>
<tr>
<td>French</td>
<td>FREN 170</td>
<td>Courses in French numbered 200 or higher</td>
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<tr>
<td>German</td>
<td>Courses in German numbered 170 or higher</td>
<td>Courses in German numbered 200 or higher</td>
</tr>
<tr>
<td>Ancient Greek</td>
<td>GREK 131 or 141</td>
<td>Ancient Greek courses numbered 400 or higher</td>
</tr>
<tr>
<td>Modern Hebrew</td>
<td>By arrangement with instructor</td>
<td>By arrangement with instructor</td>
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<tr>
<td>Italian</td>
<td>Courses in Italian numbered 200 or higher</td>
<td>Courses in Italian numbered 200 or higher</td>
</tr>
<tr>
<td>Japanese</td>
<td>JAPN 150, 151</td>
<td>JAPN 170 or 171</td>
</tr>
<tr>
<td>Korean</td>
<td>KREN 150, 151</td>
<td>EALL 470 or 471</td>
</tr>
<tr>
<td>Latin</td>
<td>LATN 131 or 141</td>
<td>Latin courses numbered 400 or higher</td>
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<tr>
<td>Persian</td>
<td>PERS 150</td>
<td>PERS 150</td>
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<tr>
<td>Portuguese</td>
<td>By arrangement with instructor</td>
<td>By arrangement with instructor</td>
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<tr>
<td>Russian</td>
<td>RUSS 150, 151</td>
<td>Courses in Russian numbered 170 or higher</td>
</tr>
<tr>
<td>Spanish</td>
<td>SPAN 261, 262, 266, or 267</td>
<td>Courses in Spanish numbered 300 or higher</td>
</tr>
</tbody>
</table>
Other ancient and modern languages, including those from Africa, South Asia, and the Middle East, may be suitable for the Literature Major if a qualified faculty adviser is available to supervise the major.

REQUIREMENTS OF THE MAJOR

Prerequisites  All tracks – LITR 120; completion of Yale College foreign lang
distributional req; Standard track – LITR 122; Film track – LITR 143; Translation
track – LITR 348 or equivalent

Number of courses  12 term courses beyond prereqs (incl senior essay)

Specific course required  LITR 300

Distribution of courses  All 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; 3
electives, as specified; Film track – 2 courses in 1 foreign lit, as specified; 1 course in
film theory; 3 electives in film studies; Translation track – 3 courses in 1 foreign lit,
as specified; 3 electives in translation studies

Substitution permitted  Standard and translation tracks – 1 advanced lang course for 1
of 3 req foreign lit courses, with DUS permission

Senior requirement  One-term senior essay (LITR 491); or two-term senior essay
(LITR 492 and 493); or 1 core sem (LITR 400–480) with senior sem essay

Intensive major  3 addtl courses in a second foreign lang in place of 3 electives;
demonstrated command of the second foreign lang to L4 level.

Prerequisites and Required Courses

LITR 120a, Introduction to Narrative  Moira Fradinger and staff
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.  WR, HU

LITR 122b, World Poetry and Performance  David Gabriel and staff
A team-taught course that examines 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.  WR, HU

LITR 143b / FILM 240b, World Cinema  Dudley Andrew
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.  WR, HU

LITR 300b / ENGL 300b, Introduction to Theory of Literature  Carol Jacobs
An examination of concepts and assumptions in contemporary views of literature.
Theories of meaning, interpretation, and representation. Critical analysis of formalist,
psychoanalytic, structuralist, poststructuralist, Marxist, and feminist approaches to
theory and to literature.  HU
The Ancient World

*LITR 154a / ENGL 395a, The Bible as Literature  Leslie Brisman
Study of the Bible as a literature—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. If there is sufficient interest, a second section will be offered.  WR, HU  RP

*LITR 168a or b / ENGL 129a or b / HUMS 198a or b, Tragedy in the European Literary Tradition  Margaret Homans
The genre of tragedy from its origins in ancient Greece and Rome through the European Renaissance to the present day. Themes of justice, religion, free will, family, gender, race, and dramaturgy. Works include Homer’s Iliad and plays by Aeschylus, Sophocles, Euripides, Seneca, Shakespeare, Racine, Ibsen, Chekhov, Brecht, Beckett, and Soyinka. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

*LITR 169a or b / ENGL 130a or b / HUMS 199a or b, Epic in the European Literary Tradition  Stefanie Markovits
The epic tradition traced from its foundations in ancient Greece and Rome to the modern novel. The creation of cultural values and identities; exile and homecoming; the heroic in times of war and of peace; the role of the individual within society; memory and history; politics of gender, race, and religion. Works include Homer’s Odyssey, Vergil’s Aeneid, Dante’s Inferno, Cervantes’s Don Quixote, and Joyce’s Ulysses. Focus on textual analysis and on developing the craft of persuasive argument through writing.  WR, HU

Medieval and Early Modern Literature to 1800

*LITR 172a  / EALL 210a  / HUMS 431a, Japan’s Classics in Text and Image  Kang-i Sun Chang
An exploration of man and nature in traditional Chinese literature, with special attention to aesthetic and cultural meanings. Topics include the concept of nature and literature; neo-Taoist self-cultivation; poetry and Zen (Chan) Buddhism; travel in literature; loss, lament, and self-reflection in song lyrics; nature and the supernatural in classical tales; love and allusions to nature; religious pilgrimage and allegory. All readings in translation; no knowledge of Chinese required. Some Chinese texts provided for students who read Chinese. Formerly CHNS 200.  HU  Tr

*LITR 175a  / EALL 206a  / HUMS 431a, Japan’s Classics in Text and Image  Edward Kamens
Fiction, poetry, and plays from the eighth century through the nineteenth, studied alongside related works of art and illustrated books housed in collections at Yale. An introduction to the Japanese classics as well as an example of interdisciplinary study in the humanities. No knowledge of Japanese required. Formerly JAPN 200.  WR, HU  Tr

*LITR 177b / ENGL 171b, Chaucer and Medieval London  Ardis Butterfield
Chaucer’s writings explored through the human and physical landscape of medieval London and Westminster. The crowds, sounds, and visual stimuli of the city examined alongside literary genres in which the author wrote, including dream visions, love epic, lyrics, and comic, satiric, and religious narrative. Chaucer’s sense of the writer’s craft
as a means of imagining space and sound and of depicting the emotional resonance of urban street scenes.  

**LITR 178a / HUMS 420a / MMES 201a / NELC 156a, Classics of the Arabic-Islamic World**  
Beatrice Gruendler
Survey of the literary tradition of the Arabic-Islamic world (West Asia, North Africa, and Muslim Spain), a textual conversation among diverse authors from late antiquity to the Mamluk period. 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.  

**LITR 179a, Renaissance Love Poetry**  
Ayesha Ramachandran
Introduction to the poetic genres of lyric, epic, and pastoral in the European Renaissance. Focus on questions of desire, love, and gendered subjectivity. The historical contexts and political uses of discourses of eroticism and pleasure in Italy, Spain, France, and England. Written exercises include poetic imitations of Renaissance texts.  

**LITR 183a / ITAL 310a, Dante in Translation**  
Giuseppe Mazzotta and Christiana Purdy
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.  

**LITR 189a / SPAN 300a, Cervantes’s *Don Quijote***  
Roberto González Echevarría
A detailed study of the *Quijote* in the aesthetic and historical context of Renaissance and baroque Spain. The significance of the *Quijote* for modern European and Latin American fiction. Readings also include Cervantes’s *Exemplary Stories* and Elliott’s *Imperial Spain*. Conducted in English; a section in Spanish available depending on demand. Counts toward the Spanish major.  

**LITR 192a / FREN 302a / HUMS 236a, Medieval Humor**  
R. Howard Bloch
Introduction to the fabliau, or Old French comic tale, and to the medieval sense of humor more generally. Close reading of a representative sample of extant fabliaux, with attention to the literary, historical, and social context of the tales. Readings and discussion in English; texts available in Old French.  

### European Literature since 1800

**LITR 205a / HUMS 212a / RUSS 321a, Capitalism and the Nineteenth-Century European Novel**  
Bella Grigoryan and Vadim Shneyder
The cultural significance and literary representations of capitalism in nineteenth-century Europe. Labor and leisure; material culture and consumerism; social and geographic mobility; constitution of the modern self; the public sphere; private life; economics and literary form. Works by Balzac, Gogol, Dickens, Flaubert, Dostoevsky, Tolstoy, and Zola supplemented by selections from theoretical writings. Readings and discussion in English.  

**LITR 206b / RSEE 255b / RUSS 255b, Studies in the Novel: Tolstoy**  
Vladimir Alexandrov
A survey of Leo Tolstoy’s legacy. Readings include early stories, *War and Peace* and *Anna Karenina*, and short later works. Close textual analysis, with primary attention
to the interrelation of theme, form, and literary and cultural contexts. Readings and discussion in English. HU Tr

**LITR 208a / RSEE 256a / RUSS 256a, Studies in the Novel: Dostoevsky**
Molly Brunson
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. HU Tr

**LITR 214a / FREN 240a / HUMS 201a, The Modern French Novel**
Alice Kaplan
and Maurice Samuels
A survey of major French novels, considering style and story, literary and intellectual movements, and historical contexts. Writers include Balzac, Flaubert, Proust, Camus, and Sartre. Readings in translation. One section conducted in French. HU Tr

**LITR 215b / GMAN 311b / GMST 184b / HUMS 230b, The Age of Goethe**
Kirk Wetters
Introduction to Germany’s "classical" period, from the 1790s to the 1830s, with attention to literature, philosophy, art, and culture. The close connection between literature and philosophy of the period; the theoretical foundations of European Romanticism and of later backlashes against it. Some attention to twentieth-century theory. HU

**LITR 217b / FREN 352b / GMAN 256b, Poetry and the Holocaust**
Thomas C. Connolly
The relationship between poetry and the Holocaust, both in poetry’s attempts to remember and come to terms with the past, and in the ways that it predicts and warns about the future. Readings from French, German, Hebrew, Arabic, Yiddish, and Italian works in translation. Readings and discussion in English, with texts available in the original languages. HU Tr

**LITR 226a / GMST 186a, German Modernism**
Henry Sussman
Introduction to the radical innovations of modernism as it was forged, received, and revised in German-speaking Europe from c. 1880 to 1945. Literary experiments in dissonance and multifaceted suggestion; strategies in criticism and elucidation demanded by modernist works. Some attention to parallels in painting and music. Readings in English translation. Priority to German Studies majors. HU RP

**LITR 239b / CLCV 216b / HUMS 214b / MGRK 216b, Dionysus in Modernity**
George Syrimis
Modernity’s fascination with the myth of Dionysus. Questions of agency, identity and community, and psychological integrity and the modern constitution of the self. Manifestations of Dionysus in literature, anthropology, and music; the Apollonian-Dionysiac dichotomy; twentieth-century variations of these themes in psychoanalysis, surrealism, and magical realism. WR, HU Tr

**LITR 241b / HUMS 225b / RUSS 323b, City and Country in the Nineteenth-Century Novel**
Molly Brunson
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.  

LITR 243b / GMST 194b / MUSI 363b / THST 351b, Cabaret  
Lynda Paul  
An exploration of cabaret as both a historical and a contemporary form of musical-literary-theatrical performance. Famous historical cabarets, with a focus on Europe in the late nineteenth and early twentieth centuries; films, plays, novels, and short stories based on the genre; cabaret songs and famous performers. Analysis of works by contemporary American cabaret artists. Students collaborate to write, produce, and perform three cabaret events.  

Non-European Literature since 1800  

*LITR 262b, Poetry of the Americas  
Stefan Esposito  
Shared thematic, philosophical, and formal concerns of Caribbean and North, Central, and South American poetry, from the colonial period to the present. Topics include freedom, slavery, American and native identity, womanhood, transcendental conceptions of nature, religion, the industrial revolution, colonial resistance, wars of independence, and nationalism.  

LITR 264b / ENGL 347b / HUMS 274b / SAST 362b, South Asian Anglophone Literature  
Shital Pravinchandra  
Introduction to key works, concepts, and issues in twentieth-century South Asian writing in English. Focus on literature from and about India, Pakistan, Sri Lanka, and Bangladesh. The status of English on the Indian subcontinent; the current popularity of South Asian Anglophone literature; the relation of South Asian literature written in English to literature written in other South Asian languages.  

LITR 266a / AFAM 191a / AFST 330a / FREN 230a, Introduction to Francophone African and Caribbean Literature  
Christopher L. Miller  
A comprehensive survey of literature written in French from sub-Saharan Africa and the Caribbean. The context of French colonialism and its institutions; the rise of Negritude and nationalism; independence and the postcolonial era. Authors include Senghor, Césaire, Sembène (including film), Kourouma, Bā, Belaya, Condé, and Lopes.  

LITR 268a / ENGL 343a / ER&M 353a / HUMS 419a / SAST 371a, Postcolonial Studies  
Shital Pravinchandra  
Introduction to key writers, literary works, concepts, and issues in the field of postcolonial studies. Definitions of the term “postcolonial,” including to whom it can be applied; the cultural, psychological, and political consequences of colonization; opinions of non-Western writers about current cultural and political climates and the historical processes that shaped them.  

LITR 271a / AFAM 369a / AMST 378a / ENGL 364a / THST 369a, African American Theater  
Staff  
African American dramatic literature and theater history from the nineteenth century to the present. Key events in black theater history, including the emergence of black musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson, Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to
nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU

*LITR 274b / SAST 374b, Modern Literature in South Asia  Benjamin Conisbee Baer
The forms and trajectories of modern literature in the Indian subcontinent. Topics of writing, secrets, and gender in nineteenth- and twentieth-century fiction, with a focus on literary prose. Representations of forbidden relationships, transgression, and intersections of the personal, the sexual, and the political. Writers from the present-day states of India, Pakistan, and Bangladesh and from the South Asian diaspora. Readings in English original or in translation.  HU

*LITR 275b / ENGL 383bG / THST 348b, The Common Wealth of Drama
Murray Biggs
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.  WR, HU

*LITR 281a, Modern Hebrew Poetry  Hannan Hever
The cultural history of Hebrew poetry in the twentieth century, when poetry became a central arena for the rise of Jewish nationalist culture. Major movements, from Bialik’s romanticism through postmodernism of the 1990s and early twenty-first century. Close reading of poems in the original language accompanied by articles on the history of Hebrew poetry. Readings in Hebrew and in English; discussion in English. Prerequisite: reading proficiency in modern Hebrew.  HU

LITR 282b, Cultural Study of Israel  Hannan Hever
Major trends in cultural studies explored using Israel as a case study; focus on the political-critical approach. Theoretical questions regarding the definition of culture; critical approaches to cultural texts; theories of high, low, and popular cultures; the constitution of the subject within the cultural arena. Attention to literature, cinema, music, and visual art.  HU

LITR 292a / LAST 396a / PORT 396a, Modern Brazilian Literature in Translation
K. David Jackson
Study of major writers, movements, and works in Brazilian literature, including drama, poetry, essay, manifesto, memoir, and fiction. Introduction to canonical writers, works, and movements, including naturalism, realism, modernism, social realism, innovative writing, and postmodern trends. General introduction to key concepts in Brazilian civilization. Conducted in English.  WR, HU  Tr

*LITR 295b / AFAM 352b / AMST 438b / ER&M 291b / WGSS 343b, 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.  HU

*LITR 296a / LAST 392a / PORT 392a, Brazil’s Modern Art Movement
K. David Jackson
A study of Brazilian modernism in literature and the arts, centered on São Paulo’s "Modern Art Week" of 1922 from the perspective of the European avant-gardes (cubism, futurism, surrealism). The Cannibal Manifesto and cultural independence
from Europe; avant-garde practices in literature and the arts from the 1920s to the
construction of Brasilia. Reading knowledge of French and Portuguese helpful but not
required. WR, HU  Tr

Literary Theory and Special Topics

*LITR 302a, Translation: Theoretical and Practical Issues  Barbara Harshav
Exploration of various theoretical and practical problems in translation. Topics
include the responsibility of the translator to the text, the author, and the reader; the
reliability of translation as a literary mode; the transmission or perversion of culture via
translation; and the specific problems involved with the translation of various genres
(poetry, drama, fiction, and nonfiction).

*LITR 306a / FILM 409a / HUMS 452a / RSEE 327a / RUSS 327a, The Danube in
History and Culture  Marijeta Bozovic
The Danube River in the film, art, and literature of various Danubian cultural
traditions, from the late nineteenth century to the present. Geography and history
of the region that includes the river’s shores and watershed: physical, historical, and
metaphoric uses of the Danube; the region as a contested multilingual, multicultural,
and multinational space, and as a quintessential site of cross-cultural engagement. HU
Tr

*LITR 307a / GMST 378a^ / HUMS 226a, Walter Benjamin and the Modernization of
Nineteenth-Century Paris  Henry Sussman
The radical modernization of Paris under the Second Empire (1851–70) as seen through
the eyes of Walter Benjamin. Focus on Benjamin’s Arcades Project, a compendium
that charted developments such as Parisian mass transit and streamlined traffic, the
construction of apartment houses, and the dissemination of mass media. Readings from
other literary texts on the same events include works by Balzac, Zola, and Aragon. HU

*LITR 308a, Illness in Art and Literature  Stefan Esposito
The intersections of illness and art from Plato through contemporary novels and films.
The role of metaphor and narrative in shaping the doctor-patient relationship; moral
and ethical issues involved in making art about disease; ways in which symbols shape
human understandings of the social good and of public health; the therapeutic potential
of art. HU

*LITR 312a / FILM 243a / HUMS 206a / MGRK 218a / WGSS 245a, Family in Greek
Literature and Film  George Syrimis
The structure and multiple appropriations of the family unit, with a focus on the
Greek tradition. The influence of aesthetic forms, including folk literature, short
stories, novels, and film, and of political ideologies such as nationalism, Marxism, and
totalitarianism. Issues related to gender, sibling rivalry, dowries and other economic
factors, political allegories, feminism, and sexual and social violence both within and
beyond the family. WR, HU  Tr

*LITR 313b / FILM 440b / HUMS 242b / THST 384b, Modernism in Northern
Europe, 1880—1918  Katie Trumpener and Carolyn Sinsky
The roots of modernism in Scandinavia, Russia, Germany, and Ireland from 1880 to
1918. Experiments with artistic forms, cultural institutions, and social theories such as
feminism, Marxism, and psychoanalysis. Works from experimental theater, cinema,
fiction, poetry, and the visual arts. HU
*LITR 323b / ENGL 336b / THST 303b, The Opera Libretto  J. D. McClatchy
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.  WR, HU

*LITR 327a / GMAN 388aG / GMST 369aG / HUMS 410a / RLST 322aG, Translating the Sacred  Hindy Najman and Kirk Wetters
Historical dynamics of cultural transfer, translation, reinterpretation of religious revelations, and foundational narratives from antiquity to modernity. Readings from ancient scripture, modern literary works, and theoretical reflections.  HU

*LITR 331a / ENGL 430a / GMAN 277a / GMST 294a / HUMS 467a, Nietzsche and Emerson  Paul North and Paul Grimstad
Comparative introduction to the central writings of Nietzsche and Emerson, with reference to the historical relationship between the two men. Overlap and antagonism on themes such as power, fate, nature, language, and writing; concepts that underwent radical shifts in each thinker’s work; ways in which philosophical style and ideas of style shaped and complicated the writers’ thinking.  HU

*LITR 337a / HUMS 297a / ITAL 305a, Italian Food and Literature  Risa Sodi
The intersection of food and literature in Italy from the Middle Ages and the Renaissance (Dante, Boccaccio, and the earliest cookbooks) to the modern age (the futurists, Calvino, and others). Discussion of foodways, or how food is tied to religions, holidays, gender roles and identities, and domestic economies. Consideration of film.  HU  Tr

*LITR 339b / FREN 397b / HUMS 362b, French Theory from Sartre to Derrida  Yue Zhuo
A survey of French thought from the end of World War II to the present, from existentialism and Marxism to structuralism and poststructuralism. Authors include Sartre, de Beauvoir, Barthes, Lévi-Strauss, Foucault, Bataille, Deleuze, Kofman, and Derrida. Readings and discussion in English.  HU  Tr

*LITR 344b / GMAN 345bG / HUMS 237b, Fiction and Knowledge  Carol Jacobs
Fiction and related prose pieces in which the relationships between narration, fiction, understanding, and knowing play a critical role. Focus on works by Western writers of the nineteenth through the twenty-first century. The texts’ theoretical implications and implicit self-definitions; the import of concepts such as truth, fiction, self-consciousness, perception, science, and narrative. Readings and discussion in English; texts available in the original German or French.  HU  Tr

*LITR 348bG / HUMS 427b / JDST 316b, The Practice of Literary Translation  Peter Cole
Intensive readings in the history and theory of translation paired with practice in translating. Case studies from ancient languages (the Bible, Greek and Latin classics), medieval languages (classical Arabic literature), and modern languages (poetic texts).  HU
Film

LITR 354a / FILM 312aG / HUMS 216a, Theory of Media  Francesco Casetti
Introduction to key issues in media studies. Relationships between commodity, artwork, and networks of exchange; media and public sphere; the analysis of radio and television; alternative or counter-hegemonic conceptions of media; and the viability of the concept "media" itself.  HU

Close study of the films of R. W. Fassbinder, Werner Herzog, and Michael Haneke. Questions of authorship, cultural politics, intermediality, and cinematic modernism. Readings and discussion in English.  HU  Tr

*LITR 380b / FILM 411b, The Films of Alfred Hitchcock  Brigitte Peucker
An examination of Hitchcock’s career as a filmmaker from Blackmail to Frenzy, with close attention to the wide variety of critical and theoretical approaches to his work. Topics include the status of the image; the representation of the feminine and of the body; spectatorship; painterliness and theatricality; generic and psychoanalytic issues.  HU

*LITR 384a / EALL 252aG / FILM 446a, Japanese Cinema before 1960  Aaron Gerow
The history of Japanese cinema to 1960, including the social, cultural, and industrial backgrounds to its development. Periods covered include the silent era, the coming of sound and the wartime period, the occupation era, the golden age of the 1950s, and the new modernism of the late 1950s. No knowledge of Japanese required. Formerly JAPN 270.  HU  Tr

*LITR 391b / FILM 441b / RSEE 321b / RUSS 245b, Russian Film  Katerina Clark and Mihaela Mihailova
Overview of Russian, Soviet, and post-Soviet cinema, from the inception of silent film in prerevolutionary Russia to the present. Theoretical writings and canonical films of important figures such as Sergei Eisenstein, Dziga Vertov, Andrei Tarkovsky, Kira Muratova, Alexei German, and Alexander Sokurov. Special attention to films by Soviet minority directors. The genre diversity of Soviet and post-Soviet film, including animation, musical comedy, rock film, and historical drama.  HU  Tr

Core Seminars

Two seminars are required for Literature majors; nonmajors may be admitted with permission of the instructor.

*LITR 417b, Maps and the Western Literary Imagination  Ayesha Ramachandran
The influence of mapping and changing notions of space on literary form, from the cartographic revolution of the sixteenth century to the modern spatial-digital revolution of GPS mapping. Spatial literacy in verbal and visual texts; maps in books and as books; literary uses of mapping practices; recent literary theory on the spatial turn. Works by Camões, Montaigne, Spenser, Milton, Pynchon, Walcott, and Chamoiseau. Use of the map collections in Yale’s Sterling Memorial and Beinecke libraries.  HU
*LITR 418a, The Migration of Cultural Forms  Benjamin Conisbee Baer
Literary and theoretical accounts of the movement of cultural forms across artificial boundaries of nation-states and imperial formations. Focus on the concepts of deterritorialization and reterritorialization in the work of Deleuze and Guattari. Circumstances and methods of travel by literary figures and works; depictions of such travel in literature. Case studies from regions that extend across South Asia and Southeast Asia, colonial nation-state boundaries in Africa, and Europe and Eurasia. HU

*LITR 419a / SAST 465a, Colonization and Psychosis in Modern Literature and Culture  Benjamin Conisbee Baer
The use of psychoanalytic categories in narrations, representations, and descriptions of colonial and postcolonial conditions in the twentieth and twenty-first centuries. Relations between modern representations of colonization and of extreme psychic states; distinctions between social and individual diagnoses; the ethics and politics of applying concepts of psychosis to social situations of domination, exploitation, and racism, and to individual and collective responses to such conditions. HU

*LITR 421b, Literature, Art, and the Environment  Jason Groves and Stefan Esposito
Survey of environmental and ecological thought in art, literature, and film from Romanticism through the present day. Focus on representations of landscape. Authors include Wordsworth, Thoreau, Darwin, Kafka, Heidegger, Sebald, Snyder, and Deleuze. HU

*LITR 422a / HUMS 324a, Death in Philosophy and Literature  Martin Hägglund
A study of major works in the philosophical and literary tradition that address the problem of death, from Plato and Epicurus to Montaigne, Shakespeare, Rousseau, Nietzsche, Freud, Borges, and de Beauvoir. Topics include the conceptual definition of death, the psychological fear of death, the nature of care, the notion of loss, the dream of immortality, and the problem of mourning. HU

*LITR 425b, The Literature of Doubt  Ayesha Ramachandran
Intersections between European Renaissance literature and the history of skepticism in the sixteenth and seventeenth centuries. The effects of doubt and skeptical thinking across a range of disciplines and genres, including politics, drama, and science. Sources include accounts of geographic and astronomical discoveries, fictional utopias, political treatises, topical satire, Reformation and Counter-Reformation polemics, philosophical essays, and new interpretations of Genesis. HU

*LITR 463a / ENGL 353a / HUMS 295a, Medieval Celtic Literature  David Gabriel
Major texts of Celtic literature, focusing on works from the birth of vernacular literature in the Middle Ages to the early modern period. Cultural, historical, and literary issues surrounding works in the Irish and Welsh languages; literary culture in Breton, Cornish, Scottish Gaelic, and Manx. Genres include lyric and bardic poetry, heroic and religious narrative, and early Arthurian works. Readings in English translation; no knowledge of Celtic languages assumed. HU Tr

*LITR 465b / HUMS 425b, Travel and Quests in Early World Literature  David Gabriel
Journeys of all types—Viking voyage of discovery, saintly pilgrimage, Zen journey to enlightenment, knightly quest—that speak to the core of the human experience. Literature of travel, journeys, and quests in the ancient and medieval world; focus on
the motivation behind travel and on the repercussions of translating such journeys into literary form.  

*LITR 466a / FILM 429a, War in Literature and Film  Katerina Clark
Representations of war in literature and film; reasons for changes over time in portrayals of war. Texts by Stendahl, Tolstoy, Juenger, Remarque, Malraux, and Vonnegut; films by Eisenstein, Tarkovsky, Joris Ivens, Coppola, Spielberg, and Altman.  

*LITR 467b / GMAN 192b, The Prose Labyrinth  Howard Stern
Short prose (prismatic, encyclopedic, labyrinthine) considered as a characteristic genre of twentieth-century literature. Works by Benjamin, Shklovsky, Ponge, Queneau, Calvino, and Cortázar. All readings available in English.  

*LITR 469a, Theater from Ritual to Performance  Jan Hagens
The history of Western drama from 1400 to the present explored through the developing relations between theater and nontheater. Participatory community festivities in the fifteenth century and their view of the world as theater; representative stagecraft and play-acting in the seventeenth century and their presentation of the world as a stage; the postmodern world as performance event in twentieth-century drama. Readings from major dramatic works and from critical-historical texts.  

*LITR 470a, Faust  Jan Hagens
The development of the Faust motif through time, from the legend’s origins in the Renaissance-Reformation period to twentieth-century variations. Readings from the English adaptation of the original German chapbook, Marlowe’s Doctor Faustus, Goethe’s Faust (Part I), and Thomas Mann’s Doctor Faustus; screenings of films with a Faustian theme.  

*LITR 471b, Dramas of Reconciliation  Jan Hagens
Differences between tragedy and the drama of reconciliation, a genre in which a serious and potentially tragic conflict is brought to a positive yet nontrivial ending. Close reading of dramas of reconciliation from the Western canon that have traditionally been categorized as tragedies. Ways in which the recategorization of such plays lends additional complexity and meaning to their endings and allows for new interpretations of the texts and their authors.  

*LITR 480a, Topics in Literary Theory: Psychoanalysis in Literature and Film  Moira Fradinger and staff
In-depth examination of a field of literary theory; topics change annually, and the course can be taken more than once. The topic for 2013 is concepts in psychoanalytic theory that bridge the clinical world, literary and critical theory, and film and gender studies. Foundational works by Freud and Lacan are considered together with literary and theoretical texts in order to explore the link between the arts and psychoanalytic theory. Concepts from the clinical field that have been imported into theories of culture, society, and the arts.  

*LITR 488a or b, Directed Reading and/or Individual Research  Moira Fradinger
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

*LITR 491a or b, The Senior Essay  Moira Fradinger
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 6 (for LITR 491a) or January 17 (for LITR 491b), a three-page prospectus signed by the student’s adviser; (2) by October 18 (for LITR 491a) or March 7 (for LITR 491b), a full rough draft (not notes); (3) by December 6 (for LITR 491a) or April 11 (for LITR 491b), the completed essay. The minimum length for an essay is twenty-five pages. Students are urged to arrange a topic and adviser early in the term before the term in which the essay is to be written.

*LITR 492a and LITR 493b, The Yearlong Senior Essay  Moira Fradinger
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 LITR 492. 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 6, a three-page prospectus signed by the student’s adviser; (2) by January 17, a full rough draft (not notes); (3) by April 11, 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.

Mathematics

(See also Applied Mathematics.)

Director of undergraduate studies: Andrew Casson, 216 LOM, 432-7056, andrew.casson@yale.edu; math.yale.edu

FACULTY OF THE DEPARTMENT OF MATHEMATICS

Professors  Donald Brown, Andrew Casson, Ronald Coifman, Igor Frenkel, Howard Garland, Alexander Goncharov, Roger Howe, Peter Jones, Mikhail Kapranov, Gregory Margulis, Yair Minsky, Vincent Moncrief, Hee Oh, David Pollard, Vladimir Rokhlin, Peter Schultheiss (Emeritus), Van Vu, Gregg Zuckerman

Assistant Professors  Amanda Folsom, Alexander Kontorovich, Sam Payne

J. W. Gibbs Assistant Professors  Dustin Cartwright, Kim Dang, Swarnendu Datta, Yen Quang Do, Steven Frankel, Daniel Fresen, Asaf Hadari, Jiuzu Hong, Nathan Kaplan, Andrei Osipov, Ronen Talmon, Zhiren Wang, Peng Zhao

Adjunct Professors  Michael Frame, Gil Kalai, Alex Lubotzky

Lecturers  Marketa Havlickova, Anna Lachowska, James Rolf

Operations Research Faculty  Eric Denardo

Statistics Faculty  Andrew Barron, Joseph Chang, Lisha Chen, John Hartigan (Emeritus), Balaji Raman, Jing Zhang
Mathematics has many aspects: it is the language and tool of the sciences, a cultural phenomenon with a rich historical tradition, and a model of abstract reasoning. The course offerings and the major in Mathematics reflect these multiple facets. The Mathematics major provides a broad education in various areas of mathematics in a program flexible enough to accommodate many ranges of interest.

**Placement in courses** The department offers a three-term sequence in calculus, MATH 112, 115, and 120. Students who have not taken calculus at Yale and who wish to enroll in calculus must take the mathematics online placement examination. They must then bring their exam results, as well as other pertinent information such as Advanced Placement test scores, to the calculus preregistration session, held at the beginning of each term in 432 DL. Advisers will be on hand at the registration session to assist each student in enrolling in the appropriate course. A link to the online placement examination and additional information is available on the departmental Web site (http://math.yale.edu/undergrad/placement-exam).

MATH 112 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 115 presupposes familiarity with the topics covered in MATH 112. MATH 120 presupposes familiarity with the topics covered in MATH 115.

MATH 230, 231 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 with the instructor of the course. After MATH 115, students with a strong interest in abstract mathematics should consider taking MATH 230, 231.

**B.A. and B.S. degree programs** The prerequisite for each program is calculus through the level of MATH 120, or the equivalent.

Each program normally consists of ten term courses in Mathematics numbered 222 or higher, including MATH 480. These may include no more than five term courses from other institutions. Each student is expected to take vector calculus and linear algebra: either MATH 230 and 231, or one of MATH 222 or 225 and MATH 250. 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. Each major program must also include at least one course in at least two of the three core areas: real analysis, algebra, and complex analysis. Taking courses from all three core areas is strongly recommended. To be eligible for Distinction in the Major, a student must have completed at least one course from each of the three core areas. The categories and core areas to which each course belongs are indicated in the course listings.

A candidate for the B.S. degree must take at least two advanced term courses in the physical sciences, such as CHEM 328, 332, 333, or PHYS 401, 402, 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 301, 305, 310, 350, 370, and 430 in his or her program, and should consider taking one or more graduate-level courses. Students interested in applications of mathematics should include MATH 300 or 301, 310, 350, and a selection of courses from MATH 241, 242, 244, 246, 251, 260, and CPSC 440.

**Senior requirement**  During the senior year students majoring in Mathematics normally take the senior seminar (MATH 480). Alternatively, with the consent of the director of undergraduate studies, highly qualified students may write a senior essay in MATH 470 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.

**Credit/D/Fail**  Courses taken Credit/D/Fail may not be counted toward the requirements of the major.

**Courses related to mathematics**  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, Philosophy, 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.

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.

**The intensive major**  Candidates for a degree with an intensive major in Mathematics must take courses in all three of the core areas: real analysis, algebra, and complex analysis. Intensive majors are also 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 MATH 399; *analysis*: MATH 301, 305, 310; *algebraic topology*: MATH 301, 350; *logic and foundations*: MATH 270.

**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. Candidates must submit
a proposal that foresees this level of achievement by the end of junior year to the
director of undergraduate studies no later than the last day of classes in their fifth
term of enrollment in Yale College. If approved by the department this proposal will
be forwarded to the Dean’s Office. Students’ status and progress will be reviewed
before they are permitted to continue in the program in the senior year. For more
information on Yale College requirements for the program, see "Simultaneous Award
of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic
Regulations.

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.

REQUIREMENTS OF THE MAJOR

Prerequisite  MATH 120 or equivalent
Number of courses  B.A. – 10 term courses numbered 222 or higher, incl MATH 480;
                  B.S. – same, with 2 addtl courses in physical sciences
Specific courses required  MATH 230 and 231; or MATH 222 or 225, and MATH 250
Distribution of courses  B.A. – 2 courses in each of 3 categories chosen from analysis,
algebra and number theory, stat and applied math, geometry and topology, logic
and foundations; courses from 2 of 3 core areas, as specified; B.S. – same, with 2
addtl advanced courses in physical sciences approved by DUS
Substitution permitted  With DUS permission, certain courses in Applied Math, Comp
                  Sci, Engineering & Applied Science, Econ, Operations Research, Phil, Physics, Stat
Intensive major  Courses in all 3 core areas; 2 grad courses or equivalent independent
                  study counted among the required courses
Senior requirement  Senior sem (MATH 480) or, with DUS permission, senior essay
                  (MATH 470) and oral report

Courses

*MATH 101b, Geometry of Nature  Michael Frame
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.  QR

*MATH 107a, Mathematics in the Real World  Anna Lachowska
The use of mathematics to address real-world problems. Applications of exponential
functions to compound interest and population growth; geometric series in mortgage
payments, amortization of loans, present value of money, and drug doses and blood
levels; basic probability, Bayes’s rule, and false positives in drug testing; elements of
logic. No knowledge of calculus required. Enrollment limited to students who have not
previously taken a high school or college calculus course.  QR
[ MATH 108, Estimation and Error ]
[ MATH 109, History of Mathematics ]

*MATH 112a or b, Calculus of Functions of One Variable I*  
Andrew Casson and staff  
Limits and their properties. Definitions and some techniques of differentiation and  
the evaluation of definite integrals, with applications. Use of the software package  
Mathematica to illustrate concepts. No prior acquaintance with calculus or computing  
assumed. [QR]

*MATH 113a or b, Calculus of Functions of One Variable II*  
James Rolf  
A continuation of MATH 112. 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 112 or equivalent; open to freshmen with some preparation in calculus. May not  
be taken after MATH 116. [QR]

*MATH 116a, Mathematical Models in the Biosciences I: Calculus Techniques*  
Michael Frame  
Introduction to topics in mathematical modeling that are applicable to biological  
systems. Discrete and continuous models of population, neural, and cardiac dynamics.  
Stability of fixed points and limit cycles of differential equations. Applications include  
Norton’s chemotherapy scheduling and stochastic models of tumor suppressor gene  
networks. After MATH 112 or equivalent. May not be taken after MATH 115. [QR]

*MATH 118a or b, Introduction to Functions of Several Variables*  
Marketa Havlickova [F] and James Rolf [Sp]  
A combination of linear algebra and differential calculus of several variables. Matrix  
representation of linear equations, Gauss elimination, vector spaces, independence,  
basis and dimension, projections, least squares approximation, and orthogonality.  
Three-dimensional geometry, functions of two and three variables, level curves and  
surfaces, partial derivatives, maxima and minima, and optimization. Intended for  
students in the social sciences, especially Economics. May not be taken after MATH 120  
or 222. Prerequisite: MATH 112. [QR]

*MATH 120a or b, Calculus of Functions of Several Variables*  
Marketa Havlickova  
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 115, or with permission of  
instructor. May not be taken after MATH 121. [QR]

[ MATH 121, Mathematical Models in the Biosciences II: Advanced Techniques ]

*MATH 190a, Fractal Geometry*  
Michael Frame  
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. [QR]

*MATH 222a or b / AMTH 222a or b, Linear Algebra with Applications*  
Amanda Folsom  
Matrix representation of linear equations. Gauss elimination. Vector spaces. Linear  
independence, basis, and dimension. Orthogonality, projection, least squares
Math: Algebra/Number Theory

**MATH 225a or b, Linear Algebra and Matrix Theory**  Van Vu [F] and Yair Minsky

[Sp]
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 120. May not be taken after MATH 222. QR
Math: Algebra/Number Theory
Psychology: AdvSci NeuroTrk

[ MATH 228, From Euclid to Einstein ]

*MATH 230a, Vector Calculus and Linear Algebra I*  Asaf Hadari
A careful study of the calculus of functions of several variables, combined with linear algebra. QR
Math: Algebra/Number Theory

*MATH 231b, Vector Calculus and Linear Algebra II*  Asaf Hadari
Continuation of MATH 230. Application of linear algebra to differential calculus. Inverse and implicit function theorems; the idea of a manifold; integration of differential forms; general Stokes' theorem. QR
Math: Analysis

*MATH 235b, Reflection Groups*  Anna Lachowska
Concepts of linear algebra are used to explore the algebraic and geometric properties of groups generated by reflections. Examples from reflection groups introduce elements of group theory, Lie algebras, and representation theory. Reflections in a real Euclidean space, groups generated by reflections, crystallographic groups, and Coxeter groups. Preference to sophomores majoring in mathematics or the sciences. Prerequisite: MATH 222 or 225. QR
Math: Algebra/Number Theory

**MATH 241a / STAT 241a**, Probability Theory  Huibin Zhou
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 120 or equivalent. QR
Math: Stat/Applied Math

**MATH 242b / STAT 242b**, Theory of Statistics  Lisha Chen
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 241 and concurrently with or after MATH 222 or 225, or equivalents. QR
Math: Stat/Applied Math
MATH 244a / AMTH 244a, Discrete Mathematics  Staff
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 115 or equivalent.  QR
Math: Stat/Applied Math

MATH 246a or b, Ordinary Differential Equations  Andrei Osipov [F]
and Ronen Talmon [Sp]
First-order equations, second-order equations, linear systems with constant
coefficients. Numerical solution methods. Geometric and algebraic properties of
differential equations. After MATH 120 or equivalent; after or concurrently with
MATH 222 or 225 or equivalent.  QR
Math: Analysis

MATH 247b / AMTH 247b / G&G 247b, Partial Differential Equations  Igor Frenkel
Introduction to partial differential equations, wave equation, Laplace’s equation,
heat equation, method of characteristics, calculus of variations, series and transform
methods, and numerical methods. Prerequisites: MATH 222 or 225, MATH 246, and
ENAS 194, or equivalents.  QR
Math: Stat/Applied Math

MATH 250a, Vector Analysis  Roger Howe
Calculus of functions of several variables, using vector and matrix methods. The
derivative as a linear mapping. Inverse and implicit function theorems. Transformation
of multiple integrals. Line and surface integrals of vector fields. Curl and divergence.
Differential forms. Theorems of Green and Gauss; general Stokes’ theorem. After
MATH 120, and 222 or 225 or equivalent.  QR
Math: Analysis

MATH 251b / STAT 251b, Stochastic Processes  Staff
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 chosen
from image reconstruction, Bayesian statistics, finance, probabilistic analysis of
algorithms, and genetics and evolution. After STAT 241 or equivalent.  QR
Math: Stat/Applied Math

MATH 260a / AMTH 260a, Basic Analysis in Function Spaces  Ronald Coifman
Diagonalization of linear operators, with applications in physics and engineering;
calculus of variations; data analysis. MATH 260 is a natural continuation of PHYS 301.
Prerequisites: MATH 120, and 222 or 225.  QR
Math: Stat/Applied Math

MATH 270a, Set Theory  Gregg Zuckerman
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 120 or equivalent.  QR
Math: Logic/Foundations

MATH 290b, Fractal Geometry: Concepts and Applications  Amanda Folsom
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 120 and 222 or equivalent.  QR
Math: Geometry/Topology

**MATH 300b, Topics in Analysis**  Daniel Fresen
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, 231 should take MATH 301 instead of this course. After MATH 250 or with
permission of instructor.  QR
Math: Analysis
Math: Core Real Analysis

* MATH 301a, Introduction to Analysis  Peter Jones
Foundations of real analysis, including metric spaces and point set topology, infinite
series, and function spaces. After MATH 230, 231 or equivalent.  QR
Math: Analysis
Math: Core Real Analysis

**MATH 305b, Real Analysis**  Yair Minsky
The Lebesgue integral, Fourier series, applications to differential equations. After
MATH 301 or with permission of instructor.  QR
Math: Analysis
Math: Core Real Analysis

**MATH 310a, Introduction to Complex Analysis**  Gregory Margulis
An introduction to the theory and applications of functions of a complex variable.
Differentiability of complex functions. Complex integration and Cauchy’s theorem.
Series expansions. Calculus of residues. Conformal mapping. After MATH 231 or 250 or
equivalent.  QR
Math: Core Complex Analysis
Math: Analysis

* MATH 315bG, Intermediate Complex Analysis  Mikhail Kapranov
Continuation of MATH 310. Topics may include argument principle, Rouché’s
theorem, Hurwitz theorem, Runge’s theorem, analytic continuation, Schwarz reflection
principle, Jensen’s formula, infinite products, Weierstrass theorem. Functions of
finite order, Hadamard’s theorem, meromorphic functions. Mittag-Leffler’s theorem,
subharmonic functions. After MATH 310.  QR  RP
Math: Core Complex Analysis
Math: Analysis

* MATH 320aG, Measure Theory and Integration  Howard Garland
Construction and limit theorems for measures and integrals on general spaces; product
measures; Lp spaces; integral representation of linear functionals. After MATH 305 or
equivalent.  QR  RP
Math: Analysis
Math: Core Real Analysis

* MATH 325bG, Introduction to Functional Analysis  Gregory Margulis
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 320.  QR  RP
Math: Analysis
Math: Core Real Analysis

**MATH 330b / STAT 330b**, **Advanced Probability**  David Pollard
Measure theoretic probability, conditioning, laws of large numbers, convergence in distribution, characteristic functions, central limit theorems, martingales. Some knowledge of real analysis assumed.  QR
Math: Stat/Applied Math

*MATH 345b, Modern Combinatorics*  Van Vu
Recent developments and important questions in combinatorics. Relations to other areas of mathematics such as analysis, probability, and number theory. Topics include probabilistic method, random graphs, random matrices, pseudorandomness in graph theory and number theory, Szemeredi’s theorem and lemma, and Green-Tao’s theorem.  Prerequisite: MATH 244.  QR
Math: Stat/Applied Math

**MATH 350a, Introduction to Abstract Algebra**  Andrew Casson
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 222 or equivalent.  QR
Math: Core Algebra
Math: Algebra/Number Theory

[ MATH 353, Introduction to Representation Theory ]

**MATH 360a, Introduction to Lie Groups**  Roger Howe
Lie groups as the embodiment of the idea of continuous symmetry. The exponential map on matrices and applications; spectral theory; examples and structure of Lie groups and Lie algebras; connections with geometry and physics. After MATH 231 or 250 or equivalent. MATH 300 or 301 and MATH 350 recommended.  QR
Math: Algebra/Number Theory

**MATH 370b, Fields and Galois Theory**  Marketa Havlickova
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 350.  QR
Math: Core Algebra
Math: Algebra/Number Theory

**MATH 373a**, **Algebraic Number Theory**  Alexander Goncharov
Structure of fields of algebraic numbers (solutions of polynomial equations with integer coefficients) and their rings of integers; prime decomposition of ideals and finiteness of the ideal class group; completions and ramification; adeles and ideles; zeta functions.  Prerequisites: MATH 310 and 370.  QR
Math: Algebra/Number Theory

**MATH 380a**, **Modern Algebra I**  Staff
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 350 and 370.  QR  RP
Math: Core Algebra
Math: Algebra/Number Theory

MATH 381b, Modern Algebra II  Gregg Zuckerman
Topics in commutative algebra: general extension of fields; Noetherian, local, and Dedekind rings. Introduction to valuation theory. Rudiments of algebraic geometry.
After MATH 380. QR RP
Math: Core Algebra
Math: Algebra/Number Theory

*MATH 400b, Introduction to Mathematical Mechanics  Vincent Moncrief
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 120, and 222 or 225, or equivalents.
Math: Stat/Applied Math

MATH 430b, Introduction to Algebraic Topology  Staff
The theory of fundamental groups and covering spaces, with particular reference to two-dimensional manifolds. After MATH 350, and 300 or 301, or equivalents. QR
Math: Geometry/Topology

[MATH 435, Differential Geometry ]

MATH 440a, Introduction to Algebraic Geometry  Howard Garland
An introduction to algebraic geometry through the study of algebraic curves. Topics include curves in the projective plane and their intersection theory; Bezout’s theorem; divisors and line bundles; the Riemann-Hurwitz formula; hyperelliptic curves; and the Riemann-Roch theorem. Prerequisites: MATH 310, 350, and some background in differential forms. QR
Math: Algebra/Number Theory

MATH 470a or b, Individual Studies  Andrew Casson and staff
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  Mikhail Kapranov
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.

Other Courses Related to Mathematics

CPSC 201a or b, Introduction to Computer Science  Dana Angluin [F] and Holly Rushmeier [Sp]
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 112 or equivalent. QR
Math: Stat/Applied Math

**CPSC 365b, Design and Analysis of Algorithms**  Daniel Spielman
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 202 and 223. QR
Math: Stat/Applied Math

**CPSC 440bG, Numerical Computation**  Vladimir Rokhlin
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 112 or an equivalent introductory programming course; MATH 120; and MATH 222 or 225 or CPSC 202. QR
Math: Stat/Applied Math

**OPRS 235a / AMTH 235a, Optimization**  Eric Denardo
Resource allocation problems solved by linear programming and its generalizations: the simplex method, duality, the Karush-Kuhn-Tucker conditions for nonlinear programs, economic equilibria, and selected applications. Prerequisite: MATH 118, 222, or 225, or equivalent. QR

**PHIL 267aG, Mathematical Logic**  Sun-Joo Shin
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Introduction to the basic concepts of set theory. Prerequisite: PHIL 115 or permission of instructor. QR
Math: Logic/Foundations

**PHIL 427bG, Computability and Logic**  Sun-Joo Shin
A technical exposition of Gödel’s first and second incompleteness theorems and of some of their consequences in proof theory and model theory, such as Löb’s theorem, Tarski’s undefinability of truth, provability logic, and nonstandard models of arithmetic.
Prerequisite: PHIL 267 or permission of instructor. QR, HU
Math: Logic/Foundations

**Mathematics and Philosophy**

Directors of undergraduate studies: Andrew Casson (Mathematics), 216 LOM, 432-7056, andrew.casson@yale.edu; Kenneth Winkler (Philosophy), 406A C, 432-1679, kenneth.winkler@yale.edu

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 120. The major requires twelve term courses including the prerequisite, at least four of which must be in Mathematics at the 200
level 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 115). Required courses include Set Theory (MATH 270), Mathematical Logic (PHIL 267), Computability and Logic (PHIL 427), an additional advanced Philosophy course with a substantive logical component, and one seminar in either Mathematics or Philosophy (other than PHIL 427) that fulfills the senior requirement (see below). Set Theory (MATH 270) and Mathematical Logic (PHIL 267) 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 MATH 480, Senior Seminar: Mathematical Topics, fulfills the senior requirement. 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 120, 222 or 225, 270, 300, 350, and a designated seminar; PHIL 126, 267, 427, a designated seminar (other than PHIL 427), and two additional electives.

**Requirements of the Major**

**Prerequisite** MATH 120

**Number of courses** 12 term courses (incl prereq and senior sem)

**Distribution of courses** At least 4 courses in Math at 200 level or higher; at least 5 courses in Phil, as specified

**Specific courses required** MATH 270, PHIL 267, 427

**Senior requirement** Senior sem

### Mechanical Engineering

Director of undergraduate studies: Corey O’Hern, M203 ML, 432-4258, coreyohan@yale.edu; seasc.yale.edu/departments/mechanical-engineering-and-materials-science

**FACULTY OF THE DEPARTMENT OF MECHANICAL ENGINEERING AND MATERIALS SCIENCE**

**Professors** Charles Ahn, ‡David Bercovici, Ira Bernstein (Emeritus), Juan Fernández de la Mora, Alessandro Gomez, ‡Shun-Ichi Karato, Amable Liñán-Martínez (Adjunct), Marshall Long, ‡Daniel Rosner, Jan Schroers, Udo Schwarz, Mitchell Smooke (Chair), Forman Williams (Adjunct)

**Associate Professors** Eric Dufresne, Corey O’Hern

**Assistant Professors** Aaron Dollar, Nicholas Ouellette

**Lecturers** Beth Anne Bennett, Kailasnath Purushothaman, Joseph Zinter

‡A joint appointment with primary affiliation in another department or school.
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 computational fluid dynamics 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 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 and Materials Science 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 and Materials Science: to provide a comprehensive introduction to basic science and mathematics, which form the foundation of mechanical engineering; to provide 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 115) by the end of their freshman year.
A student’s undergraduate engineering program usually culminates in one or more special project courses (MENG 471, 472), 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 112, 115, and ENAS 151, or the equivalent. The basic science prerequisites are PHYS 200, 201, or 180, 181; one laboratory from PHYS 163L or 205L, and one from PHYS 166L or 206L, or equivalents.

Nineteen term courses beyond the prerequisites are required as follows:

1. Advanced mathematics: ENAS 194 and MATH 222 or 225

2. Mechanical engineering and related: MENG 211, 280, 285, 286L, 361, 363L, 383, 389, 390, 471 or 472 (the senior requirement), 489, ENAS 130, EENG 200, and at least one term course in chemistry (e.g., CHEM 112, 113, 114, 115, or 118)

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 112, 115, and ENAS 151, or the equivalent. The basic science prerequisites are PHYS 180, 181, or 200, 201; one laboratory from PHYS 163L or 205L, and one from PHYS 166L, 206L, or MENG 286L.

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 112 and 115. The basic science prerequisite is physics at least to the level of PHYS 170, 171.

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 471 or 472) 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 112, 115, and ENAS 151, or equivalent; PHYS 200, 201, or 180, 181, and 2 labs (1 from PHYS 165L or 205L, and 1 from PHYS 166L or 206L, or equivalents)

Number of courses  19 term courses beyond prereqs (incl senior project)

Specific courses required  ENAS 130 and 194; EENG 200; MATH 222 or 225;
MENG 211, 280, 285, 286L, 361, 363L, 383, 389, 390, 489

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 471 or 472)

ENGINEERING SCIENCES (MECHANICAL), B.S. AND B.A.

Prerequisites  B.S. – MATH 112, 115, and ENAS 151, or equivalent; PHYS 180, 181, or 200, 201, and 2 labs (1 from PHYS 165L or 205L; 1 from PHYS 166L, 206L, or MENG 286L); B.A. – MATH 112, 115; PHYS 170, 171

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 471 or 472)

Courses

* MENG 185b, Mechanical Design  Aaron Dollar
A course designed for potential majors in mechanical engineering, with units on design, materials science, structural mechanics, utilization of a machine shop, mechanical
dissection, and computers in mechanical engineering. Includes a design project competition. Prerequisite: physics at the level of PHYS 180, or permission of instructor.

**MENG 211b, Thermodynamics for Mechanical Engineers**  Udo Schwarz
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 180 or 200, and MATH 115.  QR, SC  RP

**MENG 280a, Mechanical Engineering I: Strength and Deformation of Mechanical Elements**  Eric Dufresne
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 180 or 200, and MATH 115.  QR, SC  RP

**MENG 285a, Introduction to Materials Science**  Udo Schwarz
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; thermal and electrical conduction. Prerequisites: elementary calculus and background in basic mechanics (deformation, Hooke’s law) and structure of atoms (orbitals, periodic table).  QR, SC  RP

**MENG 2861b, Solid Mechanics and Materials Science Laboratory**  Jan Schroers
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.  SC  RP  ½ Course cr

**MENG 361a, Mechanical Engineering II: Fluid Mechanics**  Nicholas Ouellette
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 194 or equivalent, and physics at least at the level of PHYS 170.  QR, SC  RP

*MENG 3631b, Fluid Mechanics and Thermodynamics Laboratory*  Eric Brown
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 211 and 361.  WR, SC  RP

**MENG 365a, Propulsion and Energy Conversion**  Juan Fernández de la Mora
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 361 or permission of instructor. QR, SC RP

MENG 383a, Mechanical Engineering III: Dynamics Corey O’Hern
Kinematics and dynamics of particles and systems of particles. Relative motion; systems with constraints. Rigid body mechanics; gyroscopes. Prerequisites: PHYS 180 or 200, and MATH 120 or ENAS 151. QR, SC RP

MENG 389b, Mechanical Engineering IV: Fluid and Thermal Energy Science Kailsanath Purushothaman
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 211, 361, and ENAS 194; or permission of instructor. QR, SC RP

MENG 390b, Mechatronics Laboratory Staff
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 194 or equivalent, ENAS 130, and EENG 200; or permission of instructor. QR RP

MENG 400a, Computer-Aided Engineering Marshall Long
Aspects of computer-aided design and manufacture (CAD/CAM). The computer’s role in the mechanical design and manufacturing process; commercial tools for two- and three-dimensional drafting and assembly modeling; finite-element analysis software for modeling mechanical, thermal, and fluid systems. Prerequisite: ENAS 130 or permission of instructor. QR

MENG 440a / ENAS 440a, Applied Numerical Methods I Beth Anne Bennett
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 are studied in several contexts throughout the course. Prerequisites: MATH 115, and 222 or 225, or equivalents; ENAS 130 or some knowledge of MATLAB, C++, or Fortran programming. QR RP

MENG 441b / ENAS 441b, Applied Numerical Methods II Beth Anne Bennett
The derivation, analysis, and implementation of numerical methods for the solution of ordinary and partial differential equations, both linear and nonlinear. Additional topics such as computational cost, error estimation, and stability analysis are studied in several contexts throughout the course. Prerequisites: MATH 115, and 222 or 225, or equivalents; ENAS 130 or some knowledge of MATLAB, C++, or Fortran programming; ENAS 194 or equivalent. ENAS 440 is not a prerequisite. QR RP

MENG 457b / BENG 457b, Musculoskeletal Biomechanics Jing Zhou
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 280 and 383 or permission of instructor. QR, SC RP

MENG 463a G, Theoretical Fluid Dynamics Juan Fernández de la Mora
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 361 or equivalent. QR, SC RP

*MENG 471a and MENG 472b, Special Projects Corey O’Hern
Faculty-supervised individual or small-group projects with emphasis on research (laboratory or theory), engineering design (required for the ABET-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 480a G, Mechanical Design: Process and Implementation Vincent Wilczynski
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 280, 361, or permission of instructor. SC RP

Media Theory and History
Coordinator: Francesco Casetti, 53 Wall St., 432-0671, francesco.casetti@yale.edu

FACULTY ASSOCIATED WITH MEDIA THEORY AND HISTORY

Professors Dudley Andrew (Film Studies, Comparative Literature), Jack Balkin (Law School), Rüdiger Campe (German), Francesco Casetti (Humanities, Film Studies), Aaron Gerow (Film Studies, East Asian Languages & Literatures), Inderpal Grewal (Women’s, Gender, & Sexuality Studies), Beatrice Gruendler (Near Eastern Languages & Civilizations), Matthew Jacobson (History, American Studies, African American Studies), David Joselit (History of Art), David Scott Kastan (English), Marianne LaFrance (Psychology, Women’s, Gender, & Sexuality Studies), John MacKay (Slavic Languages & Literatures, Film Studies), Charles Musser (American Studies, Film Studies, Theater Studies), Robert Post (Law School), Henry Sussman (German) (Visiting), Katie Trumpener (Comparative Literature, English), Michael Warner (English, American Studies), Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)

Associate Professors Jessica Brantley (English), Gundula Kreuzer (Music), Karen Nakamura (Anthropology, East Asian Studies)

Assistant Professors J. D. Connor (History of Art), Jessica Pressman (English), R. John Williams (English)

Media Theory and History examines the category of "media" as both an object and a method of study. This field of study considers media as historically constituted entities, as objects of theoretical and juridical debate, and as crucial elements of the messages they convey and the audiences they help to constitute. Media Theory and History bridges diverse disciplinary approaches, including literature, film, legal studies, history
of art, sociology, anthropology, architecture, history of science, and computer science. It considers the social contexts and cultural effects of different media, including oral communication, written and printed texts, recorded and broadcast sound and image, and digital media.

Yale College does not have a department or a major in media studies. Media Theory and History serves as a network connecting faculty members whose interests in research and teaching intersect around the subject of media. The faculty members listed above have made themselves available to advise students interested in approaching media from various disciplinary perspectives. Advisers help students identify appropriate sequences and combinations of courses, and meet with students about senior essays on interdisciplinary topics in media studies.

Modern Middle East Studies

Director of undergraduate studies: Andrew March, 135 RKZ, 432-4178, andrew.march@yale.edu; www.yale.edu/macmillan/cmes

FACULTY ASSOCIATED WITH THE PROGRAM OF MODERN MIDDLE EAST STUDIES

Professors Abbas Amanat (History), Gerhard Böwering (Religious Studies), John Darnell (Near Eastern Languages & Civilizations), Stephen Davis (Religious Studies), Benjamin Foster (Near Eastern Languages & Civilizations), Steven Fraade (Religious Studies), Eckart Frahm (Near Eastern Languages & Civilizations), Frank Griffel (Religious Studies), Beatrice Gruendler (Near Eastern Languages & Civilizations), Dimitri Gutas (Near Eastern Languages & Civilizations), Christine Hayes (Religious Studies), Marcia Inhorn (Anthropology), Anthony Kronman (Law School), Bentley Layton (Religious Studies), Joseph Manning (Classics, History), Ivan Marcus (History), Alan Mikhail (History), Robert Nelson (History of Art), W. Michael Reisman (Law School), Maurice Samuels (French), Lamin Sanneh (Divinity School), Yuval Sinai (Religious Studies, Law School) (Visiting), Harvey Weiss (Near Eastern Languages & Civilizations)

Associate Professors Kaveh Khoshnood (Public Health), Ellen Lust (Political Science), Colleen Manassa (Near Eastern Languages & Civilizations), Andrew March (Political Science), Ahmed Mobarak (School of Management), Kishwar Rizvi (History of Art)

Assistant Professors Narges Erami (Anthropology), Zareena Grewal (American Studies), Adria Lawrence (Political Science), Mark Lazenby (School of Nursing), Eliyahu Stern (Religious Studies), Jonathan Wyrtzen (Sociology)

Senior Lecturers Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies), Tolga Koker (Economics)

Lecturers Adel Allouche (History), Karla Britton (Architecture), Karen Foster (History of Art), Konstantina Maragkou (History), Kathryn Slanski (Near Eastern Languages & Civilizations)

Senior Lector II Ayala Dvoretzky

Senior Lectors Sarab al-Ani, Muhammad Aziz, Aaron Butts, Moulay Youness Elbousty, Shiri Goren, Shady Nasser, Dina Roginsky, Farkhondeh Shayesteh
Lecturer  Etem Erol

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, but prospective majors should keep the language requirement in mind while planning their course schedules (see below).

Requirements of the major  Twelve term courses are required for the major, including three foundational courses, one each in modern thought, classical thought, and the modern Middle East. Six electives on the modern Middle East examine culture and thought, history, religion, politics, and society. Elective courses must be spread geographically and substantively; they must focus on at least two different subregions and originate in at least two different departments. The proposed course of study requires the approval of the director of undergraduate studies.

Language requirement  All students are required to complete two courses at the L5 level in a Middle Eastern language. The two courses may be applied toward the twelve-course major requirement. Typical courses include ARBC 150, 151, and PERS 150.

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 a faculty adviser 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 descriptions of the senior essay courses (MMES 491, 492, 493) for additional information. Alternatively, majors may take an additional seminar and write an essay in that course to fulfill the senior requirement.

Requirements of the Major
Prerequisites  None
Number of courses  12 term courses
Distribution of courses  3 foundational courses, 1 each in modern thought, classical thought, and the modern Middle East; 6 electives spread geographically and substantively, focusing on at least 2 subregions and from at least 2 depts
Language requirement  2 courses at L5 level in a Middle Eastern lang
Senior requirement  Senior essay (MMES 491 or MMES 492, 493) or essay written in an addtl sem
Foundational Courses

MODERN THOUGHT

*MMES 105a / AFST 372a / SOCY 372a<sup>g</sup>, Comparative Nationalism in North Africa and the Middle East  Jonathan Wyrtzen

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).  so

CLASSICAL THOUGHT

MMES 171a / HIST 360a / NELC 402a, The Islamic Near East from Muhammad to the Mongol Invasion  Adel Allouche

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.  HU

MMES 192a / RLST 170a, The Religion of Islam  Gerhard Böwering

The rise of Islam in Arabia; Muhammad and the Qur’an; Muslim tradition and religious law; crucial issues of Islamic philosophy and theology; basic beliefs and practices of the Muslim community; Sufism and Shi’ism; religious institutions and modern trends; fundamentalism and violence; freedom and democracy.  HU

MMES 201a / HUMS 420a / LITR 178a / NELC 156a, Classics of the Arabic-Islamic World  Beatrice Gruendler

Survey of the literary tradition of the Arabic-Islamic world (West Asia, North Africa, and Muslim Spain), a textual conversation among diverse authors from late antiquity to the Mamluk period. 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.  HU  Tr

*MMES 389b / PLSC 329b<sup>g</sup> / RLST 197b<sup>g</sup>, Islamic Law and Ethics  Andrew March

Introduction to Islamic legal and ethical thought for advanced students of ethics, law, or political philosophy. The history of (Sunni) Islamic jurisprudence and positive law; doctrines and debates on the epistemic status of legal-ethical knowledge and the hermeneutical and analytic methods for deriving it; study of a substantive problem in Islamic legal and ethical thought.  so

*MMES 391a / RLST 287a<sup>g</sup>, Islamic Theology and Philosophy  Frank Griffel

Historical survey of major themes in Muslim theology and philosophy, from teachings of the Qur’an to contemporary Muslim thought. The systematic character of Muslim thought and of the arguments given by thinkers; reason vs. revelation; the emergence of Sunnism and Shi’ism; the reaction of Muslim theology (from 1800) to the challenges of the West.  HU
*MMES 490a / NELC 490a\(^G\), Introduction to Arabic and Islamic Studies
   Dimitri Gutas
   Comprehensive survey of subjects treated in Arabic and Islamic studies, with
   representative readings from each. Methods and techniques of scholarship in the
   field; 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.

THE MODERN MIDDLE EAST

MMES 102a / HUMS 440a / NELC 102a, Introduction to the Middle East
   Benjamin Foster
   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.  HU

*MMES 126a / ARCH 271a / HSAR 266a / HUMS 450a / SAST 266a, Introduction to
   Islamic Architecture  Kishwar Rizvi
   Introduction to the architecture of the Islamic world from the seventh century to the
   present, encompassing regions of Asia, North Africa, and Europe. A variety of sources
   and media, from architecture to urbanism and from travelogues to paintings, are used
   in an attempt to understand the diversity and richness of Islamic architecture. Field trip
   to the Metropolitan Museum of Art in New York.  HU

MMES 196a / AFST 280a / SOCY 135a, Islamic Society, Culture, and Politics
   Jonathan Wyrtzen
   The historical development of the global Muslim community, from its origins in
   seventh-century Arabia through its spread over subsequent centuries into the Middle
   East, Africa, Central, South, and Southeast Asia, and the West. The tremendous
   variation and complexity expressed in society, culture, and politics across the Islamic
   world; Islam as a unifying factor on critical issues such as religious practice, political
   structure and activism, gender, and cultural expression.  SO

MMES 411a / ANTH 221a\(^G\), Muslim Societies  Narges Erami
   Introduction to ethnographic and historical works on Muslim societies in the Middle
   East. Focus on relationships between sociocultural practices and experiences of living
   in the region. Themes include religion, nationalism, colonialism, Orientalism, kinship,
   media, informal networks, subjectivity, popular culture, the city, law, education, and
   gender and sexuality.  WR, SO

*MMES 480a / PLSC 374a\(^G\), Comparative Politics of the Middle East  Ellen Lust
   Overview of current scholarship on Middle East politics, with attention to ways in
   which it differs from scholarship based on other regions and to its place in the broader
discipline of comparative politics. The relationship between religion and politics;
participation in elections, civil society, and political activism; the role of the military;
labor and other actors.  SO

MMES 481b / PLSC 394b, Introduction to Middle East Politics  Ellen Lust
   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 these influence regime type,
political stability, and economic development.  SO
Elective Courses

*MMES 050b / RLST 050b, Islam and Modernity*  Frank Griffel
Introduction to contemporary Islam and to the notion of modernity. Focus on whether Islam excludes modernity and a democratic society and how Muslims see the relationship among Islam, modernity, and democracy. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU

*MMES 111b / ANTH 360b, Representing Iran*  Narges Erami
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.  SO

*MMES 144b / HIST 346b, The Making of Modern Iran*  Abbas Amanat
The political, socioreligious, and cultural history of modern Iran from the Shi’ite revolution and the rise of the Safavid Empire to the present. Discussion of Shi’ism and the state, relations with neighboring countries (the Ottoman Empire and India), Russia and Britain in Qajar Iran, the Babi-Baha’i religion, the constitutional revolution, the Pahlavi dynasty, oil, nationalism and relations with the United States, the causes and the consequences of the Islamic revolution, and Iran in the contemporary Middle East.  HU

*MMES 147a / HIST 347a, The Ottoman Empire*  Alan Mikhail
Major trends in Ottoman history and historiography. The political and imperial history of the ruling Ottoman elite; the culture, politics, and realities of marginal groups such as peasants, women, and minorities. The complex web of relationships between the state and its bureaucrats, peasants, judges, families, and merchants.  WR, HU

*MMES 149a / ER&M 219a / HIST 219aG / JDST 200aG / RLST 148aG, History of the Jews and Their Diasporas to Early Modern Times*  Ivan Marcus
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 European or non-Western distributional credit within the History major, upon application to the director of undergraduate studies.  HU RP

*MMES 156b / HEBR 161b / JDST 407b, Israeli Popular Music*  Dina Roginsky
Changes in the development of popular music in Israel explored as representations of changing Israeli society and culture. The interaction of music and cultural identity; modern popular music and social conventions; songs of commemoration and heroism; popular representation of the Holocaust; Mizrahi and Arab music; feminism, sexuality, and gender; class and musical consumption; criticism, protest, and globalization. Conducted in Hebrew. Prerequisite: HEBR 140 or equivalent.  L5

*MMES 157a / JDST 306a / NELC 157aG, Israeli Narratives*  Shiri Goren
Close reading of major Israeli novels in translation with attention to how their themes and forms relate to the Israeli condition. Theories of war and peace, migration, nationalism, and gender. Authors include Yehoshua, Grossman, Matalon, Castel-Bloom, and Kashua. No knowledge of Hebrew required.  HU Tr
*MMES 159a / HEBR 159a* / JDST 409a, *Conversational Hebrew: Israeli Media*
Shiri Goren
An advanced Hebrew course for students interested in practicing and enhancing conversational skills. Focus on listening comprehension and on various forms of discussion, including practical situations, online interactions, and content analysis.
Prerequisite: HEBR 140 or permission of instructor. L5 RP

*MMES 160b / JDST 323b / NELC 155b, *State and Society in Israel*
Dina Roginsky
The interplay between the state and society in Israel. Current Israeli discourse on controversial issues such as civil rights in a Jewish-democratic state, Jewish-Arab relations, and right and left politics. Issues of orthodoxy, military service, globalization, and multiculturalism in Israel. Sociopolitical changes that have taken place in Israel since the establishment of the state in 1948 and that have led to the reshaping of Israeli Zionist ideology. HU

*MMES 172b / HIST 384jb / NELC 403b, *The Middle East between Crusaders and Mongols*
Adel Allouche
The impact of the Crusades and the Mongol conquests on the Islamic Middle East. Political, social, and economic changes in the region from the eleventh century to the middle of the fourteenth. Emphasis on the rise of new dynasties as a result of changes in the ethnic mosaic of the Middle East. WR, HU

*MMES 173b / HIST 398Jb / NELC 404b, *Mamluk Egypt*
Adel Allouche
A study of the Mamluks, manumitted slaves initially imported to Egypt for military service 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 conquest by the Ottoman Turks. WR, HU

*MMES 181a / AFST 389a / PLSC 389a, *Middle East Exceptionalism*
Adria Lawrence
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. SO

*MMES 193b / HIST 351b / RLST 155b, *The Golden Age of Islam*
Gerhard Böwering
The development of Islamic civilization in the Middle East, North Africa, Spain, Iran, and India from Muhammad through the Mongol invasions to the rise of the Ottoman, Safavid, and Mughal empires (600–1500 C.E.). Emphasis on the intellectual and religious history of Islam in the age of the caliphates and during the rule of regional dynasties. HU

*MMES 282b / GLBL 362b / SOCY 339b, *Imperialism, Insurgency, and State Building in the Middle East and North Africa*
Jonathan Wyrzten
The historical evolution of political order from Morocco to Central Asia in the past two centuries. Focus on relationships between imperialism, insurgency, and state building. Ottoman, European, and nationalist strategies for state building; modes of local resistance; recent transnational developments; American counterinsurgency and nation-building initiatives in the region. SO

*MMES 291b / SOCY 232b, *Islamic Social Movements*
Jonathan Wyrzten
Social movement and network theory used to analyze the emergence and evolution of Islamic movements from the early twentieth century to the present. Organization,
mobilization, and framing of political, nonpolitical, militant, and nonmilitant movements; transnational dimensions of Islamic activism. Case studies include the Muslim Brotherhood, Hamas, Hizbollah, Al-Qaeda, Al-Adl wa-Ihsann, and Tablighi Jama’at. SO

*MMES 311b / ER&M 327b / WGSS 327b, Constructing the Self: From Autobiography to Facebook Geetanjali Singh Chanda

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; autobiography as a horizontal community formation. WR, HU

*MMES 344a / HIST 343JaG / NELC 316a / RLST 313aG, Iran’s Prophets of Protest Abbas Amanat

Iranian messianic movements from ancient to modern. Emphasis on continuity in patterns of dissent, social impact and challenges to religious and political establishments, and influences on the Islamic world and beyond. Zoroastrian apocalyptic origins, Manichean moral community and Mazdakite proto-communism, emergence of the Mahdi and Shi’i movements from Isma’ilis to Safavids, "Universal Peace" from Mughal India to Babi-Baha’i modernity, and messianic trends from the Islamic Revolution to contemporary Iran. HU

*MMES 350b / JDST 330bG / RLST 330bG, Multiculturalism and Jewish Law in Israel Yuval Sinai

Introduction to the history of pluralism and multicultural models in the Jewish legal tradition. The role of Jewish law in contemporary Israeli society; tensions between Jewish law and secular law; possible reconciliation of these tensions in light of both Jewish legal tradition and the realities of the modern Jewish and democratic state of Israel. HU

*MMES 351a / JDST 331aG / RLST 331aG, Jewish Law in the State of Israel Yuval Sinai

A historical study of Jewish law as the basis for modern Israeli law. Examination of cases in Israeli secular civil courts and in rabbinical courts. Attention to the wide range of subjects in which Jewish law has been utilized: public law, war and peace, criminal law, torts and biomedical law, morality, employment, judicial processes of procedure and evidence, and civil rights. HU

*MMES 465a or b / ARBC 165aG and bG, Arabic Seminar Dimitri Gutas [F]

and Beatrice Gruendler [Sp]

Study and interpretation of classical Arabic texts for advanced students. Prerequisite: ARBC 146, 151, or permission of instructor. May be repeated for credit. L5

Independent Directed Study

*MMES 471a and MMES 472b, Independent Directed Study Andrew March

Independent research or directed reading under the direction of a faculty member in the program on a special topic in Modern Middle East Studies not substantially covered by an existing undergraduate or graduate course. A proposal describing the nature of the
program and the readings to be covered must be signed by the adviser and submitted to the director of undergraduate studies by the end of the second week of classes. The student should meet with the adviser regularly, typically for an hour a week, and write one term essay or several short essays.

Senior Essay Courses

*MMES 491a or b, Senior Essay  Andrew March
The one-term senior essay is a research paper of at least thirty pages prepared under the supervision of a faculty member in accordance with the following schedule: (1) by the end of the second week of classes of the term, students meet with advisers to discuss the essay’s topic, approach, sources, and bibliography; (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, a rough draft of the complete essay is submitted to the adviser; (4) by 4 p.m. on the last day of reading period, two copies of the finished paper must be submitted to the MMES registrar, 115 Prospect St., room 344. A late essay will receive a lower grade. Senior essays are graded by faculty associated with the Modern Middle East Studies program unless, for exceptional reasons, different arrangements for another reader have been made in advance with the director of undergraduate studies and the faculty adviser.

MMES 492a and MMES 493b, The Yearlong Senior Essay  Andrew March
The yearlong senior essay is a research paper of at least sixty pages prepared under the supervision of a 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 essay’s topic, approach, sources, and bibliography; (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 February, a rough draft of the complete essay is submitted to the adviser; (4) by 4 p.m. on the last day of reading period in the spring term, two copies of the finished paper must be submitted to the MMES registrar, 115 Prospect St., room 344. A late essay will receive a lower grade. Senior essays are graded by faculty associated with the Modern Middle East Studies program unless, for exceptional reasons, different arrangements for another reader have been made in advance with the director of undergraduate studies and the faculty adviser. Credit for MMES 492 only on completion of MMES 493.

Molecular Biophysics and Biochemistry

Director of undergraduate studies: Michael Koelle, CE 28A SHM, 737-5808, madeline.cavanaugh@yale.edu; medicine.yale.edu/mbb/undergraduate
FACULTY OF THE DEPARTMENT OF MOLECULAR BIOPHYSICS AND BIOCHEMISTRY

Professors †Ken Anderson, Susan Baserga, †Ronald Breaker, †Gary Brudvig, Enrique De La Cruz, †Daniel DiMaio, Donald Engelman, Alan Garen, Mark Gerstein, Nigel Grindley (Emeritus), Mark Hochstrasser, Joe Howard, Anthony Koleske, William Konigsberg, †I. George Miller, †Peter Moore (Emeritus), Karla Neugebauer, †Thomas Pollard, Lynne Regan, †David Schatz, Dieter Söll, Mark Solomon, Joan Steitz, Thomas Steitz, Scott Strobel, †William Summers, Patrick Sung, Kenneth Williams (Adjunct), †Corey Wilson, †Sandra Wolin

Associate Professors Michael Koelle, Andrew Miranker, A. Elizabeth Rhoades, Yong Xiong

Assistant Professors †Richard Baxter, Christian Schlieker, Matthew Simon, Chuck Sindelar

Lecturers Carol Bascom- Slack, Kaury Kucera, 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 for the Class of 2016 and subsequent classes The basic science courses required of all majors include four half-term units of introductory biology (BIOL 101, 102, 103, 104); a general chemistry course with laboratory (CHEM 112, 113, or 114, 115, and 116L, 117L; or 118 and 119L); a year course in organic chemistry with laboratory (CHEM 124, 125, or 220, 230, and 222L, 223L); one term of physical chemistry (CHEM 328); two terms of calculus (MATH 112 and 115); and one year of physics (PHYS 170, 171, or 180, 181, or 200, 201). The B.A. major also requires one term of biology laboratory (MCDB 121L, 221L, E&EB 123L, or 223L). Some of the prerequisites in biology, chemistry, mathematics, and physics may be satisfied by receiving scores on Advanced Placement tests or placement examinations sufficient to earn acceleration credits in the particular subjects, even if the student does not choose to accelerate.

B.S. degree for the Class of 2016 and subsequent classes Nine courses are required beyond the prerequisites: MB&B 300, 301, 302, 360L, and 490; two additional upper-level MB&B electives, one of which must be a lecture course; one quantitative reasoning elective (e.g., MATH 120 or above, STAT 105 or 230 or above, CPSC 201 or above, or ENAS 130 or above); 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 470, 471, and 478, 479 may count toward these electives. Students may substitute CHEM 333 for MB&B 302. The quantitative reasoning requirement may not be fulfilled by Advanced Placement test scores.

**B.A. degree for the Class of 2016 and subsequent classes** Seven courses are required beyond the prerequisites: MB&B 251L, 300, 301, 302, and 490; one additional upper-level MB&B elective; and one quantitative reasoning elective (e.g., MATH 120 or above, STAT 105 or 230 or above, CPSC 201 or above, or ENAS 130 or above). Students choose the elective courses in consultation with a faculty adviser (see below). Students may substitute CHEM 333 for MB&B 302. 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 490, 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.

**The major for the Class of 2015 and previous classes** Students who have already taken or placed out of either MCDB 120 or E&EB 122 are not required to take BIOL 101, 102, 103, or 104. Beyond the prerequisites, the requirements for the major are the same as those for the Class of 2016, except that the B.S. degree requires one additional biology elective at the 200 level or higher.

Students who have not yet taken or placed out of MCDB 120 or E&EB 122 must either take or place out of at least two of the four introductory biology modules, BIOL 101, 102, 103, 104. Beyond the prerequisites, the requirements for the major are the same as those for the Class of 2016, except that the B.S. degree requires one additional biology elective at the 200 level or higher.
Recommended courses for all classes  All B.S. majors are encouraged to include MB&B 470 or 471 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 194, MATH 246, or PHYS 301) and a full year of physical chemistry (CHEM 328 or 332, and 333). In place of one term of biophysics (MB&B 302) they may elect a full year of upper-level biophysics (MB&B 420 and graduate courses in optical spectroscopy and macromolecular interactions). Such revisions to the basic curriculum must be made in consultation with the faculty adviser.

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 on the Biological and Biomedical Sciences Web site (http://bbs.yale.edu). 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.

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 300, 301) after one term of organic chemistry (CHEM 220).

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<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
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<td>BIOL 101, 102, 103, 104</td>
<td>CHEM 220, 230, 222L, 223L</td>
<td>MB&amp;B 300, 301</td>
<td>CHEM 328</td>
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<td>CHEM 112, 113, 116L, 117L</td>
<td>MATH 112, 115 And, for B.A. major: MCDB 221L or E&amp;E 223L</td>
<td>One quantitative reasoning elective PHYS 180, 181</td>
<td>MB&amp;B 302</td>
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<td>And, for B.A. major: MB&amp;B 251L</td>
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<td>And, for B.S. major: MB&amp;B 360L</td>
<td>And, for B.S. major: One science elective A second MB&amp;B elective</td>
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Combined B.S./M.S. degree program  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. See "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in Molecular Biophysics and Biochemistry.
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 2014:
J. Steitz, 136E BCMM (737-4418)
C. Schlicker, 236A BASS (432-5035)

Class of 2015:
P. Sung, C 130A SHM (785-4553)
C. Sindelar, CE 25 SHM (737-4752)

Class of 2016:
M. Hochstrasser, 224 BASS (432-5101)
W. Konigsberg, CE 14A SHM (785-4599)

Class of 2017:
L. Regan, 322 BASS (432-9843)
M. Simon, 220 BASS (432-5158)

REQUIREMENTS OF THE MAJOR
Prerequisites  All classes—CHEM 112, 113, or 114, 115, and 116L, 117L (or 118, 119L);
                   CHEM 124, 125, or 220, 230, and 222L, 223L; CHEM 328; MATH 112, 115;
                   PHYS 170, 171, or 180, 181, or 200, 201; Class of 2016 and subsequent classes—
                   B.S. — BIOL 101, 102, 103, 104; B.A. — BIOL 101, 102, 103, 104; MCDB 121L, 221L,
                   E&EB 123L, or 223L; Class of 2015 and previous classes—B.S. — MCDB 120 or
                   E&EB 122; B.A. — MCDB 120 or E&EB 122; MCDB 121L or E&EB 123L
Number of courses  Class of 2016 and subsequent classes—B.S. — 9 term courses
                   beyond prereqs, incl senior req; B.A. — 7 term courses beyond prereqs, incl senior req;
                   Class of 2015 and previous classes—B.S. — 10 term courses beyond prereqs, incl
                   senior req; B.A. — 7 term courses beyond prereqs, incl senior req
Specific courses required  All classes—B.S. — MB&B 300, 301, 302, 360L; B.A.
                 — MB&B 251L, 300, 301, 302
Distribution of courses  All classes—B.S. — 2 addtl MB&B electives, 1 quantitative
                   reasoning elective, and 1 science elective, all as specified; B.A. — 1 addtl MB&B
                   elective and 1 quantitative reasoning elective, as specified; Class of 2015 and
                   previous classes—B.S. — 1 addtl biology elective at 200 level or higher
Substitution permitted  CHEM 333 for MB&B 302
Senior requirement  Senior project (MB&B 490)

Courses

*MB&B 050a, Topics in Cancer Biology  Sandy Chang
Introduction to cancer as a genetic disease, with a focus on discoveries in cancer biology
that offer mechanistic insights into the disease process. A brief history of cancer;
influence of the genomic revolution on cancer diagnostics; molecular defects underlying
specific cancers; current and future cancer therapeutics. Patient case studies highlight
specific molecular pathways and treatment strategies. Enrollment limited to freshmen
with a strong background in biology and/or chemistry, typically demonstrated by a
score of 4 or 5 on Advanced Placement examinations. Preregistration required; see under Freshman Seminar Program.  

**MB&B 105a or b / MCDB 105a or b, An Issues Approach to Biology**  
Timothy Nelson  
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.  

**MB&B 110b, Current Issues in Biological Science**  
William Summers  
Students identify a scientific problem and then plan and execute a program of individualized learning aimed at the particular scientific knowledge required to understand and analyze the chosen problem. Intended to help students develop self-education skills as applied to scientific understanding, apply those skills to acquire some specific scientific knowledge, and understand the process by which scientific knowledge and understanding are achieved. For non–science majors.  

**[ MB&B 111, The Science of Human Hormones ]**  

**MB&B 218La / HSAR 218La, Art and Biomolecular Recognition Laboratory**  
Andrew Miranker and staff  
The chemical basis of artists’ materials, both modern and historical, examined through applied techniques in biomolecular recognition. Guided technical examination of works from Yale University Art Gallery collections. Students design their own assays and experiments. Intended for non–science majors.  

**MB&B 230b / MCDB 230b, Rain Forest Expedition and Laboratory**  
Scott Strobel and staff  
Preparation for a two-week expedition to one of the world’s rain forests during spring break and for a ten-week summer laboratory experience using samples collected during the expedition. Integrated topics draw on the fields of ecology, microbiology, chemistry, pharmacology, molecular biology, and bioinformatics. Students participate in an original scientific project from field biology to natural product characterization. After one year of introductory biology or equivalent; after or concurrently with one term of organic chemistry. Limited enrollment. Funding for major travel expenses and summer research provided.  

**MB&B 251La / MCDB 301La, Laboratory for Biochemistry**  
William Konigsberg and staff  
An introduction to current experimental methods in molecular biology. After or concurrently with MBB 200 or 300. Limited enrollment. Requires preregistration by e-mail to Aruna Pawashe and William Konigsberg prior to the first week of classes.  

**MB&B 300a, Principles of Biochemistry I**  
Michael Koelle and Matthew Simon  
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 BIOL 101; after or concurrently with CHEM 125 or 220  SC

**MB&B 301b**, Principles of Biochemistry II  Christian Schlicker and Joan Steitz  
A continuation of MB&B 300 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 300 or permission of instructor.  SC

**MB&B 302b**, Principles of Biophysics  Enrique De La Cruz and Chuck Sindelar  
An introduction to the theoretical basis of biophysical concepts and approaches with selected examples and applications. Prerequisites: MB&B 300 and CHEM 328.  SC

*MB&B 360Lb*, Laboratory for Biochemistry and Biophysics  Alan Garen and staff  
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 301. Limited enrollment. Preregistration required during the first week of November using a sign-up sheet outside 157 OML.  SC

**MB&B 420a**, Macromolecular Structure and Biophysical Analysis  Yong Xiong and staff  
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 301 and 302.  SC

**MB&B 435a**, Mathematical Methods in Biophysics  A. Elizabeth Rhoades and staff  
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 MBB. Prerequisites: MATH 120 and MB&B 300 or equivalents, or with permission of instructors.  QR, SC

**MB&B 443b**, Advanced Eukaryotic Molecular Biology  Mark Hochstrasser and staff  
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 300 and 301, or permission of instructor.  SC, RP

*MB&B 445b*, Methods and Logic in Molecular Biology  Anthony Koleske and staff  
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 300 and 301.  SC, RP

**MB&B 449a**, Medical Impact of Basic Science  Joan Steitz and staff  
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 300 and 301 or equivalents, or permission of instructor.  SC
MB&B 4524G / MCDB 4524G, Bioinformatics: Practical Application of Simulation and Data Mining  Mark Gerstein
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 301 and MATH 115, or permission of instructor. SC

*MB&B 470a and MBB 471b, Research in Biochemistry and Biophysics  Alan Garen
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 251L or 360L.

*MB&B 478a and MBB 479b, Intensive Research in Biochemistry and Biophysics  Alan Garen
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 MBB majors. Prerequisite: MB&B 251L or 360L. 2 Course cr per term

*MB&B 490b, The Senior Project  William Konigsberg and staff
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.

Molecular, Cellular, and Developmental Biology

Director of undergraduate studies: Douglas Kankel, 1220B KBT, 432-3839, crystal.adamchek@yale.edu, www.biology.yale.edu

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

Professors  Sidney Altman, Ronald Breaker, John Carlson, †Lynn Cooley, Craig Crews, Stephen Dellaporta, Xing-Wang Deng, Paul Forscher, Jo Handelsman, †Mark Hochstrasser, Vivian Irish, Christine Jacobs-Wagner, Douglas Kankel, †Paula Kavathas, Haig Keshishian, Mark Moosiker, †Jon Stanley Morrow, Timothy Nelson,
Thomas Pollard, Anna Pyle, Joel Rosenbaum, Frank Slack, †Hugh Taylor, Robert Wyman

**Associate Professors** Thierry Emonet, Martín García-Castro, Scott Holley, †Akiko Iwasaki, Weimin Zhong

**Assistant Professors** Murat Acar, †Sreeganga Chandra, Damon Clark, Nicole Clay, Valerie Horsley, Farren Isaacs, †Kathryn Miller-Jensen, †Matthew Rodeheffer

**Lecturers** Carol Bascom- Slack, †Alexia Belperron, Brett Berke, Emile Boulnapap, Iain Dawson, Mary Klein, Maria Moreno, Kenneth Nelson, †Aruna Pawashe, Barry Pickos, †William Segreves, Joseph Wolenski

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

The science of biology is extremely broad, ranging across the domains of molecules, cells, tissues and organs, 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 Molecular, Cellular, and Developmental 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 biologicals and pharmaceuticals, the practice of medicine, and pursuit of the scientific bases for understanding the development and function of biological systems.

Molecular, Cellular, and Developmental Biology (MCDB) offers programs for students wishing to concentrate on molecular and cellular biology and genetics, with applications to problems in cell and developmental biology, neurobiology, and various aspects of computational biology. Interdisciplinary opportunities are available within the major in the biotechnology and neurobiology tracks.

The MCDB major offers many opportunities for independent laboratory research. With approval, research can be conducted under the supervision of faculty members in any Yale department. Some programs for study abroad are available to MCDB majors; 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 and Professional Experience (http://cipe.yalecollege.yale.edu).

**Prerequisites** The basic science courses required of all MCDB majors are BIOL 101, 102, 103, 104; CHEM 112, 113, or 114, 115, or 118, taken with their associated laboratories, as well as one term of organic chemistry with laboratory (CHEM 124, 125 with 222L, 223L satisfies both chemistry requirements); two terms of PHYS 170, 171 or higher; and one term of MATH 115 or above (excluding MATH 190). The second term of organic chemistry, CHEM 230, may be used as an elective in the major. Note that these prerequisites fulfill most of the usual premedical science requirements.

Acceleration credit awarded in chemistry, mathematics, and physics, or completion of advanced courses in those departments, is accepted instead of the corresponding prerequisites for the MCDB major. Students who have mathematics preparation equivalent to MATH 115 or higher are encouraged to take additional mathematics courses, such as MATH 120, 121, 222, or 225.
Placement For students in the Class of 2016 and subsequent classes, placement in
MCDB courses is determined by examinations administered at Yale. Based on the
results of the examinations, a student may place out of one or more courses in the BIOL
101–104 sequence. However, one or more of these introductory Biology courses may be
explicitly required as prerequisites for upper-level MCDB courses.

Students in the Class of 2015 and previous classes 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 BIOL 101, 102, 103, and 104. Students with
equivalent scores on one of the corresponding chemistry tests, or who have scored 7 on
an International Baccalaureate higher-level examination in an appropriate subject, may
also be exempt from taking BIOL 101, 102, 103, and 104.

Placement in chemistry courses is arranged by the Chemistry department. Because
the required chemistry courses are prerequisite to several MCDB 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 flexible
program in later years.

Requirements of the major Beyond the prerequisites, the B.A. degree requires at least
eight course credits, including seven lecture courses or seminars and two laboratories,
as follows:

1. Three core courses: either MCDB 200 or 202; either MCDB 205 or 210; either
MCDB 300 or MB&B 300
2. Three electives, for three course credits, from MCDB courses numbered 200 or above
3. One elective, for one course credit, from MCDB courses numbered 350 or above
4. Two MCDB laboratories numbered 201L or above
5. The senior requirement, described below

Residential college seminars do not count toward the requirements of the major. The
MCDB major should not be taken as one of two majors with Molecular Biophysics and
Biochemistry or with Ecology and Evolutionary Biology.

Credit/D/Fail No course taken Credit/D/Fail may be counted toward the MCDB
major, including prerequisites.

Neurobiology track In addition to the three core courses for the standard major,
the neurobiology track requires the core course MCDB 320, as well as one MCDB
elective numbered 350 or above and two electives chosen from BENG 410, CPSC 475,
MCDB 240, 310, 315, 415, 430, 440, PSYC 270, and either STAT 101 or PSYC 200. Other
courses may be substituted with the approval of the student’s track adviser. (Students
should note that PSYC 110 is a prerequisite for many psychology courses but does
not substitute as an elective in the neurobiology track.) Two laboratories chosen from
MCDB courses numbered 201L or above are also required. Students interested in the
neurobiology track should consult an adviser for the track. Advisers whose names are
listed followed by "(F)" may be consulted during the fall term; others may be consulted
during either term.
Neurobiology track advisers
P. Forscher, 222 KBT (432-6344)
H. Keshishian, 640A KBT (432-3478)
R. Wyman [F], 610A KBT (432-3475)
W. Zhong, 616 KBT (432-9233)

Biotechnology track In addition to the three core courses for the standard major, the biotechnology track requires the core course MCDB 370 and three electives chosen from any MCDB course numbered 200 or above, MB&B 420, MB&B 421, 443, BENG 351, 352, 410, 435, 457, 464, CENG 210, 411, 412, CPSC 437, 445, 470, or 475. Two laboratories are required: either two from MCDB (including at least one from MCDB 341L to MCDB 345L), or BENG 355L, 356L or CENG 412. Students interested in the biotechnology track should consult an adviser for the track. Advisers whose names are listed followed by "[F]" may be consulted during the fall term; others may be consulted during either term.

Biotechnology track advisers
R. Breaker, 506 KBT (432-9389)
X. W. Deng [F], 352B OML (432-8908)
K. Nelson, 710A KBT (432-5013)
J. Wolenski, 330 KBT (432-6912)

Electives in all tracks If both MCDB 200 and 202 are taken, one counts as a core course and the other as an elective. If both MCDB 205 and 210 are taken, one counts as a core course and the other as an elective. Two laboratory courses, either MCDB 342L and 343L or 344L and 345L, 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. Residential college seminars cannot be substituted for electives.

Many of the courses in other departments listed above have prerequisites; such prerequisites can be substituted for an upper-level elective with permission of the director of undergraduate studies.

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 (1220B KBT). All students must fill out a checklist of requirements and go over it with the undergraduate registrar, Crystal Adamchek, by the spring term of the junior year. For the B.A. degree the senior 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 (MCDB 470); or by successful completion of one term of individual research (MCDB 475).

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 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 for the B.S. is usually fulfilled by completing a yearlong research course, MCDB 485, 486. Alternatively, two consecutive terms of MCDB 475 can be taken during the senior year. In the case of a two-term project in MCDB 475, it is possible for a student to begin the project during the spring term of the junior year, continue it over the summer, and complete it during the fall term of the senior year. In all other cases, the senior requirement must be completed during the senior year. Yale College does not grant academic credit for summer research unless the student is enrolled in an independent research course in Yale Summer Session. Seniors working toward the B.S. degree are expected to spend ten hours per week conducting individual research.

**B.S. degree, intensive major** Requirements for the B.S. degree with an intensive major are the same as those for the B.A. degree except that students take an additional seminar numbered MCDB 350 or higher and fulfill the senior requirement by taking MCDB 495, 496, Intensive Research, for four course credits. The additional seminar does not need to be taken during the senior year. Seniors in the intensive major are expected to spend twenty hours per week conducting individual research.

**Research courses before senior year** The research courses MCDB 475, 485, 486, and 495, 496 exist primarily to fulfill the senior requirement. Some students may wish to take MCDB 475 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 for the major, including the senior requirement. Students may take up to three credits in MCDB 475 (MCDB 485, 486 counts as two terms of MCDB 475 in this calculation) during their undergraduate career.

**Laboratory preparation for research** Students with an interest in particular problems in cellular and molecular biology and who are planning to undertake independent research may wish to take one or more of the following laboratories first: MCDB 303L, 342L, 343L, 344L, or 345L.

**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. 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. The requirements are as follows:

1. Candidates must satisfy the Yale College requirements for the B.S. degree. Students in the program must complete the three or four core courses for the major (depending on track) and choose their three or four electives from graduate-level courses. One of
these electives must be a graduate seminar selected with the approval of the director of undergraduate studies. Grades below B– in graduate courses are not accepted.

2. In addition to the courses specified above, students must complete two graduate research courses for six course credits: (a) MCDB 585, 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 faculty adviser and two faculty members that meets to discuss the research project. Two of the members of this committee must be members of the MCDB faculty. 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, a four-credit, yearlong course that is similar to MCDB 495, 496 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. To be considered for admission to the program, by the end of their fifth term of enrollment students must 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 the major, including prerequisites.

2. Students must apply in writing to the director of undergraduate studies and obtain departmental approval no later than the last day of classes in their fifth term of enrollment in Yale College. 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.

3. 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 department during their last four terms at Yale and at least two undergraduate courses during their last two terms.

4. Students must earn grades of A in at least two of their graduate-level term courses (or in one year course) and have at least a B average in the remaining ones.

For more information, see "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations.

**Advising** Freshmen considering a major in Molecular, Cellular, and Developmental Biology are invited to consult with the director of undergraduate studies and/or a faculty member in MCDB who is a fellow of their residential college. For assistance in identifying a suitable adviser, students should contact the departmental undergraduate registrar, Crystal Adamchek. Students in the neurobiology or biotechnology track should consult an adviser for their track (listed above). The course schedules of all MCDB majors (including sophomores intending to major in MCDB) must be signed
by a faculty member in the department. The signature of the director of undergraduate studies is required only for students who are fulfilling the requirements of two majors or who have been admitted to the simultaneous B.S./M.S. degree program. Students whose regular adviser is on leave can consult the office of the director of undergraduate studies to arrange for an alternate.

Any member of the MCDB department can serve as a faculty adviser to majors. College faculty advisers available to freshmen are listed below.

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<tr>
<th>Code</th>
<th>Name</th>
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<tbody>
<tr>
<td>BK</td>
<td>M. Garcia-Castro, J. Wolenski</td>
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<td>BR</td>
<td>N. Clay, I. Dawson</td>
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<td>CC</td>
<td>M. Mooseker [F], R. Wyman [F]</td>
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<td>DC</td>
<td>C. Bascom-Slack, V. Irish, W. Zhong</td>
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<td>TD</td>
<td>S. Holley</td>
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<td>JE</td>
<td>R. Breaker, T. Emonet, F. Isaacs, T. Nelson</td>
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**Requirements of the Major**

**Prerequisites**  
BIOL 101, 102, 103, 104; CHEM 112, 113, or 114, 115, or 118, with labs, and 1 term of organic chem with lab (CHEM 124, 125 with 222L, 223L satisfies both reqs); PHYS 170, 171 or higher; MATH 115 or above (except MATH 190); all courses taken for letter grades

**Number of courses**  
B.A. — at least 7 courses and 2 labs beyond prereqs taken for letter grades, totaling at least 8 course credits (incl senior req); B.S. — 9 courses and 2 labs beyond prereqs taken for letter grades, totaling at least 10 course credits (incl senior req); B.S., intensive major — 10 courses and 2 labs beyond prereqs taken for letter grades, totaling at least 13 course credits (incl senior req)

**Specific courses required**  
All tracks — MCDB 200 or 202; MCDB 205 or 210; MCDB 300 or MB&B 300; Neurobiology track — MCDB 320; Biotechnology track — MCDB 370

**Distribution of courses**  
Standard track — 3 electives from MCDB numbered 200 or above; 1 addtl MCDB course numbered 350 or above; 2 labs in MCDB numbered 201L or above; Neurobiology and biotechnology tracks — 3 electives and two labs as specified

**Senior requirement**  
B.A. — MCDB 470 or 475 taken in senior year, or senior essay; B.S. — 2 consecutive terms of MCDB 475, at least 1 in senior year, or MCDB 485, 486

**Intensive major**  
1 addtl sem numbered MCDB 350 or higher; MCDB 495, 496 in senior year

**Introductory Courses**

*MCDB 050a, Immunology and Microbes*  
Paula Kavathas
Principles of immunology, microbiology, and host-microbe interaction. Innate and adaptive immunity; principles of vaccination. Organisms studied include HIV, influenza, human papilloma virus, polio, and human microbiota.  
SC  RP
*MCDB 103a, Cancer  Alexia Belperron
Introduction to the biology of cancer, with a focus on leukemia, skin cancer, and cancers linked to infection. Topics include genetics, biochemistry, immunity, infection agents, and challenges for prevention and treatment. Intended for non-science majors and underclassmen.  SC

MCDB 105a or b / MB&B 105a or b, An Issues Approach to Biology  Timothy Nelson
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.  SC

*MCDB 106a / HLTH 155a, Biology of Malaria, Lyme, and Other Vector-Borne Diseases  Alexia Belperron
Introduction to the biology of pathogen transmission from one organism to another by insects; special focus on malaria and Lyme disease. Biology of the pathogens including modes of transmission and establishment of infection; immune responses and the associated challenges to prevention and treatment. Intended for non-science majors; preference to freshmen and sophomores. Prerequisite: high school biology.  SC

*MCDB 109b, Immunity and Contagion  Paula Kavathas and Sarah Bertino
Introduction to the human immune system, followed by study of microorganisms such as influenza, HIV, human papilloma virus, and human microbiota. Discussion of the biology of each organism and interaction with the host immune system, reinforcing principles of immune function. Enrollment limited to freshmen and sophomores.  SC

MCDB 123b, Genes and Environment  Jo Handelsman
The nature of biological thought and inquiry explored through study of the interplay between genes and the environment. Influence of the microbial world on the physiology and evolution of organisms. Tools from molecular biology and genomics are used to examine the effects of internal and external factors on gene expression, how the process of gene expression leads to observable characteristics, and the relationship between bacterial gene expression and human survival. Intended for non-science majors.  SC

[ MCDB 150, The Human Population Explosion ]

*MCDB 166b, From Microbes to Molecules I  Jo Handelsman and Carol Bascom- Slack
The first term of a yearlong introduction to biology and chemistry through research on soil bacteria. Focus on the discovery of antibiotics from soil bacteria isolated from the Yale campus. Diversity of life, structure of biomolecules, components of a cell, molecular basis of gene expression, heritability, and symbiosis. Comparison with eukaryotic molecular and cellular biology. Class sessions include lecture and laboratory components. Enrollment limited to freshmen and sophomores, with preference to freshmen.  SC 1½ Course cr

*MCDB 167b / CHEM 167b, From Microbes to Molecules II  Andrew Phillips
The second term of a yearlong introduction to biology and chemistry through research on soil bacteria isolated from the Yale campus. Focus on the molecular basis of antibiotic activity. Introduction to organic chemistry, the structure of small molecules and their place in central dogma, physical principles underpinning separations science, molecular spectroscopy, and mass spectroscopy. Class sessions include lecture and
laboratory components. Prerequisite: MCDB 166. Enrollment limited to freshmen and sophomores, with preference to freshmen. SC 1½ Course cr

Intermediate and Advanced Courses

**MCDB 200b, Molecular Biology**  Stephen Dellaporta and staff
A study of the fundamental principles of molecular biology, including the experimental methodologies used in biological research. Topics include the structure, function, and chemical behavior of biological macromolecules (DNA, RNA, and protein), chromosome and genome organization, replication and maintenance of the genome, transcriptional and translational regulation, microRNAs and other noncoding RNAs, RNA processing, and systems biology. Designed to provide an accelerated venue for MCDB majors and other students seeking to understand the molecular basis for gene expression and biological function. Prerequisites: CHEM 112, 114, or 118, and BIOL 101 or equivalent performance on the corresponding biological sciences placement examination; or permission of instructor. SC
Psychology: AdvSci NeuroTrk

**MCDB 201Lb, Molecular Biology Laboratory**  Maria Moreno
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 200. Special registration procedures apply. Interested students must contact the instructor and attend an organizational meeting during the first week of classes. WR, SC ½ Course cr

**MCDB 202a, Genetics**  Stephen Dellaporta and staff
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. Prerequisite: BIOL 103 or equivalent performance on the corresponding biological sciences placement examination. SC RP

**MCDB 203La, Laboratory for Genetics**  Iain Dawson and William Leiserson
Introduction to laboratory techniques used in genetic analysis. Genetic model organisms—bacteria, yeast, *Drosophila*, and *Arabidopsis*—are used to provide practical experience with various classical and molecular genetic techniques including cytogenetics; complementation, epistasis, and genetic suppressors; mutagenesis and mutant analysis, recombination and gene mapping, isolation and manipulation of DNA, and transformation of model organisms. Concurrently with or after MCDB 202. SC ½ Course cr

**MCDB 205b, Cell Biology**  Thomas Pollard and staff
A comprehensive introductory course in cell biology. Emphasis on the general principles that explain the molecular mechanisms of cellular function. Prerequisites: BIOL 101 and 102, or equivalent performance on the corresponding biological sciences placement examinations, or a score of 5 on the Advanced Placement test in Biology, or a score of 710 or above on the SAT Biology M test, or MCDB 200. SC
**MCDB 210a, Developmental Biology**  Scott Holley and staff  
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. Prerequisites: BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations.  *sc*

**MCDB 221La, Model Systems in Biological Research**  Maria Moreno  
An introduction to research and common methodologies in the biological sciences, with emphasis on the utility of model organisms. Techniques and methods commonly used in biochemistry, cell biology, genetics, and molecular and developmental biology; experimental design; data analysis and display; scientific writing. Concurrently with or after BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations, or with permission of instructor.  *sc ½ Course cr*

**MCDB 230b / MB&B 230b, Rain Forest Expedition and Laboratory**  Scott Strobel and staff  
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.  *sc*

**MCDB 240b, Biology of Reproduction**  Hugh Taylor and Mary Klein  
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. Prerequisites: BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations, or a score of 5 on the Advanced Placement test in Biology, or a score of 710 or above on the SAT Biology M test.  *sc*

**MCDB 241Lb, Laboratory for Biology of Reproduction and Development**  Mary Klein  
Laboratory investigation of reproductive and developmental processes in classic vertebrate and invertebrate systems, with emphasis on mammalian reproduction and development. Topics include gametogenesis, ovulation, hormonal control of reproduction, and investigation of embryogenesis in the mouse, frog, and fruit fly. Enrollment limited. Concurrently with or after MCDB 210 or 240. Not open to freshmen. Special registration procedures apply; students must consult the instructor prior to the first week of classes.  *sc ½ Course cr*

**MCDB 290b, Microbiology**  Christine Jacobs-Wagner and Carol Bascom-Slack  
Cell structure of microorganisms, bacterial genetics, microbial evolution and diversity, microbial development, microbial interaction, chemotaxis and motility, gene regulation, microbial genomics, host defense systems, infectious diseases, viruses, and biological weapons. Prerequisites: BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations; two terms of organic
chemistry; one term of biochemistry, cell biology, or genetics; or with permission of instructor.  SC

*MCDB 291Lb, Laboratory for Microbiology  Iain Dawson
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 290. Electronic permission key required; students should contact the instructor prior to the first class meeting.  SC  ½ Course cr

*MCDB 300b / MB&B 200b, Biochemistry  Ronald Breaker and staff
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. Prerequisites: BIOL 101, or equivalent performance on the corresponding biological sciences placement examination; one term of organic chemistry; or with permission of instructor.  SC

*MCDB 301La / MB&B 251La, Laboratory for Biochemistry  William Konigsberg and staff
An introduction to current experimental methods in molecular biology. After or concurrently with MB&B 200 or 300. Limited enrollment. Requires preregistration by e-mail to Aruna Pawashe and William Konigsberg prior to the first week of classes.  SC  ½ Course cr

*MCDB 303Lb, Advanced Molecular Biology Laboratory  Maria Moreno and Kenneth Nelson
A laboratory course that provides advanced research skills in molecular biology. Weekly workshops focus on laboratory practice, experimental design, data analysis, reading of primary literature, scientific presentations, and scientific writing skills. Application of these skills in project-based laboratory training sponsored by a faculty member. Enrollment limited. For juniors who have completed MCDB <121L> or 201L and are planning their senior research projects. No research laboratory experience required. Special registration procedures apply; interested students must contact the instructor and attend an organizational meeting.  SC  RP

*MCDB 310a G / BENG 350a G, Physiological Systems  Mark Saltzman and staff
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 113 or 115, or PHYS 180 and 181; MCDB <120>, or BIOL 101 and 102.  SC

MCDB 315b, Biological Mechanisms of Reaction to Injury  Joseph Madri and staff
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&B. Prerequisite: MCDB 205, 300, or 310.  SC  RP

MCDB 320a G, Neurobiology  Haig Keshishian and Paul Forscher
The excitability of the nerve cell membrane as a starting point for the study of molecular, cellular, and systems-level mechanisms underlying the generation and
control of behavior. After a year of college-level chemistry; a course in physics is strongly recommended. SC

MCDB 321La, Laboratory for Neurobiology  Haig Keshishian and staff
Introduction to the neurosciences. Projects include the study of neuronal excitability, sensory transduction, CNS function, synaptic physiology, and neuroanatomy. Concurrently with or after MCDB 320. SC ½ Course cr

*MCDB 341La or b, Laboratory in Electron Microscopy  Barry Piekos
Techniques in light and electron microscopy. Enrollment limited; preference to majors in MCDB or MB&G. Students must devote two to three laboratory hours per week in addition to the published meeting time. Students should contact the instructor prior to the first week of classes. After or concurrently with MCDB 205; prior laboratory experience strongly recommended. SC RP ½ Course cr

*MCDB 342La, Laboratory in Nucleic Acids I  Kenneth Nelson
A project from a research laboratory within the MCDB department, using technologies from molecular and cell biology. Laboratories meet twice a week for the first half of the term. Concurrently with or after MCDB 202, 205, or 300. Enrollment limited. Special registration procedures apply; students must consult the instructor prior to the first week of classes. SC ½ Course cr

*MCDB 343La, Laboratory in Nucleic Acids II  Kenneth Nelson
Continuation of MCDB 342L to more advanced projects in molecular and cell biology, such as making and screening cDNA libraries, microarray screening and analysis, or next-generation DNA sequencing. Laboratories meet twice a week for the second half of the term. Prerequisite: MCDB 342L or permission of instructor. Enrollment limited. Special registration procedures apply; students must consult the instructor prior to the first week of classes. SC ½ Course cr

*MCDB 344Lb, Experimental Techniques in Cellular Biology  Joseph Wolenski
An inquiry-based approach to research in cell and molecular biology, with emphasis on experimental strategies and techniques. Research is module-based and includes topics in gene expression, protein purification, and fluorescence microscopy. Methods include SDS-PAGE, immunoblots, column chromatography, mammalian cell culture, cell fractionation, cell transfection, and phase contrast and confocal microscopy. Prepares for MCDB 475, 485, or 495. Meets during January and February. Prerequisite: MCDB 205. Special registration procedures apply; interested students must contact the instructor at least eighteen months in advance. SC ½ Course cr

*MCDB 345Lb, Experimental Strategies in Cellular Biology  Joseph Wolenski
Continuation of MCDB 344L, with increased emphasis on experimental design and interpretation of data. Students develop semi-independent research projects in modern biomedical research. Emphasis on key components of being a successful principal investigator, including benchwork, seminar presentations, lab meetings, and experimental design. Prepares for MCDB 475, 485, or 495. Meets during March and April. Prerequisite: MCDB 344L. Special registration procedures apply; interested students must contact the instructor at least eighteen months in advance. SC ½ Course cr
*MCDB 370bG, Biotechnology  Xing-Wang Deng and staff
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 200, 202, or 300.  SC

*MCDB 387b, The Eukaryotic Cell Cycle  Lain Dawson
The regulation and coordination of the eukaryotic cell cycle examined by means of a detailed critique of primary literature. Particular attention to the role of the cell cycle in the processes of development and differentiation and in cancer and other diseases. Students develop an understanding of experimental approaches to problem solving. Enrollment limited, with preference to juniors and seniors. Prerequisites: BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations; MCDB 202, 205, or 210. Electronic permission key required. Students must contact the instructor prior to the first class meeting.  SC

*MCDB 415bG, Cellular and Molecular Physiology  Frederick Sigworth and Emile Boulpaep
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 205, 310, 320, or permission of instructor.  SC

*MCDB 430aG, Biology of the Immune System  Akiko Iwasaki and staff
The development of the immune system. Cellular and molecular mechanisms of immune recognition. Effector responses against pathogens. Immunologic memory and vaccines. Human diseases including allergy, autoimmunity, immunodeficiency, and HIV/AIDS. After MCDB 300.  SC

*MCDB 435a, Landmark Papers in Cell Biology  Joel Rosenbaum
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. Weekly discussion by all participants required. Students should contact the instructor prior to the first week of classes. Prerequisites: courses in cell biology, biochemistry, and genetics, or permission of instructor.  SC

*MCDB 440bG, Brain Development and Plasticity  Weimin Zhong and staff
Recent advances in scientific understanding of brain development and plasticity, including neuronal determination, axon guidance, synaptogenesis, and developmental plasticity. Prerequisites: BIOL 101, 102, and 103, or equivalent performance on the corresponding biological sciences placement examinations; MCDB 320 or permission of instructor.  SC

*MCDB 450b, The Human Genome  Stephen Dellaporta
A focus on the primary scientific literature covering the principles of genomics and its application to the investigation of complex human traits and diseases. Topics include the technology of genome sequencing and resequencing, the characterization of sequence and structural variation in human populations, haplotype and linkage
disequilibrium analysis, genome-wide association studies, the comparative genomics of humans and our closest relatives, and personalized genomics and medicine. Enrollment limited to 15. Students should contact the instructor prior to the first week of classes. Prerequisite: MCDB 202; a course in statistics is strongly recommended. sc

**MCDB 452aG / MB&B 452aG, Bioinformatics: Practical Application of Simulation and Data Mining**  
Mark Gerstein

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 301 and MATH 115, or permission of instructor. sc

**MCDB 470a or b, Tutorial in Molecular, Cellular, and Developmental Biology**  
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. 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 on the departmental Web site [http://www.biology.yale.edu/undergrad/forms.html](http://www.biology.yale.edu/undergrad/forms.html) and on the course site on Classes*v2 ([https://classesv2.yale.edu/portal](https://classesv2.yale.edu/portal)) and a written plan of study with bibliography, approved by the faculty research adviser. The form and proposal must be uploaded to Classes*v2 ([https://classesv2.yale.edu/portal](https://classesv2.yale.edu/portal)) by the end of the second week of classes. The final paper is due in the hands of the sponsoring faculty member, with a copy to the course instructor, by the last day of classes. 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 may count as an elective toward the major. Fulfills the senior requirement for the B.A. degree if taken in the senior year.

**MCDB 475a or b, Research**  
Douglas Kankel

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. To register, the student must prepare a form (available on the departmental Web site [http://www.biology.yale.edu/undergrad/forms.html](http://www.biology.yale.edu/undergrad/forms.html) and on the course site on Classes*v2 ([https://classesv2.yale.edu/portal](https://classesv2.yale.edu/portal)) and a written plan of study with bibliography, approved by the faculty research adviser. The form and proposal must be uploaded to Classes*v2 ([https://classesv2.yale.edu/portal](https://classesv2.yale.edu/portal)) by the end of the second week of classes. The final research paper is due in the hands of the sponsoring faculty member, with a copy uploaded to Classes*v2 ([https://classesv2.yale.edu/portal](https://classesv2.yale.edu/portal)), by the last day of classes. Seniors taking this course to fulfill the senior requirement must give an oral presentation of their research at the end of the term. Students who take this course more than once must reapply each term; students planning to conduct two terms of research should consider enrolling in MCDB 485, 486. Students should line up a research laboratory during the term preceding the
research. Fulfills the senior requirement for the B.A. degree if taken in the senior year. Two consecutive terms of this course fulfill the senior requirement for the B.S. degree if at least one term is taken in the senior year.

*MCDB 482a, Advanced Seminar in Cell Biology: Intracellular Signal Transduction*
Craig Crews
Discussion of intracellular signal transduction pathways. Detailed critique of experimental approaches, controls, results, and conclusions of selected current and classic papers in this field.  

*MCDB 485a and MCDB 486b, Research in Molecular, Cellular, and Developmental Biology*
Douglas Kankel and Ronald Breaker
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. Written assignments include a short research proposal summary due at the beginning of the first term, a grant proposal due at the end of the first term, and a research report summarizing experimental results due at the end of the second term. Students are also required to present their research in either the fall or the spring term. A poster session is held at the end of the spring term. Students should line up a research laboratory during the term preceding the research. Guidelines for the course may be obtained on the departmental Web site (http://www.biology.yale.edu/undergrad/forms.html) and on the course site on Classes+ (https://classesv2.yale.edu/portal). Written proposals are due by the end of the second week of classes. Fulfills the senior requirement for the B.S. degree if taken in the senior year.

*MCDB 495a and MCDB 496b, Intensive Research in Molecular, Cellular, and Developmental Biology*
Douglas Kankel and Ronald Breaker
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. Written assignments include a short research proposal summary due at the beginning of the first term, a grant proposal due at the end of the first term, and a research report summarizing experimental results due at the end of the second term. Students must attend a minimum of three research seminar sessions (including their own) per term. Students are also required to present their research during both the fall and spring terms. A poster session is held at the end of the spring term. Guidelines for the course may be obtained on the departmental Web site (http://www.biology.yale.edu/undergrad/forms.html) and on the course site on Classes+ (https://classesv2.yale.edu/portal). Written proposals are due by the end of the second week of classes. Fulfills the senior requirement for the B.S. degree with an intensive major. 2 Course cr per term

**Music**

Director of undergraduate studies: Ian Quinn, 205 STOECK, 432-2986, dus.music@yale.edu; yalemusic.yale.edu
FACULTY OF THE DEPARTMENT OF MUSIC

Professors Kathryn Alexander (Adjunct), Richard Cohn, Allen Forte (Emeritus), Michael Friedmann (Adjunct), Daniel Harrison, James Hepokoski (Chair), Richard Lalli (Adjunct), Patrick McCreless, Leon Plantinga (Emeritus), Ian Quinn, Ellen Rosand, Gary Tomlinson, Michael Veal, Craig Wright

Associate Professors Shinik Hahm (Adjunct), Gundula Kreuzer, Toshiyuki Shimada (Adjunct), Sarah Weiss

Assistant Professors Rebekah Ahrendt, Brian Kane, Michael Klingbeil (Adjunct), Ève Poudrier

Lecturers Daniel Egan, Andrew Gerle, Emily Green, Grant Herreid, Sarah Kohane, Sarita Kwok, Joshua Rosenblum, Stanley Scott, Wendy Sharp, Jeanine Tesori

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 from 100 to 199, 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 360, 361, 460, and 461). Of these four credits, only two may be applied to the major in Music. See "Individual Instruction in Performance" 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 210, 211, 218, and 219. 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, a survey of world music, and a two-course music theory requirement. The survey courses in music history and world music are MUSI 350, 351, 352, and 353. Students choose two courses from the music theory series numbered 301 through 311 to satisfy the music theory requirement. Also required is one course designated "Senior sem" during the senior year. Five additional term courses in music chosen from Levels II, III, and IV (only one of which is from Level II) complete the major. Prospective majors are advised to begin the required courses by their sophomore year.

Students intending to go on to graduate work are advised to study German and French to achieve at least a reading knowledge of those languages. All Music majors are urged to undertake regular studies in musical performance.

Credit/D/Fail courses Courses taken Credit/D/Fail may not be counted toward the requirements of the major.
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.

The intensive major  The intensive major is for students of high standing who are qualified to do independent and original work in the history or theory of music or in composition. Those admitted to this major elect MUSI 490, 491 in the senior year in addition to the senior seminar.

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 360, 361, 460, and 461) and MUSI 210 and 211 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 350, 351, 352, and 353, 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 Orchestra 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 210, 211, 218, and 219, or equivalents
Number of courses  12 term courses beyond prereqs, 11 numbered 300 or above
Specific courses required  MUSI 350, 351, 352, 353, and 2 from 301–311
Distribution of courses  5 addtl courses from Levels II, III, IV, of which only 1 is from Level II
Senior requirement 1 senior sem

Intensive major Senior sem and senior essay or project (MUSI 490, 491)

Freshman Seminars

*MUSI 002a, The Role of the Performer in the Musical Experience*
Michael Friedmann
Various models of the role of the performer in the composer-performer-audience partnership that comprises the musical experience. Repertoire for case studies ranges from baroque to mid-twentieth-century works, and from solo (both vocal and instrumental) to chamber and orchestral works. Audio and video recordings are used to introduce concepts of interpretation, stylistic approaches associated with specific historical periods, the performer as intermediary for the composer’s wishes, and the performer’s use of repertoire as a platform for personal expression. Extensive listening exercises. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. Prerequisite: ability to read music.  HU

*MUSI 010b, Music and Diplomacy*
Rebekah Ahrendt
The history of music in cultural diplomacy, with a focus on theoretical frameworks that grew up around musical practices as a result of music’s diplomatic functions. Scores, instruments, and performers mobilized in the service of diplomacy; the influence of past practices on contemporary policy; state-sponsored musical tours; diplomatic patronage; universal vs. national music, including the use of such labels to further diplomatic goals. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU

Level I

*MUSI 107b / HUMS 217b, Exploring the Nature of Genius*
Craig Wright
The changing meanings of the term "genius" in Western culture; discussion as to whether genius is a reality. Focus on the special talents needed to respond to and shape the world in a defining fashion, and the quirky patterns of thought exemplified by great minds, principally Leonardo da Vinci, Newton, Mozart, Woolf, Beethoven, van Gogh, Picasso, Joyce, and Hitler. Recent developments in neurobiology that suggest future lines of research into the minds of exceptional individuals.  WR, HU

*MUSI 110a or b, Introduction to the Elements of Music*
Richard Lalli
The fundamentals of musical language (notation, rhythm, scales, keys, melodies, and chords), including writing, analysis, singing, and dictation. Intended for students who have no music reading ability.

*MUSI 112a, Listening to Music*
Craig Wright
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.  HU
MUSI 130a, Introduction to the History of Western Music: 900 to 1800
Rebekah Ahrendt
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. HU

MUSI 131b, Introduction to the History of Western Music: 1800 to the Present
Gundula Kreuzer
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. HU

MUSI 175b, The Mathematics of Music
Richard Cohn and Andrew Jones
An introduction to applied mathematics in the context of music theory and analysis. Concepts from algebra, modular arithmetic, set theory, geometry, and elementary topology are applied to the study of musical rhythms, melodies, and chords across a wide repertoire of classical, atonal, and popular musics. Prerequisite: ability to read music. QR, HU

Level II
*MUSI 205a or b, Tonal Harmony and Form
Brian Kane
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 110 must take the music theory placement test. See the Calendar for the Opening Days or the Music department Web site for information about the placement test. To be followed by MUSI 210. HU

MUSI 210a or b, Elementary Studies in Analysis and Model Composition I
Ève Poudrier and staff
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 218 or 219. Admission after MUSI 205 or by the music theory placement test. See the Calendar for the Opening Days or the Music department Web site for information about the placement test. To be followed by MUSI 211. HU, RP

MUSI 211a or b, Elementary Studies in Analysis and Model Composition II
Richard Cohn and staff
Continuation of MUSI 210. Recommended to be taken concurrently with MUSI 218 or 219. Admission after MUSI 210 or by the music theory placement test. See the Calendar for the Opening Days or the Music department Web site for information about the placement test. HU, RP

*MUSI 214a, Songwriting for Composers and Lyricists
Joshua Rosenblum
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 205. Enrollment limited to 12. HU, RP
*MUSI 215a, Conduction Ensemble  Michael Veal
Workshop in the method of conduction, or conducted improvisation. Focus on learning and executing a set of conducting gestures that shape improvisations into spontaneously generated compositions. Open to vocalists and instrumentalists from all stylistic backgrounds and musical traditions. The course culminates in a public performance by the ensemble. No previous experience with improvisation required.  
HU RP

*MUSI 218a or b, Elementary Musicianship I  Sarita Kwok
Exercises in melodic and harmonic dictation, sight-singing, keyboard harmony, and aural analysis. Recommended to be taken concurrently with MUSI 210 or 211.  
RP ½ Course cr

*MUSI 219a or b, Elementary Musicianship II  Sarita Kwok
Continuation of MUSI 218. Prerequisite: MUSI 218. Recommended to be taken concurrently with MUSI 210 or 211.  
RP ½ Course cr

*MUSI 220a and MUSI 221b, The Performance of Chamber Music  Wendy Sharp
Coached chamber music emphasizing the development of ensemble skills, familiarization with the repertory, and musical analysis through performance. Admission by audition only. May be repeated for credit. For audition information e-mail wendy.sharp@yale.edu. Credit for MUSI 220 only on completion of MUSI 221.  
RP ½ Course cr per term

*MUSI 222a or b, The Performance of Vocal Music  Richard Lalli
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 credit. For audition information e-mail richard.lalli@yale.edu.  
HU RP

*MUSI 223a, The Performance of Early Music  Grant Herreid
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 credit. For audition information e-mail grant.herreid@yale.edu  
HU RP

*MUSI 228a / THST 224a, Musical Theater Performance I  Andrew Gerle
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 211 and 219, or with permission of instructor. Admission by audition only. May be repeated for credit. For audition information e-mail dan.egan@yale.edu.  
HU RP
*MUSI 246a / THST 236a, American Musical Theater History  Daniel Egan
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. WR, HU, RP

*MUSI 265b / AFAM 253b, Jazz in Transition, 1960–1980  Michael Veal
Stylistic currents in jazz that evolved during the 1960s and 1970s as jazz was influenced by various popular, experimental, and world musics. Focus on the work of Miles Davis, John Coltrane, Ornette Coleman, and Sun Ra. HU

MUSI 280a / ER&M 280a / GMST 380a, Music in Nazi Germany  Gundula Kreuzer
The interrelations between music and politics under the extreme conditions of a totalitarian regime. How the National Socialists sought to police all aspects of Germany’s musical life between 1933 and 1945 and why they often failed. Topics include aesthetic, political, and administrative prerequisites for the Nazis’ efforts; consequences of Nazism for musical culture during the Third Reich and beyond; and the vulnerability of music to ideological appropriation. HU

Level III

All courses numbered 300 and above require the ability to read music.

*MUSI 301b, Modal Counterpoint: Analysis and Composition  Ian Quinn
Studies in the theory, analysis, and composition of sixteenth-century modal polyphony. Prerequisite: MUSI 211. Enrollment limited to 18. Preference to Music majors according to class. RP

*MUSI 307a, Jazz Harmony  Brian Kane
An intensive study of the language of jazz, with a focus on jazz harmonies, scale-chord relationships, improvisational syntax, reharmonization, and transcription. Students analyze and transcribe solos, write model compositions, and acquire basic jazz piano skills. Prerequisites: MUSI 211 and 219. Enrollment limited to 18. Preference to Music majors according to class. HU

*MUSI 308b, Rhythm and Temporality in Music of the Twentieth Century  Ève Poudrier
A survey of compositional techniques and analytical tools that address rhythm, meter, and tempo in twentieth-century music. Critical thinking about musical temporality, analytical methods, and their practical applications. Prerequisite: MUSI 211. Enrollment limited to 18. Preference to Music majors according to class. HU

MUSI 309a, Musical Spaces, Sets, and Geometries  Richard Cohn
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 211. Enrollment limited to 18. Preference to Music majors according to class. QR

*MUSI 312a, Composition Seminar I  Kathryn Alexander
Intermediate project-oriented studies in music composition, acoustic and/or technological. Survey of contemporary techniques in a broad range of styles and syntax, including both concert and vernacular music genres. Prerequisite: MUSI 205, 325, 395, or equivalent. Admission by audition only. May be repeated for credit. Enrollment limited to 20. To audition, students should upload one or two PDF scores and MP3
recordings in a single zip file by 4 p.m. on Wednesday, September 4, to their personal
dropbox on the Composition Seminar Web page at classesy2.yale.edu. Students with
questions should contact the instructor at kathryn.alexander@yale.edu.

[MUSI 313, Composition Seminar II]

*MUSI 314b, Composition of Musical Theater  Jeanine Tesori
Intermediate and advanced project-oriented studies in composition of musical theater.
Prerequisite: MUSI 210. May be repeated for credit. Enrollment limited to 12.  HU  RP

*MUSI 318a, Intermediate Musicianship  Richard Lalli
Training in advanced aural perception, sight-singing, and keyboard skills. Prerequisite:
MUSI 218.

*MUSI 320a, Instrumentation and Orchestration  Kathryn Alexander
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
Grant Herreid and Ellen Rosand
Study of a seventeenth-century Venetian opera, with attention to 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 211 and
219. Admission by audition only. May be repeated for credit. For audition information
e-mail grant.herreid@yale.edu.  HU  RP

*MUSI 323a, Introduction to Conducting  Toshiyuki Shimada
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 324b, Intermediate Conducting  Toshiyuki Shimada
Intermediate studies in baton technique and score preparation. After MUSI 323.

*MUSI 325a, Fundamentals of Music, Multimedia Art, and Technology  Staff
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. Enrollment limited to 25.  HU

*MUSI 330b / AMST 331b / FILM 428b / THST 330b, Alternate Realities and Musical
Multimedia  Lynda Paul
The role of music and other kinds of sound in the creation and experience of alternate
realities, from video games to theme parks and theatrical multimedia. Perspectives from
recent work in film and media studies, theater and performance studies, anthropology,
cognitive science, and a variety of musichological and ethnomusicological subdisciplines,
such as popular music studies, opera studies, and ritual studies.  HU

*MUSI 334b, Analysis and Performance of Early Music  Grant Herreid
Continuation of MUSI 223. Analytical techniques applied to interpretation and
performance. Emphasis on the development of vocal technique and sight-reading skills.
Students in this class form the nucleus of the Yale Collegium Musicum. Prerequisite:
MUSI 223 or equivalent. Admission by audition only. May be repeated for credit. For audition information see www.yale.edu/oci. HU RP

*MUSI 343a / CGSC 343a, Music Cognition  Ian Quinn
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 110 or familiarity with music notation. SO

*MUSI 346a, Javanese Gamelan: Analysis and Performance  Sarah Weiss
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. WR, HU

*MUSI 350a, History of Western Music: Middle Ages and Renaissance  Craig Wright
A detailed investigation of the history of musical style from A.D. 900 to 1600. Preference to Music majors according to class. HU

*MUSI 351b, History of Western Music: Baroque and Classical  James Hepokoski
A detailed investigation of the history of musical style from 1600 to 1800. Preference to Music majors according to class. HU

[ MUSI 352, History of Western Music: The Nineteenth and Twentieth Centuries ]

*MUSI 353a, Topics in World Music  Sarah Weiss
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. HU

MUSI 357b / SAST 259b, Indian Music Theory and Practice  Stanley Scott
Introduction to the concepts and culture of music in South Asia from Vedic times to the present, with a focus on North Indian classical music. Discussion of history and theory is enriched by practical instruction and live performances. Topics include raga (melody), tala (meter), musical forms, improvisation, patronage, religion, and gender, with forays into folk music and film. No previous experience in Indian classical music required. HU

MUSI 363b / GMST 194b / LITR 243b / THST 351b, Cabaret  Lynda Paul
An exploration of cabaret as both a historical and a contemporary form of musical-literary-theatrical performance. Famous historical cabarets, with a focus on Europe in the late nineteenth and early twentieth centuries; films, plays, novels, and short stories based on the genre; cabaret songs and famous performers. Analysis of works by contemporary American cabaret artists. Students collaborate to write, produce, and perform three cabaret events. HU

*MUSI 370a / ART 371a, Sound Art  Brian Kane and Martin Kersels
Introduction to sound art, a contemporary artistic practice that uses sound and listening as mediums, often creating psychological or physiological reactions as part of the finished artwork. The history of sound art in relation to the larger history of art and music; theoretical underpinnings and practical production; central debates
and problems in contemporary sound art. Includes creation and in-class critique of experimental works. Materials fee: $25.  

[MUSI 395, Composition and Performance of Music, Multimedia Art, and Technology]

Level IV

*MUSI 412a, Composition Seminar III  Michael Klingbeil and staff
Advanced project-oriented studies in music composition, acoustic and/or technological. Prerequisites: MUSI 312 and 313. Admission by audition only. May be repeated for credit. Enrollment limited to 8. To audition, students should upload one or two PDF scores and MP3 recordings of work completed in MUSI 312, 313, 412, or 413 in a single zip file by 4 p.m. on Wednesday, September 4, to their personal dropbox on the Composition Seminar Web page at classes2.yale.edu. Students with questions should contact the instructor at michael.klingbeil@yale.edu.

*MUSI 413b, Composition Seminar IV  Kathryn Alexander and staff
Continuation of MUSI 412. Prerequisites: MUSI 312 and 313. Admission by audition only. May be repeated for credit. Enrollment limited to 8. To audition, students should upload one or two PDF scores and MP3 recordings of prior work completed in MUSI 312, 313, 412, or 413 in a single zip file by 5 p.m. on Thursday, January 16, to their personal dropbox on the Composition Seminar Web page at classes2.yale.edu. Students with questions should contact the instructor at kathryn.alexander@yale.edu.

*MUSI 426b, Chamber Music of Robert Schumann: Analysis and Performance  Michael Friedmann
A study of selected chamber works by Schumann, coupling analytical research with practical performance issues. Advanced violinists, violists, cellists, clarinetists, oboists, hornists, and pianists admitted by audition.

*MUSI 435b / HUMS 231b, Music in European Thought: Three Moments in the Modern Era  Leon Plantinga
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.  

SENIOR SEMINARS

*MUSI 455a, Schubert’s Lieder and Sonata Forms  Patrick McCreless and Jonathan Guez
Close analytical reading of songs and sonata-form instrumental movements by Schubert, an innovator in both lyrical and instrumental music. Use of harmony and form; questions of interpretation and meaning; the influence of the two idioms on each other, especially in Schubert’s later works. Ways in which knowledge of one repertoire can deepen understanding of the other.  

Music: Senior Seminar

*MUSI 475a, Verdi, Wagner, and Britten in 2013  Gundula Kreuzer
The role of commemorations in the musical world explored through the operatic anniversary year of 2013, which includes bicentenaries of Verdi and Wagner and the centenary of Britten. Theories of reception history, canon formation, nationalism, and
music historiography; disciplinary development and current trends in opera studies. Close reading of one opera by each composer, with attention to typical stylistic and music-dramatic choices. Enrollment limited to Music majors.

Music: Senior Seminar

*MUSI 476b, Music and the Postcolonial  Michael Veal and Alexandra Kieffer
The role of music in postcolonial settings after World War II. Case studies from Algeria, Nigeria, Jamaica, India, and the Republic of Guinea encompass folk/traditional, popular, and art musics. Ramifications of geopolitical independence for expressive culture.

Music: Senior Seminar

Individual Study Courses

*MUSI 471a and MUSI 472b, Individual Study  Ian Quinn
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 MUSI 491b, Senior Essay for Intensive Majors in the History, Theory, or Composition of Music  Ian Quinn
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.

Individual Instruction in Performance

*MUSI 360a or b, Performance: First Term  Sarita Kwok
Individual instruction in the study and interpretation of musical literature. Permission to take lessons for academic credit is granted to students who demonstrate an appropriate level of proficiency in audition. Students taking MUSI 360 and 361 are required to be concurrently enrolled in a 200-level theory course (MUSI 205, 210, 211) for both terms, or they must complete one term of 200-level theory before enrolling in MUSI 360 and two terms of 200-level theory before enrolling in MUSI 361. 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. Students register for the section specific to their instrument: see www.yale.edu/oci for section information. Although the faculty of the School of Music attempts to accommodate those who qualify for credit instruction, it cannot guarantee that 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 $550 for ten hours of lessons per term or $350 for six hours of lessons per term. The fees are added to the Student Financial Services bill and are not refundable after the first two weeks of lessons each term. Declared music majors in
their junior or senior year may receive noncredit lessons at a discounted rate: six hours of lessons per term at no charge or ten hours of lessons per term for $275. Auditions for assignment to instructors (for both credit and noncredit lessons) are required for freshmen and some returning students, and are held only at the beginning of the fall term. No auditions are held during the spring term. To arrange for an audition, students must sign up at http://music.yale.edu/academics/lessons.html.

*MUSI 361a or b, Performance: Second Term* Sarita Kwok
Continuation of MUSI 360. Enrollment requires previous completion of or concurrent registration in an additional required music theory course. Prerequisite: MUSI 360; after or concurrently with MUSI 210 or 211, as determined by the music theory placement test.

*MUSI 460a or b, Performance: Third Term* Sarita Kwok
Continuation of MUSI 361. Prerequisite: MUSI 361.

*MUSI 461a or b, Performance: Fourth Term* Sarita Kwok
Continuation of MUSI 460. Prerequisite: MUSI 460. 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.

**Naval Science**

Program advisers: Lieutenant Daniel Kohnen, USN, daniel.kohnen@yale.edu; Lieutenant Joshua Parsons, USN, joshua.parsons@yale.edu; Rm. 430, 55 Whitney Ave., 432-8223, nrotc.yalecollege.yale.edu

The Naval Reserve Officers Training Corps (NROTC) program educates and trains young men and women for service as commissioned officers in the United States Navy or Marine Corps. Candidates may apply for either the Scholarship Program or the nonscholarship College Program (see below) and choose either the Navy or the Marine option. Upon conferral of a degree, graduates of the NROTC Scholarship Program are commissioned into the Navy or Marine Corps for a minimum of five years of active duty service. Graduates of the College Program are commissioned for a minimum of three years of active duty service.

**Academic requirements** The Naval Science curriculum includes courses on topics such as Navy and Marine Corps organization, at-sea navigation, leadership, naval history, amphibious warfare, engineering, and weapons systems. Courses emphasize development of professional knowledge and leadership skills, which are placed in the context of military service immediately following graduation from Yale College.

Students in the NROTC program enroll in one Naval Science course per term. Some courses are required for both Navy and Marine option students, while others are specific to the branch of service. All NROTC students must also enroll in the Naval Science Laboratory each term. Most Naval Science courses count for enrollment credit; none count toward the thirty-six course credits required for the bachelor’s degree.

Prior to graduation, Navy option students must also complete eight core curriculum courses through Yale College in fields such as mathematics, physical science, history, and English. These courses count toward the bachelor’s degree, and many can be used
to fulfill distributional requirements. For more information, visit the Yale NROTC Web site (http://nrotc.yalecollege.yale.edu/academics).

For the Navy option, the usual sequence of Naval Science courses is:

**Freshman**
- Introduction to naval science
- Navigation

**Sophomore**
- Sea power
- Organizational leadership

**Junior**
- Naval engineering
- Naval weapons systems

**Senior**
- Naval operations
- Leadership and ethics

For the Marine Corps option, the usual sequence of Naval Science courses is:

**Freshman**
- Introduction to naval science
- Elective

**Sophomore**
- Sea power
- Organizational leadership

**Junior**
- Evolution of warfare
- Elective

**Senior**
- Amphibious warfare
- Leadership and ethics

**Application** Yale College students in their first or second year are eligible for enrollment in the NROTC program. Students who matriculate at Yale without a four-year NROTC scholarship may apply for enrollment in the nonscholarship College Program and compete for scholarships during their first two years. If selected for the Scholarship Program, students receive full tuition, academic fees, a stipend for textbooks, and a monthly subsistence allowance that increases annually. In addition to their involvement with the Naval ROTC program throughout the academic year, scholarship students attend a training cruise with a U.S. Navy or Marine Corps operational unit for approximately four weeks each summer.

Candidates apply for the national Naval ROTC scholarship on line via the national NROTC Web site (http://www.nrotc.navy.mil). Applications are due by January 31 for activation the following fall. For enrollment in the nonscholarship College Program, students apply directly to the Yale NROTC unit.

Yale’s Naval Reserve Officers Training Corps program is a member of a consortium of universities centered at the College of the Holy Cross in Worcester, Massachusetts. For additional information about Yale’s NROTC program, visit the program’s Web site (http://nrotc.yalecollege.yale.edu) or send questions to nrotc@yale.edu.

**Courses**

*NAVY 100a or b, Naval Science Laboratory*  Daniel Kohnen

Leadership and practical application skills from the Professional Core Competency objectives that are not covered in other Naval Science courses. Emphasis on professional training that is not of an academic nature. Includes both classroom instruction and physical training. Topics and special briefings as determined by Naval Science faculty and the Naval Service Training Command. Required for NROTC students each term. Receives no credit; cannot be applied toward the 36-course-credit requirement for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or eligibility for General Honors. 0 Course cr
*NAVY 111A, Introduction to Naval Science  Joshua Parsons
An overview of the naval service for first-year Naval ROTC students and others
interested in pursuing the NROTC program. Organization, missions, customs and
traditions, leadership principles, ethics, duties of a junior officer, and career options in
the U.S. Navy and Marine Corps. Discussion of shipboard organization and procedures,
safety, and damage control prepares students for summer training aboard naval vessels.
For enrollment credit only; cannot be applied toward the 36-course-credit requirement
for the Yale bachelor’s degree. Grades earned in this course do not count toward GPA or
eligibility for General Honors.

*NAVY 112B, Navigation  Daniel Kohnen
Introduction to surface-ship navigation and practical piloting in both restricted and
open water. Celestial navigation theory, navigational charts and instruments, and
electronic navigation. Weather and other environmental factors that affect naval
operations. Navigation rules and regulations, maneuvering board concepts, and
practical exercises. For enrollment credit only; cannot be applied toward the 36-course-
credit requirement for the Yale bachelor’s degree. Grades earned in this course do not
count toward GPA or eligibility for General Honors.

NAVY 212B, Leadership and Management  Joshua Parsons
A study of leadership, ethics, resource management, and organizational behavior, with
emphasis on situations commonly encountered by junior officers in the naval service.
Classical theories of management, motivation, and communication; development
of skills in organizational thinking and problem solving. Required for second-year
NROTC students. For enrollment credit only; cannot be applied toward the 36-course-
credit requirement for the Yale bachelor’s degree. Grades earned in this course do not
count toward GPA or eligibility for General Honors. o Course cr

Other Courses Related to Naval Science

HIST 221A / GLBL 281A, Military History of the West since 1500  Paul Kennedy
A study of the military history of the West since 1500, with emphasis on the
relationship between armies and navies on the one hand, and technology, economics,
geoigraphy, and the rise of the modern nation-state on the other. The coming of
airpower in its varied manifestations. Also meets requirements for the Air Force and
Naval ROTC programs.  HU

Near Eastern Languages and Civilizations

Director of undergraduate studies: Benjamin Foster, 315 HGS, 432-6715,
benjamin.foster@yale.edu; nelc.yale.edu

FACULTY OF THE DEPARTMENT OF NEAR EASTERN LANGUAGES AND
CIVILIZATIONS

Professors  John Darnell, Benjamin Foster, Eckart Frahm, Beatrice Gruendler, Dimitri
Gutas, Bentley Layton, Harvey Weiss

Associate Professor  Colleen Manassa

Lecturers  Adel Allouche, Karen Foster, David Klotz, Kathryn Slanski

Senior Lector II  Ayala Dvoretzky
Senior Lectors  Sarah al-Ani, Muhammad Aziz, Aaron Butts, Moulay Youness Elbousty, Shiri Goren, Dina Roginsky, Farkhondeh Shayesteh

Lectors  Etem Erol, Hasmik Tovmasyan

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, including the senior essay course. No more than six 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. 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 120 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. In their senior year, students take NELC 490, Introduction to Arabic and Islamic Studies. 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 NELE 492 and/or 493, 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, 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 120; All other areas — none

Number of courses  12 term courses (incl prereq and senior essay)

Distribution of courses  2 years of a Near Eastern lang; 3 courses in Near Eastern hist and civ, incl 1 in ancient and 1 in Islamic Near East; area of concentration as specified

Specific course required  Arabic and Islamic studies — NELE 490

Senior requirement  Senior essay using materials in 1 or more Near Eastern langs (in NELE 492 and/or 493 or in dept sem)

**Near Eastern History and Civilizations**

**INTRODUCTORY AND SURVEY COURSES**

*NELE 001b / ARCG 001b, Egypt and Northeast Africa: A Multidisciplinary Approach*  John Darnell

Examination of approximately 10,000 years of Nile Valley cultural history, with an introduction to the historical and archaeological study of Egypt and Nuba. Consideration of the Nile Valley as the meeting place of the cultures and societies of northeast Africa. Various written and visual sources are used, including the collections
of the Peabody Museum and the Yale Art Gallery. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  

WR, HU

*NELC 101b / HUMS 438b, Origins of Western Civilization: The Near East from Alexander 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.  HU

NELC 102a / HUMS 440a / MMES 102a, Introduction to the Middle East  Benjamin Foster
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.  HU

ANCIENT, CLASSICAL, AND MEDIEVAL

NELC 106b / ARCG 235b / HSAR 235b / HUMS 245b, The Worlds of Homer  Karen Foster
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.  HU

NELC 108a / ARCG 237a / HSAR 237a, Ancient Painting and Mosaics  Karen Foster
Developments in wall painting, vase painting, and mosaics as seen in ancient Egypt, the Aegean Bronze Age, and the Greek, Etruscan, and Roman world.  HU

NELC 116aG, Myth and Ritual in the Ancient Near East  Kathryn Slanski
Introduction to ancient Near Eastern tales about gods and heroes. Topics include creation, the cosmic order, sacred marriage, divine battles, death, and the interaction between gods and humans. Focus on myths from Mesopotamia, with comparison to Egyptian, biblical, and classical traditions.  HU

NELC 156a / HUMS 420a / LITR 178a / MMES 201a, Classics of the Arabic-Islamic World  Beatrice Gruendler
Survey of the literary tradition of the Arabic-Islamic world (West Asia, North Africa, and Muslim Spain), a textual conversation among diverse authors from late antiquity to the Mamluk period. 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.  HU  Tr

*NELC 165aG / JDST 413aG / RLST 411aG, Biblical, Qumranic, and Targumic Aramaic  Aharon Maman
Survey of the historical and philological aspects of biblical, Qumranic, and Targumic Aramaic. Comparison of the dialects’ grammar and historical development; some attention to topics in comparative Semitic philology and historical linguistics; the influence of Hebrew and Aramaic on one another over time. Reading and extensive philological analysis of texts in each of the three dialects. Prerequisite: HEBR 140 or equivalent.  HU
NELC 220bG / ARCG 223bG / WGSS 226bG, Lives in Ancient Egypt  Colleen Manassa
Introduction to the social history of ancient Egypt from 3,100 to 30 B.C.E. Focus on
the lives of particular individuals attested in the textual and archaeological record, from
pharaohs and queens to artists, soldiers, and farmers. Reading of primary sources in
translation; course projects integrate ancient objects in Yale collections.  HU

NELC 314aG / ARCG 346aG, Ancient Civilizations of Nubia  Maria Gatto
Introduction to the sociocultural history and archaeology of ancient Nubia; special
attention to interconnections with Egypt and Africa. Nubia’s role in shaping both the
origin of pharaonic civilization and African cultural identity; parallels and divergences
with Saharan, West African, and Near Eastern cultures. Use of the Nubian collection of
the Peabody Museum.  SO

*NELC 315b / CLCV 312b / HUMS 442b, Translating the Hero  Kathryn Slanski
Relationships between masterworks of ancient Near Eastern and Greek literature
and their reworkings by Western authors and artists. Traditional notions of heroism,
such as the righteous sufferer, the epic hero, and the tragic hero. Adaptation and
transformation of ancient heroic themes in modern literature and film. Manipulation
of ancient sources in the retelling of stories and themes; the mechanics of transmission
and borrowing; questions of archetype.  HU

*NELC 316a / HIST 343JaG / MMES 344a / RLST 313aG, Iran’s Prophets of Protest
Abbas Amanat
Iranian messianic movements from ancient to modern. Emphasis on continuity
in patterns of dissent, social impact and challenges to religious and political
establishments, and influences on the Islamic world and beyond. Zoroastrian
apocalyptic origins, Manichean moral community and Mazdakite proto-communism,
emergence of the Mahdi and Shi’i movements from Isma’ils to Safavids, "Universal
Peace" from Mughal India to Babi-Baha’i modernity, and messianic trends from the
Islamic Revolution to contemporary Iran.  HU

*NELC 380bG / HIST 211Jb / RLST 253bG, The Making of Monasticism
Bentley Layton
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. Readings in translation.
(Formerly RLST 420)  HU

NELC 402a / HIST 360a / MMES 171a, The Islamic Near East from Muhammad to
the Mongol Invasion  Adel Allouche
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.  HU

*NELC 403b / HIST 384Jb / MMES 172b, The Middle East between Crusaders and
Mongols  Adel Allouche
The impact of the Crusades and the Mongol conquests on the Islamic Middle East.
Political, social, and economic changes in the region from the eleventh century to the
middle of the fourteenth. Emphasis on the rise of new dynasties as a result of changes in the ethnic mosaic of the Middle East. WR, HU

*NELC 404b / HIST 398Jb / MMES 173b, Mamluk Egypt Adel Allouche
A study of the Mamluks, manumitted slaves initially imported to Egypt for military service 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 conquest by the Ottoman Turks. WR, HU

MODERN

NELC 120aG / ARCG 221aG / HSAR 234a, Egyptomania Colleen Manassa
Conceptual underpinnings of the use of ancient Egyptian motifs in architecture, painting, sculpture, and decorative arts throughout western Europe, the Middle East, and North America from antiquity to the present. Coordinated with the exhibit Egyptomania at the Peabody Museum. HU

NELC 155b / JDST 323b / MMES 160b, State and Society in Israel Dina Roginsky
The interplay between the state and society in Israel. Current Israeli discourse on controversial issues such as civil rights in a Jewish-democratic state, Jewish-Arab relations, and right and left politics. Issues of orthodoxy, military service, globalization, and multiculturalism in Israel. Sociopolitical changes that have taken place in Israel since the establishment of the state in 1948 and that have led to the reshaping of Israeli Zionist ideology. HU

*NELC 157aG / JDST 306a / MMES 157a, Israeli Narratives Shiri Goren
Close reading of major Israeli novels in translation with attention to how their themes and forms relate to the Israeli condition. Theories of war and peace, migration, nationalism, and gender. Authors include Yehoshua, Grossman, Matalon, Castel-Bloom, and Kashua. No knowledge of Hebrew required. HU Tr

Languages and Literatures of the Ancient Near East

AKKADIAN

AKKD 110aG, Elementary Akkadian I Eckart Frahm and staff
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 120. L1 RP

AKKD 120bG, Elementary Akkadian II Eckart Frahm and staff
Continuation of AKKD 110. Prerequisite: AKKD 110. L2 RP

AKKD 130aG, Intermediate Akkadian I Benjamin Foster and Eckart Frahm
Close reading of selected Akkadian texts; introduction to Akkadian dialects, cuneiform epigraphy, and research techniques of Assyriology. Prerequisite: AKKD 120. L3 RP

AKKD 140b, Intermediate Akkadian II Staff
Continuation of AKKD 130. Prerequisite: AKKD 130.
EGYPTIAN

EGYP 110a, Introduction to Classical Hieroglyphic Egyptian I  Niv Allon and Julia Hsieh
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 120. L1 RP

EGYP 117a, Elementary Biblical Coptic I  Kevin Wilkinson and staff
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 127. L1 RP

EGYP 120b, Introduction to Classical Hieroglyphic Egyptian II  Niv Allon and Julia Hsieh
Continuation of EGYP 110. Prerequisite: EGYP 110. L2 RP

EGYP 127b, Elementary Biblical Coptic II  Kevin Wilkinson and staff
Continued study of 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. Prerequisite: EGYP 117. L2 RP

*EGYP 131a, Intermediate Egyptian: Literary Texts  Colleen Manassa
Close reading of Middle Egyptian literary texts; introduction to the hieratic (cursive) Egyptian script. Readings include the Middle Kingdom stories of Sinuhe and the Eloquent Peasant and excerpts from Wisdom Literature. Prerequisite: EGYP 120. L3 RP

SYRIAC

Students wishing to study Syriac should consult the director of undergraduate studies.

Hebrew Language and Literature

*HEBR 110a, Elementary Modern Hebrew I  Ayala Dvoretzky
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. Credit only on completion of HEBR 120. L1 RP
1½ Course cr

HEBR 120b, Elementary Modern Hebrew II  Ayala Dvoretzky
Continuation of HEBR 110. 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. Prerequisite: HEBR 110 or equivalent. L2 RP 1½ Course cr

*HEBR 130a, Intermediate Modern Hebrew I  Ayala Dvoretzky and staff
Review and continuation of grammatical study, leading to a deeper understanding of style and usage. Focus on selected readings and on writing, comprehension, and speaking skills. Prerequisite: HEBR 120 or equivalent. L3 RP
HEBR 140b\textsuperscript{G}, Intermediate Modern Hebrew II  Ayala Dvoretsky
Continuation of HEBR 130. Review and continuation of grammatical study leading to a deeper comprehension of style and usage. Focus on selected readings and on writing, comprehension, and speaking skills. Prerequisite: HEBR 130 or equivalent.  L4  RP

*HEBR 158a\textsuperscript{G} / JDST 305a, Contemporary Israeli Society in Film  Shiri Goren
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 140 or permission of instructor.  L5, HU  RP

*HEBR 159a\textsuperscript{G} / JDST 409a / MMES 159a, Conversational Hebrew: Israeli Media
Shiri Goren
An advanced Hebrew course for students interested in practicing and enhancing conversational skills. Focus on listening comprehension and on various forms of discussion, including practical situations, online interactions, and content analysis. Prerequisite: HEBR 140 or permission of instructor.  L5  RP

*HEBR 160a\textsuperscript{G} / JDST 360a, Hebrew in a Changing World  Dina Roginsky
Sociological aspects of Modern Hebrew as the language is used in Israel to construct norms, expectations, and daily experiences. Readings and class discussions address changes in Israeli society and culture at large. Prerequisite: HEBR 140.  L5

HEBR 161b / JDST 407b / MMES 156b, Israeli Popular Music  Dina Roginsky
Changes in the development of popular music in Israel explored as representations of changing Israeli society and culture. The interaction of music and cultural identity; modern popular music and social conventions; songs of commemoration and heroism; popular representation of the Holocaust; Mizrahi and Arab music; feminism, sexuality, and gender; class and musical consumption; criticism, protest, and globalization. Conducted in Hebrew. Prerequisite: HEBR 140 or equivalent.  L5

*HEBR 162b\textsuperscript{G}, Israel in Ideology and Practice  Dina Roginsky
The social history of modern Israel from the inception of Zionism in the late nineteenth century to the present, with emphasis on the ideological processes that led to the foundation of the state in 1948. Topics include political dynamics, the complicated relationship between state and religion, Jewish-Arab relations, and contemporary Israeli society. Prerequisite: HEBR 140 or equivalent.  L5  RP

Arabic and Islamic Studies

ARABIC

ARBC 110a, Elementary Modern Standard Arabic I  Shady Nasser and staff
Development of a basic knowledge of Modern Standard Arabic. Emphasis on grammatical analysis, vocabulary acquisition, and the growth of skills in speaking, listening, reading, and writing. Credit only on completion of ARBC 120.  L1  RP

1½ Course cr

ARBC 120b, Elementary Modern Standard Arabic II  Shady Nasser and staff
Continuation of ARBC 110. Prerequisite: ARBC 110 or equivalent.  L2  RP

1½ Course cr
ARBC 130a, Intermediate Modern Standard Arabic I  Sarab al-ANI and staff
Intensive review of grammar; readings from contemporary and classical Arab authors
with emphasis on serial reading of unwveled Arabic texts, prose composition, and
formal conversation. Prerequisite: ARBC 120 or permission of instructor.  L3  RP
1 1/2 Course cr

ARBC 136aG, Intermediate Classical Arabic I  Hadi Jorati and staff
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 120 or permission of instructor. May be taken concurrently with
ARBC 130 or 150.  L3  RP

ARBC 140b, Intermediate Modern Standard Arabic II  Shady Nasser and staff
Continuation of ARBC 130. Prerequisite: ARBC 130 or equivalent.  L4  RP
1 1/2 Course cr

ARBC 146bG, Intermediate Classical Arabic II  Matteo Di Giovanni and staff
Continuation of ARBC 136. Prerequisite: ARBC 136 or permission of instructor. May be
taken concurrently with ARBC 140 or 151.  L4  RP

*ARBC 150a, Advanced Modern Standard Arabic I  Shady Nasser and staff
Further development of listening, writing, and speaking skills. For students who
already have a substantial background in Modern Standard Arabic. Prerequisite:
ARBC 140 or permission of instructor.  L5  RP

*ARBC 151b, Advanced Modern Standard Arabic II  Shady Nasser
and Muhammad Aziz
Continuation of ARBC 150. Prerequisite: ARBC 150 or permission of instructor.  L5  RP

ARBC 161aG, Arabic Prose Narrative  Muhammad Aziz
Close reading of Palace Walk, the first book of the Cairo Trilogy by Naguib Mahfouz.
Attention to the vocabulary, idiomatic expressions, and structural patterns of the
novel. Includes literary analysis, discussion, and weekly position papers. Prerequisite:
ARBC 151. May be repeated for credit.  L5  RP

ARBC 163b, Modern Arabic Poetry  Sarab al-ANI
Close reading of selected poems by modern and contemporary Arab poets from various
regions of the Arab world. Analysis of poetic language; literary tools utilized in the
poems; figurative devices used to express artistic ideas; ways in which poetic language
expresses plot, time, place, character, and cultural references; relations between literal
and poetic meanings of language. Prerequisite: ARBC 151 or permission of instructor.
L5, HU  RP

*ARBC 164b, North African Literature  Moulay Youness Elbousty
Close reading of selected works of North African fiction, drama, and poetry. Focus on
contemporary texts from Morocco, Algeria, Tunisia, and Libya. Idiomatic expressions
and structural patterns; selections from adapted movies. Prerequisite: ARBC 151 or
permission of instructor.  L5, HU  RP
*ARBC 165aG and bG / MMES 465a or b, Arabic Seminar  Dimitri Gutas [F] and Beatrice Gruendler [Sp]
Study and interpretation of classical Arabic texts for advanced students. Prerequisite: ARBC 146, 151, or permission of instructor. May be repeated for credit.  L5

ARBC 190b, Levantine Arabic  Shady Nasser and staff
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 130.  RP

ARBC 193a, Moroccan Arabic  Moulay Youness Elboushy
A basic course in the Moroccan dialect of Arabic. Principles of grammar and syntax; foundations for conversation and listening comprehension. Prerequisite: ARBC 130 or equivalent.  RP

*ARBC 471a or b, Directed Reading and Research  Dimitri Gutas [F] and Beatrice Gruendler [Sp]
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 is required from both the director of undergraduate studies and a member of the department who agrees to serve as instructor. Student and instructor meet regularly throughout the term. The course culminates in either a piece of written work or a final examination.

PERSIAN

PERS 110aG, Elementary Persian I  Farkhondeh Shayesteh
Introduction to modern Persian, with emphasis on all four language skills: reading, writing, listening, and speaking. Credit only on completion of PERS 120.  L1  RP 1½ Course cr

PERS 120bG, Elementary Persian II  Farkhondeh Shayesteh
Continuation of PERS 110, with emphasis on all four language skills: reading, writing, listening, and speaking. Prerequisite: PERS 110 or permission of instructor.  L2  RP 1½ Course cr

PERS 130aG, Intermediate Persian I  Farkhondeh Shayesteh
Continuation of PERS 120, with emphasis on expanding vocabulary and understanding more complex grammatical forms and syntax. Prerequisite: PERS 120 or permission of instructor.  L3  RP 1½ Course cr

PERS 140bG, Intermediate Persian II  Farkhondeh Shayesteh
Continuation of PERS 130, with emphasis on expanding vocabulary and understanding more complex grammatical forms and syntax. Prerequisite: PERS 130 or permission of instructor.  L4  RP 1½ Course cr

*PERS 150bG, Thematic Survey of Modern Persian Literature  Farkhondeh Shayesteh
An advanced course focusing on continuing development of language skills for nonnative speakers. Emphasis on reading and writing through modern Persian literary prose and poetry. Prerequisite: PERS 140 or permission of the instructor.  L5, HU  RP

*PERS 151aG, Persian Culture and Media  Farkhondeh Shayesteh
Advanced study of Persian grammar, vocabulary, and culture through the use of authentic Persian media. Examination of daily media reports on cultural, political,
historical, and sporting events in Iran, Afghanistan, Tajikistan, and other Persian-speaking regions. Designed for nonnative speakers. Prerequisite: PERS 140 or permission of instructor. L5

*PERS 471a or b, Directed Reading in Persian
Staff
Independent study of Persian texts at an advanced level.

TURKISH

TKSH 110a, Elementary Modern Turkish I  Etem Erol
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 120. L1 RP 1½ Course cr

TKSH 120b, Elementary Modern Turkish II  Etem Erol
Continuation of TKSH 110. Prerequisite: TKSH 110 or permission of instructor. L2 RP 1½ Course cr

TKSH 130a, Intermediate Turkish I  Etem Erol
Continued study of modern Turkish, with emphasis on advanced syntax, vocabulary acquisition, and the beginnings of free oral and written expression. Prerequisite: TKSH 120 or permission of instructor. L3 RP

TKSH 140b, Intermediate Turkish II  Etem Erol
Continuation of TKSH 130. Prerequisite: TKSH 130. L4 RP

TKSH 150a, Advanced Turkish I  Etem Erol
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 140. L5 RP

TKSH 151b, Advanced Turkish II  Etem Erol
Continuation of TKSH 150. Focus on primary materials from Turkish media, short stories, and Turkish films. Development of proficiency sufficient for conducting research and presenting findings and evaluations in Turkish. Prerequisite: TKSH 150. L5 RP

*TKSH 471a or b, Directed Reading and Research  Etem Erol
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 is required from both the director of undergraduate studies and a member of the department who agrees to serve as instructor. Student and instructor meet regularly throughout the term. The course culminates in either a piece of written work or a final examination. RP
Courses for Majors

*NELC 490a/G / MMES 490a, Introduction to Arabic and Islamic Studies*
Dimitri Gutas

Comprehensive survey of subjects treated in Arabic and Islamic studies, with representative readings from each. Methods and techniques of scholarship in the field; 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.

*NELC 492a and NELC 493b, The Senior Essay*
Benjamin Foster

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 fall 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 493) 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/oci. (Also see "Courses in the Yale Graduate and Professional Schools" under "Special Arrangements" in the Academic Regulations.)

Operations Research

Coordinator: Eric Denardo, 502 DL, 432-7276, eric.denardo@yale.edu

Professors  Eric Denardo, Edward Kaplan, 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.

Courses

**OPRS 235a / AMTH 235a, Optimization**  Eric Denardo
Resource allocation problems solved by linear programming and its generalizations: the simplex method, duality, the Karush–Kuhn–Tucker conditions for nonlinear programs, economic equilibria, and selected applications. Prerequisite: MATH 118, 222, or 225, or equivalent.  QR

**Philosophy**

Director of undergraduate studies: Kenneth Winkler, 406A C, 432-1679, kenneth.winkler@yale.edu; philosophy.yale.edu

**FACULTY OF THE DEPARTMENT OF PHILOSOPHY**

**Professors** George Bealer, Seyla Benhabib, Stephen Darwall, Michael Della Rocca, Keith DeRose, Paul Franks, Tamar Gendler (*Chair*), John Hare, Karsten Harries, Verity Harte, Laurence Horn, Shelly Kagan, Joshua Knobe, Thomas Pogge, Carl Posy (*Visiting*), Scott Shapiro, Sun-Joo Shin, Steven Smith, Jason Stanley, Zoltán Szabó, Kenneth Winkler, Gideon Yaffe

**Assistant Professors** Daniel Greco, Raul Saucedo, Bruno Whittle

**Lecturers** Benjamin George, Aaron Norby, John Pittard, Sam Shpall

Philosophy 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 standard major Prerequisite to the Philosophy major are two introductory or intermediate philosophy courses. The 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 broad groups: history of philosophy (PHIL 125–174, 200–264, 400–424), metaphysics and epistemology (PHIL 265–319, 425–449), and ethics and value theory (PHIL 175–199, 320–399, 450–479). In history of philosophy, majors are required to take (a) either PHIL 125 and 126 or both terms of Directed Studies, and (b) an additional, third course in history of philosophy. Majors are encouraged to take PHIL 125 and 126 as early as possible; these courses may be taken in either order. 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.

Beginning with the Class of 2015, majors are also required to complete a course in logic, such as PHIL 115, and they are encouraged to do so by the fall of their junior year.

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:

1. Some introductory courses, including PHIL 115, First-Order Logic, do not count toward a group requirement. Other courses count toward a group requirement unless they are otherwise designated.

2. 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, although 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 under which it is listed in this bulletin, though the presumption will be against such petitions.

3. 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.

Credit/D/Fail courses No more than one course taken Cr/D/F may be counted toward the major, with the permission of the director of undergraduate studies.

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 (a) additional readings, (b) submission of a complete draft of the final paper by the eighth week of the term that will then be significantly revised, and (c) 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 a two-term independent project supervised by an instructor (PHIL 490, 491). 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  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 (a) two courses in the history of philosophy, usually PHIL 125 and 126 or DRST 003 and 004, (b) two seminars, one of which may be in the Psychology department, with the approval of the director of undergraduate studies, and (c) 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 (c) must be approved by the director of undergraduate studies. The five psychology courses must include PSYC 110 or its equivalent. Each major must also satisfy the senior requirement as described above for the standard major. No more than one course taken Cr/D/F may be counted toward the requirements of the major, with the permission of the director of undergraduate studies.

Beginning with the Class of 2015, majors in the psychology track are also required to complete a course in logic, such as PHIL 115, and they are encouraged to do so by the fall of their junior year.

Students interested in philosophy and psychology should also consider 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 003 and 004, or PHIL 125 and 126), 2 in metaphysics and epistemology, and 2 in ethics and value theory; 2 phil sens; Psychology track — 7 courses in phil, as specified; 5 courses in psych; Both tracks — Class of 2015 and subsequent classes — 1 course in logic
Specific courses required  
*Standard track* – PHIL 125 and 126, or DRST 003 and 004;
*Psychology track* – PSYC 110 or equivalent

**Senior requirement**  Both tracks – a third sem in phil, or a one- or two-term independent project (PHIL 490, 491)

Introductory courses

*PHIL 083a, Democracy and Political Philosophy*  Jason Stanley  
The use of propaganda and rhetoric in political campaigns, and its implications for democratic systems of government. Conditions necessary for a state to be considered democratic; the dependence of democracy on speech; distinguishing speech that is propaganda from speech that is not; reasons to view propaganda and misleading rhetoric as inconsistent with the existence of a democratic state. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU

**PHIL 112a, Problems of Philosophy**  Daniel Greco  
Exploration of perennial philosophical problems, including differences between knowledge and opinion, the objectivity or nonobjectivity of moral judgment, the nature of consciousness, the existence of God, the nature and possibility of free will, and how people remain the same over time as their bodily and psychological traits change. Readings from both classical and influential contemporary works.  HU

**PHIL 115a, First-Order Logic**  Bruno Whittle  
An introduction to formal logic. Study of the formal deductive systems and semantics for both propositional and predicate logic. Some discussion of metatheory.  Q8

**HISTORY OF PHILOSOPHY**

**PHIL 125a / CLCV 125a, Introduction to Ancient Philosophy**  Verity Harte  
An introduction to 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 126.  HU

*PHIL 126b, Introduction to Modern Philosophy from Descartes to Kant*  
Michael Della Rocca  
An introduction to major figures in the history of modern philosophy, with critical reading of works by Descartes, Malabranche, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Intended to be taken in conjunction with PHIL 125 although PHIL 125 is not a prerequisite.  HU

**ETHICS AND VALUE THEORY**

**PHIL 175a, Introduction to Ethics**  Karsten Harries  
The question of what constitutes the good life, and the different answers to that question given by Plato, Bentham, Kant, Kierkegaard, and Nietzsche.  HU  
EP&E: Intro Ethics

**PHIL 179b, Life**  Shelly Kagan  
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.  HU
PHIL 181b / CGSC 281b / PSYC 181b, Philosophy and the Science of Human Nature
Tamar Gendler
Central texts from the Western philosophical tradition paired with recent findings in cognitive science and related fields. Plato’s discussion of parts of the soul and contemporary work on dual processing; Aristotle’s conception of character and modern research in social psychology; Epictetus’s writings on human flourishing and contemporary work on happiness; writings on morality by Kant and Mill and recent research on moral intuitions. HU

Intermediate courses

HISTORY OF PHILOSOPHY

PHIL 204a / GMST 381a, Kant’s Critique of Pure Reason  Paul Franks
An examination of the metaphysical and epistemological doctrines of Kant’s Critique of Pure Reason. Prerequisite: PHIL 126 or DRST 004. HU

PHIL 208b / HUMS 333b, Four Condemnations: Philosophy and Religion in Conflict  Karsten Harries
An examination of four famous condemnations: the Condemnation of 1277; the condemnation of Meister Eckhart in 1328; the condemnation and execution of Giordano Bruno in 1600; and the condemnation of Galileo Galilei in 1633. Demonstration that the issue in each case was the shape and legitimacy of the modern age. HU

PHIL 213b / JDST 275b, The Philosophy of Maimonides  Gabriel Citron
Introduction to the thought of the medieval Jewish philosopher Moses Maimonides. His radically nonanthropomorphic conception of God; his resultant understanding of the nature of man and the ends of life; ways in which his views on ethics, religion, and politics are structured to support his philosophical system. Recommended preparation: an introductory course in philosophy or Judaic studies. HU

PHIL 216b / GREK 438b, Plato’s Republic, Book Eight  Verity Harte
Reading and discussion of the Greek text of Plato’s Republic, Book Eight, focused on Plato’s psychological and political theory. Contrasts between the philosophical ideal and various nonideal conditions of city and of person. Prerequisites: GREK 131 and 141 or equivalents. 15, HU

PHIL 220a / JDST 272a, Medieval Philosophy  Paul Franks and Stephen Ogden
Introduction to central problems and themes in medieval philosophy. The confrontation between Greek philosophy and the Abrahamic or scriptural religions of Judaism, Christianity, and Islam; conceptions in metaphysics, epistemology, philosophy of mind, and ethics to which the encounter gave rise. Philosophers include Augustine, Saadiah, al-Farabi, al-Ghazali, Maimonides, Ibn-Rushd, Aquinas, Crescas, and Ockham. HU

PHIL 260b / AMST 260b, American Philosophy  Kenneth Winkler
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 George 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. HU
PHIL 261b / GMST 212b / HUMS 330b, Realism, Idealism, and Romanticism
Paul Franks
Investigation of the possibility of individual agency and absolute reason in modernity. Introduction to figures from classical German philosophy such as Kant, Goethe, Mendelssohn, Jacobi, Fichte, Schelling, Schlegel, and Hegel. Themes include realism, idealism, romanticism, skepticism, nihilism, freedom, individuality, systematicity, and romantic irony. HU

METAPHYSICS AND EPISTEMOLOGY

PHIL 267a, Mathematical Logic Sun-Joo Shin
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Introduction to the basic concepts of set theory. Prerequisite: PHIL 115 or permission of instructor. QR
Math: Logic/Foundations

PHIL 269b, The Philosophy of Science Daniel Greco
Central questions about the nature of scientific theory and practice. Factors that make a discipline a science; how and why scientific theories change over time; interpreting probabilistic claims in science; whether simpler theories are more likely to be true; the laws of nature; whether physics has a special status compared to other sciences; the legitimacy of adaptationist thinking in evolutionary biology. HU

PHIL 270b, Epistemology Keith DeRose
Introduction to current topics in the theory of knowledge. The analysis of knowledge, justified belief, rationality, certainty, and evidence. HU

PHIL 271a / LING 271a, Philosophy of Language Zoltán Szabó
An introduction to contemporary philosophy of language, organized around four broad topics: meaning, reference, context, and communication. Introduction to the use of logical notation. HU

PHIL 274a / JDST 335a, Concepts of God in Jewish Philosophy Gabriel Citron
Introduction to Jewish philosophy, from Philo to Maimonides and Spinoza to Levinas. Focus on different conceptions of God and their interrelations. Corporeal views of God and their culmination in pantheism and panentheism; incorporeal conceptions of God and their apotheosis in negative theology; contemporary existential understandings of God. HU

PHIL 275b, Mathematics, Intuition, and Ontology Carl Posy
Ontological and epistemological issues raised by contemporary mathematics. Whether mathematical objects exist and, if they do, how they relate to ordinary objects. Ways in which knowledge about mathematical objects resembles or differs from ordinary empirical knowledge. The influence of such debates on the development of mathematics itself. Historical case studies introduce mathematical notions and place issues in philosophical context. HU

PHIL 277b, Frege and Analytic Philosophy Jason Stanley
Gottlob Frege’s view of arithmetic as an abstract reality no less real than the ordinary objects of sight and touch. His attempt to place arithmetic on an absolutely firm foundation, and wider views of meaning and representation that emerged from the attempt. Frege’s contributions to logicism, analytic philosophy, and the notation for quantification and variables; his influence on the emerging discipline of logic and on
later study of the meaning properties of natural languages. Prerequisite: PHIL 115 or equivalent, or with permission of instructor.  HU

PHIL 281b, Infinity  Bruno Whittle
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.  QR, HU

ETHICS AND VALUE THEORY

PHIL 326b / RLST 402b, The Philosophy of Religion  John Pittard
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.  HU

PHIL 328aG / PLSC 293aG, European Political Thought from Weber to Derrida  Seyla Benhabib
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.  SO

PHIL 333a, Rationality  Stephen Darwall and Alexander Worsnip
Examination of normative assumptions about when a piece of behavior or state of mind counts as rational or irrational. Philosophical problems, puzzles, and paradoxes about rationality of belief and action. Belief consistency; pragmatic reasons for belief; the rational response to disagreement; conceptions of preference and rational choice; feminist accounts of rationality. Enrollment limited. Prerequisite: a course in philosophy.  HU

PHIL 334a / PLSC 281a / RLST 273aG, Ethical and Social Issues in Bioethics  Stephen Latham
A selective survey of issues in biomedical ethics. Comparison of different points of view about biomedical issues, including religious vs. secular and liberal vs. conservative. Special attention to issues in research and at the beginning and end of life.  SO

PHIL 337a, Rawls, Recognition, and Equality  Thomas Pogge
John Rawls’s domestic theory of justice and its appeals to respect and equality. Recent work on the concept of recognition and its relationship to distributive justice. Contemporary variants of liberal egalitarianism, including luck egalitarianism, the capability approach, and democratic equality. Whether equality as a normative ideal is best understood in terms of relationships among persons or of patterns of distribution.  HU

Seminars

HISTORY OF PHILOSOPHY

*PHIL 400aG / CLSS 403a, Aristotle’s Physics, Book II  Verity Harte
Reading and discussion of the Greek text of Aristotle’s Physics, Book II. Aristotle’s core conception of nature and his physical theory. Prerequisites: GREK 131, 141, and PHIL 125 or equivalents, or with permission of instructor.  L5, HU
*PHIL 410b / EALL 308bG / HUMS 305b, Sages of the Ancient World
  Michael Hunter
  Comparative survey of ancient discourses about wisdom from China, India, the Near East, Egypt, Greece, and Rome. Topics include teaching, scheming, and dying. HU

*PHIL 415a, Hume  Kenneth Winkler
  A study of Hume’s epistemology and metaphysics and his science of human nature. Topics include our knowledge of space and time; inductive reasoning; the nature and representation of causation; the origin and justification of belief in an external world; personal identity; the normative bearing of naturalized epistemology; the explanation and justification of religious belief; and the attractions and limits of skepticism. Readings in Book I of A Treatise of Human Nature, An Enquiry concerning Human Understanding, and Dialogues concerning Natural Religion. HU

*PHIL 418bG, Philosophical Psychology  Verity Harte
  Central topics in philosophical psychology from works by Plato and Aristotle. The nature of specific psychological faculties and activities, such as perception, memory, desire, imagination, emotion, and reasoning. HU

*PHIL 420bG, Kantian Themes in Contemporary Philosophy  Paul Franks and Carl Posy
  Examination of issues in contemporary philosophy on which Kantian perspectives shed light. Topics include skepticism, transcendental arguments, truth, the unity of the proposition, the unity of consciousness, paradoxes of knowledge, foundations of logic and mathematics, and realism and antirealism. HU

*PHIL 421a / HIST 239Ja / HUMS 313a / PLSC 317a, John Locke in Historical Context
  Steven Pincus
  Locke's thinking about political resistance, religious toleration, and political economy examined in light of the writings and activities of his contemporaries. Introduction to methodological questions in the history of political thought. WR, HU

METAPHYSICS AND EPISTEMOLOGY

*PHIL 425bG, Metaphysics through Language  Zoltán Szabó
  Exploration of natural language metaphysics—metaphysical views implicitly favored by human languages. The mechanism whereby language can be the source of views about reality. Topics include existence, identity, parthood, time, modality, and teleology. HU

*PHIL 427bG, Computability and Logic  Sun-Joo Shin
  A technical exposition of Gödel's first and second incompleteness theorems and of some of their consequences in proof theory and model theory, such as Löb's theorem, Tarski's undefinability of truth, provability logic, and nonstandard models of arithmetic.
  Prerequisite: PHIL 267 or permission of instructor. QR, HU
  Math: Logic/Foundations

*PHIL 428bG, Propositions, Truth, and Paradox  Bruno Whittle
  Semantic paradoxes and the question of how to give adequate accounts of truth and of propositions in light of them. Readings include recent work on languages that contain their own truth predicates and on attempts to give consistent accounts of structured propositions. HU
**PHIL 429a** / LING 391a, Problems in Semantics: Quantification  Benjamin George
Topics in the semantics of quantification, with a focus on the expressive power of quantification in natural language. Analysis of quantifiers such as some, every, no, many, fewer, and most; generalizations about and possible universals of quantification in natural language; implications for mathematical and philosophical properties of logics that are suitable for modeling natural language semantics; plural quantification.  
HU

**PHIL 431a**, Persistence, Action, and Relations  Michael Della Rocca
Central issues in contemporary metaphysics, including the nature of persistence and the nature of intentional action. Special attention to the nature of relations and to the reasons for making what has come to be known as the Parmenidean Ascent. Authors include Davidson, Sider, Lewis, Anscombe, Quine, Frankfurt, and Leibniz.  
HU

**PHIL 432a** / CGSC 432a, Experimental Philosophy  Joshua Knobe
Overview of research in and critical responses to experimental philosophy, a field in which scientific studies are conducted to examine people’s intuitions about philosophical problems. Applications of this method to philosophical questions about morality, language, knowledge, and consciousness.  
HU

**PHIL 433a**, Modal Logic and Metaphysics  Jason Stanley
Modal logic and its semantics, and their implications for metaphysics. Readings from works by Ruth Barcan Marcus, Saul Kripke, Robert Stalnaker, George Boolos, and Timothy Williamson. Prerequisite: PHIL 115 or equivalent.  
HU

**PHIL 434a**, The Epistemology of Disagreement  John Pittard
Investigation of the epistemic significance of disagreement. Whether one can reasonably maintain confident belief in the face of disagreement with apparently qualified thinkers; recent responses to that question from conciliationists and anticonciliationists. Related issues in the theory of rationality.  
HU

**PHIL 435b**, Philosophy for Psychologists  Aaron Norby
Central issues in philosophy of mind and their relations with contemporary psychology. Scientific psychology versus philosophy as the better approach to addressing the questions raised. Prerequisite: PHIL 181 or equivalent.  
HU

**PHIL 436b** / LING 169b, Meaning  Laurence Horn and Benjamin George
Analysis of selected classic readings in the study of meaning. Problems of sense and reference, presupposition, speaker intention, semantics of descriptions, names, and natural kinds. Historical tensions concerning the relationship between logical formalism and ordinary language; debates about the role of context in theories of meaning. Readings from works by Frege, Russell, Strawson, Donnellan, Austin, Grice, Kripke, and Putnam.  

**ETHICS AND VALUE THEORY**

**PHIL 455b** / EP&E 334b, Normative Ethics  Shelly Kagan
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). Prerequisite: a course in
moral philosophy.  

*PHIL 456aG / HUMS 329a / PLSC 296aG, Contemporary Theory: Berlin, Oakeshott,
and Strauss  Steven Smith
Close reading of works by three major figures in twentieth-century political philosophy
— Isaiah Berlin, Michael Oakeshott, and Leo Strauss. The authors’ critiques of social
science, and their views on the Enlightenment and on the role of the university in a free
society.  

*PHIL 457aG / EP&E 235a / PLSC 283aG, Recent Work on Justice  Thomas Pogge
In-depth study of one contemporary book, author, or debate in political philosophy,
political theory, or normative economics. Focus varies from year to year based on
student interest and may include a ground-breaking new book, the life’s work of a
prominent author, or an important theme in contemporary political thought.  

*PHIL 459aG, Twentieth-Century Ethical Theory  Sam Shapall
Study of major developments in twentieth-century moral philosophy through
close reading of core texts in metaethics. Foundational issues about the nature and
status of moral discourse; questions about the relationship of morality to rationality.
Recommended preparation: a course in ethics.  

*PHIL 460b / HUMS 304b, Theories of Punishment  David Goldman
The nature, function, and justification of punishment as understood by thinkers such
as Plato, Bentham, and Hegel. The significance of criminal wrongdoing to which
punishment is a response; the social roles that punishment might or does serve;
relations between political authority and the justification of criminal punishment;
specific practices, such as the *lex talionis* and capital punishment; the twentieth-century
debate between utilitarians and retributivists.  

*PHIL 461b / EP&E 458b / PLSC 315b, Egalitarianism  Christopher Lebron
The concept of equality in normative political theory explored through contemporary
philosophical texts. Reasons why oppressed, marginalized, and systematically
disadvantaged groups express their claims in terms of equality; racial inequality as a
case study.  

Tutorial and Senior Essay Courses

*PHIL 480a or b, Tutorial  Kenneth Winkler
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 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 PHIL 491b, The Senior Essay  Kenneth Winkler
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 490 in the fall or 491 in the
spring. Students completing a two-term project should enroll in both 490 and 491. The
deadline for senior essays completed in the fall is December 6; the deadline for both one- and two-term senior essays completed in the spring is April 25.

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 section K of the Academic Regulations.) With permission of the director of graduate studies, relevant Graduate, Divinity, and Law School courses may count toward the major. Course descriptions appear in the Graduate, Divinity, and Law School bulletins.

Physics

Director of undergraduate studies: John Harris, 311 WNSL-W, 432-3601, dus.physics@yale.edu; physics.yale.edu/undergraduate-studies

FACULTY OF THE DEPARTMENT OF PHYSICS

Professors  †Charles Ahn, Yoram Alhassid, Thomas Appelquist, ‡Charles Bailyn, O. Keith Baker, Charles Baltay, Sean Barrett, Cornelius Beausang (Adjunct), †Hui Cao, Richard Casten, †Richard Chang (Emeritus), †Paolo Coppi, David DeMille, †Michel Devoret, †Paul Fleury, Moshe Gai (Adjunct), Steven Girvin, Leonid Glazman, Martin Gutzwiller (Adjunct), John Harris, †Victor Henrich, Jay Hirshfield (Adjunct), Francesco Iachello, Dmitry Kharzeev (Adjunct), Steven Lamoreaux, William Marciano (Adjunct), Simon Mochrie, Vincent Moncrief, †Priyamvada Natarajan, Peter Parker (Emeritus), †Daniel Prober, Nicholas Read, Jack Sandweiss, †Robert Schoelkopf, Ramamurti Shankar, †A. Douglas Stone, Paul Tipton (Chair), †John Tully, Thomas Ullrich (Adjunct), C. Megan Urry, †Pieter van Dokkum, †John Wettlaufer, Michael Zeller (Emeritus)

Associate Professors  Helen Caines, †Eric Dufresne, †Thierry Emonet, Bonnie Fleming, †Marla Geha, Walter Goldberger, Jack Harris, †Sohrab Ismail-Beigi, Daniel McKinsey, Daisuke Nagai, †Corey O’Hern, †A. Elizabeth Rhoades, Witold Skiba, Volker Werner

Assistant Professors  Sarah Demers, Tobias Golling, Nikhil Padmanabhan, David Poland

Lecturers  Sidney Cahn, Stephen Irons, †Frank Robinson

†A joint appointment with primary affiliation in another department.

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 four 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), philosophy and physics (see Physics and Philosophy) and physics and
geosciences (see Physics and Geosciences). Applied Physics is a closely related major (see Applied Physics).

**Introductory courses with no calculus requirement**   Physics courses numbered 120 or below are for students with little or no previous experience in physics who do not plan to major in the natural sciences. These courses have no college-level mathematics requirement and do not satisfy the medical school requirement.

**Introductory calculus-based lecture sequences**

1. PHYS 170, 171 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 112 and 115 should be taken concurrently.

2. PHYS 180, 181 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 112 is a prerequisite; MATH 115 and 120 should be taken concurrently.

3. PHYS 200, 201 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 115 is presumed. MATH 120 should be taken concurrently with PHYS 200. It is suggested that MATH 222 or 225 be taken concurrently with PHYS 201.

4. PHYS 260, 261 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, 231 or the equivalent should be taken concurrently with PHYS 260, 261.

If students have the appropriate mathematics background, they are advised to take a calculus-based physics course. Sir Isaac Newton developed calculus while trying to describe the world around him; it is the natural language of physics. Students enrolled in one of the calculus-based introductory courses will be invited to a series of Chairman’s Teas, which provide an opportunity to discuss topics on the frontiers of physics with faculty and peers. Completion of a calculus-based course also prepares students for the 340-level series of advanced physics electives, which cover special topics of interest to both majors and nonmajors.

PHYS 170, 180, 200, and 260 meet at the same time so that students are easily able to change levels if necessary. Questions about placement should be addressed to the director of undergraduate studies.

**Introductory laboratories**   Two different introductory laboratory sequences are offered: PHYS 165L, 166L, and PHYS 205L, 206L. 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 Classes* v2 (http://classesv2.yale.edu).

1. PHYS 165L, 166L is an introductory laboratory for students without a strong high school physics laboratory preparation. Related lecture courses are PHYS 170, 171, and PHYS 180, 181.
2. **PHYS 205L, 206L** is for students who plan to major in the physical sciences. Related lecture courses are PHYS 180, 181, PHYS 200, 201, and PHYS 260, 261. Students who take the lecture courses in freshman year are advised to start this laboratory sequence with PHYS 205L in the spring of freshman year or 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 170, 171, or 180, 181, or 200, 201, or 260, 261). The offerings for 2013–2014 include PHYS 341, Biological Physics, 342, Introduction to Earth and Environmental Physics, 343, Gravity, Astrophysics, and Cosmology, and 344, Quantum and Nanoscale Physics.

**Major degree programs** Two different majors are offered in Physics: the B.S. and the B.S. with an intensive major. Students in either program acquire advanced training in physics, mathematics, 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 degree programs require research experience through PHYS 471 and 472—one term for the B.S. degree and two terms for the B.S. degree with an intensive major. 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 B.S. program with an intensive major is distinguished by depth of study in advanced physics courses and prepares students to study physics or closely related physical sciences in graduate school. 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 either major.

**B.S. degree program** The prerequisites are an introductory lecture course sequence with a mathematics sequence equivalent to, or more advanced than, the corequisite of the physics sequence. The following options are appropriate: PHYS 170, 171 with MATH 112, 115; or PHYS 180, 181 with MATH 115, 120; or PHYS 200, 201 with MATH 120 and either 225 or 222; or PHYS 260, 261 with MATH 230, 231 or equivalent. In addition, the laboratory sequence PHYS 205L, 206L or PHYS 165L, 166L 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 major. Students are advised to take mathematics courses throughout their freshman year at the appropriate level.

Eight courses are required beyond the prerequisites, including the senior project. Students must take a mathematics course at the level of, or more advanced than, PHYS 301. 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 401 and 402, pertain to advanced classical physics (mechanics, statistical physics and thermodynamics, and electromagnetism), and the third, APHY 439 or PHYS 440, covers quantum mechanics. Three advanced elective
courses are also required. Suitable advanced courses include the PHYS 340-level electives, an advanced laboratory such as PHYS 382L, and 400-level 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 the required number of advanced courses.

**Senior requirement for the B.S. degree program** The senior requirement for the regular B.S. degree is fulfilled by receiving a passing grade on a one-term research project in PHYS 471 or 472 or equivalent. Students should consult the director of undergraduate studies for further information.

**B.S. degree program, intensive major** The prerequisites for the B.S. degree with an intensive major are the same as for the standard program. Ten courses are required beyond the prerequisites, including the senior project. Students must take a mathematics course at the level of, or more advanced than, PHYS 301. 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 410), statistical physics and thermodynamics (PHYS 420), and electromagnetism (PHYS 430). Two other courses incorporate quantum mechanics (PHYS 440 and 441). These courses must be taken in order because the ideas build progressively: PHYS 410 precedes 440, which precedes 441, 420, and 430.

Because experiment is at the heart of the discipline, the intensive major requires one term of advanced laboratory (PHYS 382L or equivalent) and at least two terms of independent research (PHYS 471, 472 or equivalent). One advanced elective course is required to complete the program. Suitable advanced courses include the PHYS 340-level electives and 400-level 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 B.S. degree program, intensive major** The senior requirement for the intensive major is fulfilled by receiving a passing grade on a two-term research project in PHYS 471, 472 or equivalent. Students should consult the director of undergraduate studies for further information.

**Sequence of courses** For both the regular B.S. degree and the B.S. degree with an intensive major, students are advised to begin the program in their freshman year to allow the greatest amount of flexibility in course selection. It is possible, however, to complete either program in a total of six terms, as illustrated below.
A program for a student completing the Physics B.S. in three years might be:

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<tr>
<th>Freshman or Sophomore</th>
<th>Sophomore or Junior</th>
<th>Senior</th>
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<td>PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261</td>
<td>PHYS 206L</td>
<td>APHY 439 or PHYS 440</td>
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<tr>
<td>PHYS 205L</td>
<td>PHYS 301</td>
<td>PHYS 471 or 472</td>
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<tr>
<td>Mathematics corequisites</td>
<td>PHYS 401</td>
<td>Two advanced electives</td>
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<td>Mathematics corequisites</td>
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<td>One advanced elective</td>
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**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 170, 171, or 180, 181, or 200, 201, or 260, 261, with appropriate math coreqs; PHYS 205L, 206L, or PHYS 165L, 166L

**Number of courses** 8 term courses beyond prereqs (incl senior req)

**Specific courses required** PHYS 301 or other advanced math course; PHYS 401, 402, and either APHY 439 or PHYS 440, in sequence

**Distribution of courses** 3 advanced electives approved by DUS

**Senior requirement** PHYS 471 or 472 or equivalent

**B.S. DEGREE, INTENSIVE MAJOR**

**Prerequisites** PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261, with appropriate math coreqs; PHYS 205L, 206L, or PHYS 165L, 166L

**Number of courses** 10 term courses beyond prereqs (incl senior req)

**Specific courses required** PHYS 301 or other advanced math course; PHYS 410, 440, 441, 420, 430, in sequence; PHYS 382L

**Distribution of courses** 1 advanced elective approved by DUS

**Senior requirement** PHYS 471 and 472 or equivalent
Courses

*PHYS 050a / APHY 050a, Science of Modern Technology  Daniel Prober and staff
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.
SC  RP

*PHYS 101a or b, Movie Physics  Frank Robinson and staff
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.  QR, SC

*PHYS 110b, Developments in Modern Physics  Paul Tipton
An introduction to modern physics and quantitative reasoning. Topics include
subatomic particles, electromagnetic waves, black holes, galaxies, and the fate of the
universe. The stages of descriptive modeling, with examples ranging from Newtonian
physics to Einstein’s theory of relativity.  QR, SC

*PHYS 116a, Understanding the World through Physics  Richard Casten
Introduction to basic principles of physics through exploration of the physics involved
in daily life. Sports, music, radiation, natural disasters, relativity, alternative energy, and
recent innovations. Methods used by physicists to approach problems; application of
these methods to problems outside the field.  SC

*PHYS 120b, Quantum Physics and Beyond  Helen Caines and John Harris
Current topics in modern physics, beginning with quantum physics and continuing
through subatomic physics, special and general relativity, cosmology, astrophysics, and
string theory.  SC

PHYS 165La and PHYS 166Lb, General Physics Laboratory  Richard Casten and staff
A variety of individually self-contained experiments are roughly coordinated with the
lectures in PHYS 170, 171, and 180, 181 and illustrate and develop physical principles
covered in those lectures.  SC  ½ Course cr per term

*PHYS 170a and PHYS 171b, University Physics for the Life Sciences  Simon Mochrie
An introduction to classical physics with special emphasis on applications drawn from
the life sciences and medicine. Fall-term topics include vectors, kinematics, Newton’s
laws of motion, oscillations and waves, gravitation, elasticity, statics, diffusion, fluids,
and thermodynamics. Spring-term topics include electricity and magnetism, circuits,
light and optics, sound, and modern physics. Essential calculus is introduced as needed.
Concurrently with MATH 112, 115. See comparison of introductory sequences and
laboratories in the YCPS.  QR, SC

PHYS 180a and PHYS 181b, University Physics  Sean Barrett and staff
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 115 and 120 or equivalents. See comparison of introductory sequences and laboratories in the YCPS. May not be taken for credit after PHYS 170, 171. QR, SC

**PHYS 200a and PHYS 201b, Fundamentals of Physics**  Tobias Golling

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 115 or equivalent. See comparison of introductory sequences and laboratories in the YCPS. QR, SC

**PHYS 205La and PHYS 206Lb, Modern Physical Measurement**  Daniel McKinsey and staff

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. sc ½ Course cr per term

**PHYS 260a and PHYS 261b, Intensive Introductory Physics**  Charles Baltay

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 and 231, or PHYS 301, or equivalent. QR, SC

**PHYS 290a / G&G 290a, Earthquakes and Volcanoes**  Jun Korenaga

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 provide students with hands-on problem-solving experiences in geophysics. Prerequisites: CHEM 112, 113, or 114, 115, or 118; MATH 120; PHYS 170, 171, or 180, 181, or 200, 201; or permission of instructor. QR, SC

**PHYS 295a / ASTR 255a, Research Methods in Astrophysics**  Marla Geha

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. Use of the Python programming language. Includes an optional field trip during October recess to the Arecibo 300-meter radio telescope. No previous programming experience required. QR, SC RP

**PHYS 301a, Introduction to Mathematical Methods of Physics**  Nikhil Padmanabhan

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 401 or 410. Prerequisite: PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. QR

**PHYS 320a, Science and Public Policy**  Bonnie Fleming
Case studies in the science and technology enterprise in the United States and selected foreign countries; how science and technology affect public policy and in turn are affected by it; how research is planned, supported, evaluated, and utilized; how criteria for selection of research areas are developed and used in the executive and legislative branches of government. No detailed background in physical science or mathematics required. WR, SO

**PHYS 341a, Biological Physics**  Simon Mochrie and staff
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 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. Recommended preparation: PHYS 301 or other advanced mathematics course. QR, SC

**PHYS 342a / G&G 342a, Introduction to Earth and Environmental Physics**
Steven Lamoreaux
A broad introduction to the physical, chemical, and biological processes that affect the climate and other features of the Earth. Emphasis on anthropogenic activity that affects the environment; attention to issues of energy extraction from natural resources and subsequent waste disposal. Recommended preparation: familiarity with basic calculus. Prerequisite: PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. QR, SC

**PHYS 343b / ASTR 343b, Gravity, Astrophysics, and Cosmology**
Nikhil Padmanabhan
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 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. QR, SC

**PHYS 344b, Quantum and Nanoscale Physics**  Sean Barrett
An introduction to cutting-edge developments in physics involving quantum information and/or nanotechnology. Background concepts in quantum mechanics, electromagnetism, and optics are introduced as necessary. Prerequisite: PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261, or permission of instructor. PHYS 301 or other advanced mathematics course recommended. QR, SC

*PHYS 382LbG, Advanced Physics Laboratory*  Steven Lamoreaux
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 206L. After or concurrently with PHYS 439 or 440, or with permission of instructor. SC

**PHYS 401a and PHYS 402b, Advanced Classical Physics from Newton to Einstein**
Ramamurti Shankar
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
III. Subjects of Instruction

discipline, an idea that was subsequently shaken to the core by the revolutionary discoveries of quantum physics and relativity. Prerequisite: PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261. Concurrently with PHYS 301 or other advanced mathematics course. QR, SC

PHYS 410a, Classical Mechanics  Witold Skiba and staff
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 170, 171, or 180, 181, or 200, 201, or 260, 261. Concurrently with PHYS 301 or other advanced mathematics course. QR, SC

*PHYS 420a, Thermodynamics and Statistical Mechanics  A. Douglas Stone
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 301 and 410 or equivalents. QR, SC

PHYS 430b, Electromagnetic Fields and Optics  Francesco Iachello
Electrostatics, magnetic fields of steady currents, electromagnetic waves, and relativistic dynamics. Provides a working knowledge of electrodynamics. Prerequisites: PHYS 301 and 410 or equivalents. QR, SC

PHYS 439a / APHY 439aG, Basic Quantum Mechanics  Sohrab Ismail-Beigi
and Robert Schoelkopf
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 181 or 201, PHYS 301, or equivalents, or permission of instructor. QR, SC

PHYS 440b, Quantum Mechanics and Natural Phenomena I  David DeMille
and Daniel McKinsey
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. Prerequisite: PHYS 410 or 401. QR, SC

PHYS 441a, Quantum Mechanics and Natural Phenomena II  David DeMille
and Daisuke Nagai
Continuation of PHYS 440. Prerequisite: PHYS 440. QR, SC

PHYS 448aG / APHY 448aG, Solid-State Physics I  Victor Henrich and Charles Ahn
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 322, 439, PHYS 420. QR, SC
PHYS 449bG / APHY 449bG, Solid-State Physics II  A. Douglas Stone
and Michel Devoret
The second term of the sequence described under APHY 448. QR, SC

PHYS 458aG / APHY 458aG, Principles of Optics with Applications  Hui Cao
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 430. QR, SC

PHYS 460aG, Mathematical Methods of Physics  Nicholas Read
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 301 or other advanced mathematics course. QR

*PHYS 471a and PHYS 472b, Independent Projects in Physics  Sean Barrett
and Volker Werner
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. RP

Physics and Geosciences

Directors of undergraduate studies: John Harris (Physics), 311 WNSL-W, 432-3601,
dus.physics@yale.edu; David Evans (Geology and Geophysics), 210 KGL, 432-3127,
david.evans@yale.edu

The major in Physics and Geosciences applies fundamental physical principles to the
study of Earth and other planetary bodies at a level that is more intensive than in the
Physics or Geology and Geophysics majors individually. Topics of interest range from
atmosphere, ocean, and climate dynamics to physics of the solid Earth or of other
planetary bodies.

Prerequisites  The prerequisites for the major include MATH 120 or its equivalent,
an introductory physics sequence numbered PHYS 170, 171 or above, the associated
physics laboratory sequence PHYS 205L, 206L, and a course in ordinary differential
equations chosen from ENAS 194, MATH 246, or PHYS 301.

Requirements of the major  Beyond the prerequisites, the major requires a minimum
of twelve term courses, including the senior project. At least four of these courses must
be in Physics and at least six must be in Geology and Geophysics. Students complete a
two- or three-term advanced physics sequence: either PHYS 401 and 402, or PHYS 410,
420, and 430. They must also take basic quantum mechanics (PHYS 439) and one
elective numbered PHYS 420 or above. Required courses in Geology & Geophysics
include one introductory course numbered G&G 100–150, with any accompanying
laboratory; one elective numbered G&G 200 or above; and four advanced electives from
one of two Geology and Geophysics tracks: the atmosphere, ocean, and climate track
or the solid Earth science track. A list of suggested electives is available from the office
of the director of undergraduate studies in Geology and Geophysics or on the G&G departmental Web site (earth.yale.edu). No elective course may count toward multiple requirements for the major.

**Senior requirement** Students complete a two-term senior project on a topic that is appropriate for the combined major and acceptable to both the Physics and Geology and Geophysics departments. The project is undertaken in either PHYS 471, 472 or G&G 490, 491. In addition, students must present an oral report on their project to each department.

**Credit/D/Fail** No course taken Credit/D/Fail may be counted toward the Physics and Geosciences major, including prerequisites.

**Advising** Interested students should consult the directors of undergraduate studies in Physics and in Geology and Geophysics.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** MATH 120 or equivalent; PHYS 170, 171 or above; PHYS 205L, 206L; ENAS 194, MATH 246, or PHYS 301

**Number of courses** at least 12 courses beyond prereqs, incl senior req

**Specific courses required** PHYS 401 and 402, or 410, 420, and 430; PHYS 439

**Distribution of courses** 1 elective numbered PHYS 320 or above; 1 intro course in G&G, with lab, as specified; 1 elective numbered G&G 200 or above; 4 advanced courses in a G&G track, as specified

**Senior requirement** Senior project in PHYS 471, 472 or G&G 490, 491, on topic acceptable to both depts; oral report on project to both depts

**Physics and Philosophy**

Directors of undergraduate studies: John Harris (Physics), 311 WNSL-W, 432-3601, dus.physics@yale.edu; Kenneth Winkler (Philosophy), 406A C, 432-1679, kenneth.winkler@yale.edu

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 at the level of MATH 120; any introductory Physics lecture sequence numbered 170 or higher; PHYS 165L and 166L, or 205L and 206L; one introductory Philosophy course.

Beyond the prerequisites, students take fourteen term courses, including the senior requirement. Seven courses in Physics approved by the director of undergraduate studies and numbered 301 or higher are required, including PHYS 301 or equivalent and either PHYS 439 or 440. Six courses in Philosophy or in History of Science, Medicine, and Public Health are required, including PHIL 125 and 126, one course in logic above the introductory level, and a Philosophy seminar selected with the approval of the directors of undergraduate studies.

**Senior requirement** Seniors must complete one of the following: (1) PHYS 471 or 472; (2) PHIL 490 or 491 (senior essay); (3) PHIL 480 (tutorial) in an appropriate
subject; (4) an appropriate Philosophy seminar with the approval of the director of undergraduate studies in Philosophy.

**REQUIREMENTS OF THE MAJOR**

**Prerequisites** MATH 120; PHYS 170, 171, or 180, 181, or 200, 201, or 260, 261; PHYS 165L, 166L, or 205L, 206L; 1 intro Phil course

**Number of courses** 14 term courses beyond prereqs, incl senior req

**Distribution of courses** 7 Physics courses numbered 301 or higher approved by DUS; 6 courses in Phil or HSHM, incl 1 in logic above intro level and a Phil sem, as specified

**Specific courses required** PHYS 301 or equivalent; PHYS 439 or 440; PHIL 125, 126

**Senior requirement** 1 from PHYS 471 or 472, PHIL 490 or 491, PHIL 480 on appropriate topic, or approved Phil sem

**Political Science**

Director of undergraduate studies: David Cameron, 115 Prospect St., 432-5236, david.r.cameron@yale.edu; politicalscience.yale.edu/academics/about-undergraduate-program

**FACULTY OF THE DEPARTMENT OF POLITICAL SCIENCE**

**Professors** Bruce Ackerman, Akhil Amar, Seyla Benhabib, David Cameron, Thad Dunning, Bryan Garsten, Alan Gerber, Jacob Hacker, Oona Hathaway, Gregory Huber, Stathis Kalyvas, Joseph LaPalombara (*Emeritus*), David Mayhew, Douglas Rae, John Roemer, Susan Rose-Ackerman, Frances Rosenbluth, Bruce Russett (*Emeritus*), Nicholas Sambanis, James Scott, Ian Shapiro, Stephen Skowronek, Steven Smith, Susan Stokes (*Chair*), Alec Stone Sweet, Peter Swenson, John Wargo, Steven Wilkinson, Elisabeth Wood

**Associate Professors** Daniel Butler, Ana De La O, Susan Hyde, Ellen Lust, Karuna Mantena, Andrew March

**Assistant Professors** Peter Aronow, Kate Baldwin, Deborah Beim, John Bullock, Seok-ju Cho, Allan Dafoe, Alexandre Debs, Samuel DeCanio, John Henderson, Eitan Hersh, Sigrun Kahl, Hélène Landemore, Adria Lawrence, Jason Lyall, Nuno Monteiro, Paulina Ochoa Espejo, Margaret Peters, Eleanor Powell, Kelly Rader, Thania Sanchez, Tariq Thachil, Vesla Weaver, Jessica Weiss

**Lecturers** Alejandro Bonvecchi, Edwin Camp, Nathaniel Cogley, Thomas Donahue, Alexandra Dufresne, Ruben Durante, Cynthia Farrar, Michael Fotos, Alin Fumurescu, Elizabeth Hanson, Cynthia Horan, Jolyon Howorth, Boris Kapustin, Matthew Kocher, Jean Krasno, Stephen Latham, Christopher Lebron, David Simon, Derek Slap, James Sleeper, John Starr, Peter Verovsek, Jeremy Wallace

**Advising** Students majoring in Political Science are expected to have a member of the Political Science faculty as an adviser. Upon declaring their major, students are asked to identify an adviser in their substantive field of interest. The fields of interest of the faculty are listed on the departmental Web site (http://politicalscience.yale.edu/people/faculty). For newly declared majors having difficulty identifying an appropriate adviser, one or more members of the faculty will be suggested by the department. Students are also encouraged to seek advice from the department’s residential college
faculty representatives as well as from other members of the department who are knowledgeable about their fields of interest. Majors must secure written approval of their course selections each term from their adviser, another member of the department, or the director of undergraduate studies. All subsequent changes in a student’s major program must also be approved.

Students are urged to take the initiative in shaping a coherent program suited to their interests, and they should also consult frequently with their adviser. The director of undergraduate studies and other members of the department can provide advice about departmental requirements, options within the major, requirements of two majors, study abroad, and other matters related to the major. Additional information on advising can be found on the departmental Web site. (http://politicalscience.yale.edu/academics/undergraduate-program/advising)

**The standard program for the Classes of 2014 and 2015** Eleven term courses in political science are required. Students must take at least two courses in each of any three of the department’s five fields—international relations, American government, political philosophy, analytical political theory, and comparative government. Students expecting to major in Political Science should take one or more introductory-level courses in the department early in their college careers. Introductory courses count toward the overall course requirement and toward the departmental fields requirement.

Students are encouraged to take courses related to political science that are offered by other departments. Students in the Classes of 2014 and 2015 who elect the standard program may petition to count up to three such courses toward the major. Students may routinely count college seminars taught by members of the Political Science faculty toward the major, and they may petition to count one college seminar taught by an instructor outside the department. Students who have completed Directed Studies may, with the approval of the director of undergraduate studies, count one term of DRST 005, 006 toward the major.

**The standard program for the Class of 2016 and subsequent classes** Twelve term courses in political science are required. Students must take at least two courses in each of any three of the department’s five fields—international relations, American government, political philosophy, analytical political theory, and comparative government. Students expecting to major in Political Science should take one or more introductory-level courses in the department early in their college careers. Introductory courses count toward the overall course requirement and toward the departmental fields requirement.

For students in the Class of 2016 and subsequent classes, up to two lecture courses taken Credit/D/Fail may count toward the major, with permission of the director of undergraduate studies.

Students are encouraged to take courses related to political science that are offered by other departments. Students who elect the standard program may petition to count up to two such courses toward the major. Students may routinely count college seminars taught by members of the Political Science faculty toward the major, and they may petition to count one college seminar taught by an instructor outside the department.
Students who have completed Directed Studies may, with the approval of the director of undergraduate studies, count one term of DRST 005, 006 toward the major.

**Senior requirement**  Students in all classes majoring in Political Science are required to take at least two seminars taught by members of the Political Science department, one during the senior year. Seniors in the major must also complete a senior essay, as described under "Senior essay” below. The essay can be written either in one term or over both terms of the senior year. In order to graduate from Yale College, a student majoring in Political Science must achieve a passing grade on the senior essay.

**Seminar preregistration**  Each term, the department provides all declared majors the opportunity to apply for preregistration to its seminars. Instructors of seminars may preregister up to twelve students per course, or up to eight students for courses multiple-titled with other programs. The maximum enrollment for each seminar is eighteen. Students may be preregistered for up to two seminars per term. For fall-term seminar preregistration, an initial notice is sent to all majors in July; for spring-term preregistration, the notice is sent in November. Only students who are declared Political Science majors at the time the notice is sent are eligible to participate.

**Senior essay**  The senior essay provides an appropriate intellectual culmination to the student’s work in the major and in Yale College. The essay 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. Essays are expected to be in the range of twenty-five to thirty double-spaced pages. At the beginning of the term in which the essay is written, students must have their senior essay topic approved by a faculty member who has agreed to advise them. Each student is expected to consult regularly with the seminar instructor or adviser and take the initiative in developing a plan of research, scheduling regular meetings, and submitting preliminary drafts for review.

One-term essays may be written either in a seminar or, with the approval of an adviser and the director of undergraduate studies, in PLSC 480, One-Term Senior Essay. Senior essays written in the fall term are due on December 6, 2013. Spring-term and yearlong essays are due on April 21, 2014. More extensive information about the senior essay can be found on the departmental Web site (http://polisci.yale.edu/undergraduate-program/undergraduate-senior-essay).

**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 essay requirement by enrolling in the yearlong course sequence PLSC 490, The Senior Colloquium, and 491, The Senior Essay. PLSC 490 also counts toward the senior seminar requirement. In the fall term, students writing a yearlong senior essay develop a research prospectus for the essay and begin their research under the supervision of a member of the faculty who specializes in the area being investigated. In the spring term, students complete the essay. Yearlong senior essays are expected to be substantially longer than a regular term paper. While there is no fixed length, they are normally fifty to sixty pages long.

Majors who wish to enroll in the yearlong senior essay must apply for admission in the spring of their junior year. The deadline for the Class of 2015 is March 31, 2014. By that date, students should submit to the office of the director of undergraduate studies: (1) the yearlong senior essay prospectus form signed by a faculty adviser who has agreed...
to supervise the student during both terms of the senior year; and (2) a one-to-two-page statement describing the research project. It is expected that no more than fifteen students will be admitted each year.

**The major with an interdisciplinary concentration** Students majoring in Political Science may choose an interdisciplinary concentration, which allows them to identify and pursue an area of study that crosses conventional disciplinary and departmental boundaries. Examples of interdisciplinary concentrations are urban studies, health politics and policy, political economy, political psychology, and global affairs. Students choosing such a concentration are required to take twelve term courses toward the major. At least seven courses must be in the field of concentration, and two courses must be taken in each of any two of the department’s five fields. The senior requirement is the same as for the standard program, with the proviso that the essay must be written on a subject that falls within the field of concentration.

For the Classes of 2014 and 2015, as many as three courses taken in other departments may, with the approval of the director of undergraduate studies, be applied toward the concentration. Two additional courses from other departments may be counted toward the departmental fields requirement, with the permission of the director of undergraduate studies. For the Class of 2016 and subsequent classes, a maximum of three courses taken other departments may be counted toward the major, with the permission of the director of undergraduate studies.

Students wishing to pursue the Political Science major with an interdisciplinary concentration must submit an application and meet with the director of undergraduate studies to discuss their proposed program of study. The application is due prior to the beginning of the November recess in the student’s final year of enrollment.

**The intensive major** The intensive major gives students an opportunity to undertake more extensive course work and research for the senior essay than is possible in the standard major. Requirements for the intensive major are identical to those for the nonintensive major (standard program or interdisciplinary concentration), with the following exceptions: (1) in the spring term of the junior year, intensive majors take PLSC 474, Directed Reading and Research for Junior Intensive Majors, in preparation for writing a yearlong senior essay; (2) in the senior year, intensive majors fulfill the senior essay requirement by enrolling in the yearlong course sequence PLSC 490, The Senior Colloquium, and PLSC 493, Senior Essay for Intensive Majors (PLSC 490 also counts toward the senior seminar requirement); (3) for the Class of 2016 and subsequent classes, a total of fifteen term courses is required.

Juniors wishing to pursue an intensive major must apply to the director of undergraduate studies by November 15, 2013. The application should contain: (1) the intensive major application form signed by a faculty adviser who has agreed to supervise the student for the final three terms of enrollment; (2) a plan of study that identifies the political science courses that will be taken in those three terms; and (3) a one-to-two-page description of the proposed senior essay.

**Study abroad** Students who study in a Junior Term Abroad program or at another university during the summer may, with the approval of the director of undergraduate studies, count up to two courses toward the major. Students who study in a Junior Year
Abroad program may, with the approval of the director of undergraduate studies, count up to four courses toward the major.

**Combined B.A./M.A. degree program** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See "Simultaneous Award of the Bachelor’s and Master’s Degrees" under "Special Arrangements" in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in Political Science.

**REQUIREMENTS OF THE MAJOR**

**B.A. DEGREE, STANDARD PROGRAM**

**Prerequisites** None

**Number of courses** Classes of 2014 and 2015—11 term courses; Class of 2016 and subsequent classes—12 term courses

**Distribution of courses** 2 courses in each of 3 of the 5 departmental fields

**Substitution permitted** Classes of 2014 and 2015—3 courses from other depts with DUS approval; Class of 2016 and subsequent classes—2 courses from other depts with DUS approval

**Senior requirement** 2 sems, 1 in senior year, and 1-term senior essay in sem or in PLSC 480; or 1 sem as specified and 2-term senior essay in PLSC 490, 491

**Intensive major** Classes of 2014 and 2015—11 term courses; Class of 2016 and subsequent classes—15 term courses; All classes—PLSC 474; 2 courses in each of 3 of the 5 departmental fields; 1 sem as specified and 2-term senior essay in PLSC 490, 493

**B.A. DEGREE, INTERDISCIPLINARY CONCENTRATION**

**Prerequisites** None

**Number of courses** 12 term courses

**Distribution of courses** Classes of 2014 and 2015—7 courses in field of concentration, incl up to 3 from other depts with DUS approval; 2 courses in each of 2 of the 5 departmental fields, incl up to 2 from other depts with DUS approval; Class of 2016 and subsequent classes—7 courses in field of concentration; 2 courses in each of 2 of the 5 departmental fields; maximum of 3 courses from other depts with DUS approval

**Senior requirement** 2 sems, 1 in senior year, and 1-term senior essay in sem or in PLSC 480; or 1 sem as specified and 2-term senior essay in PLSC 490, 491

**Intensive major** Classes of 2014 and 2015—12 term courses; Class of 2016 and subsequent classes—15 term courses; All classes—PLSC 474; 7 courses in field of concentration; 2 courses in each of 2 of the 5 departmental fields; 1 sem as specified and 2-term senior essay in PLSC 490, 493

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**Introductory Courses**

**PLSC 111a, Introduction to International Relations** Jolyon Howorth
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.  so

**PLSC 113a, Introduction to American Politics**  Kelly Rader
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.  so

**PLSC 114b, Introduction to Political Philosophy**  Bryan Garsten
Fundamental issues in contemporary politics investigated through reflection on classic texts in the history of political thought. Emphasis on topics linked to modern constitutional democracies, including executive power, representation, and political parties. Readings from Plato, Machiavelli, Hobbes, Locke, Rousseau, Madison and Hamilton, Lincoln, and Tocqueville, in addition to recent articles on contemporary issues.  so

**EP&E: Intro Political Phil**

**PLSC 116b, Introduction to Comparative Politics**  Adria Lawrence
Introduction to the study of politics and political life in the world 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.  so

**PLSC 118a, The Moral Foundations of Politics**  Ian Shapiro
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 Bentham, Mill, Marx, Burke, Rawls, Nozick, and others.  so

**EP&E: Intro Political Phil**

## International Relations

**PLSC 120a / EP&E 381a, Ethics in the Age of Globalization and Multinational Corporations**  Prakash Sethi
Multinational corporations and their impact – both positive and negative – on national cultures, ethical norms, business practices, and political governance structures in the host countries. Attempts by corporations, civil society organizations, and national, multilateral, and international political entities to ameliorate the negative side effects of globalization while supporting efforts toward continued economic growth.  so

**PLSC 121a / GLBL 322a / HLTH 450a, Strategic Thinking in Global Health**  Elizabeth Bradley and staff
Core principles for the development and implementation of grand strategy in addressing common global health problems. Application of these principles and of strategic problem solving at both conceptual and practical levels. Political and policy analysis, organizational theory, and leadership skills central to addressing global health issues in low- and middle-income countries.  so

**PLSC 122b / EP&E 285b, Humanitarian Intervention**  Jolyon Howorth
Analysis of Western intervention in humanitarian crises since the end of the Cold War. Case studies from Kurdistan, Somalia, Bosnia-Herzegovina, Kosovo, Ivory Coast, Libya, and Mali. Reasons for nonintervention in Rwanda, Darfur, and Syria. Ethics of the humanitarian dimension; politics of coalitions of the willing; the material
dimension of interest; the effectiveness of humanitarian intervention in achieving its stated objectives. so

*PLSC 123b, Political Economy of Foreign Aid  Peter Aronow
Introduction to modern quantitative research methods in international political economy, with a focus on empirical evidence related to foreign aid. The state of knowledge regarding the effects of development assistance on democratization, governance, human rights, and conflict. The challenges of drawing causal inferences in the domain of international political economy. so

PLSC 124a, The Politics of Migration  Margaret Peters
The politics of migration in both receiving and sending states during the past two hundred years. Focus on current debates over immigration in the United States. Topics include public opinion, interest group politics, the role of institutions, policy formation, and human rights. so

PLSC 126b, The Balance of Power  Nuno Monteiro
The theory and practice of the balance of power in international politics. Different theories of the role of the balance of power. The history of great-power politics since the turn of the twentieth century, including the causes and conduct of World Wars I and II, the Cold War, and post–Cold War events and trends. so

PLSC 130a / GLBL 260a, Nuclear Politics  Alexandre Debs
The pursuit, use, and non-use of nuclear weapons from the Manhattan Project to the present. The effect of the international system, regional dynamics, alliance politics, and domestic politics in the decision to pursue or forgo nuclear weapons. The role of nuclear weapons in international relations, the history of the Cold War, and recent challenges in stemming nuclear proliferation. so

*PLSC 132aG / GLBL 379a, China’s International Relations  Jessica Weiss
Analysis of contemporary Chinese diplomacy, including China’s increasing regional and global influence. Mainstream concepts and theories in international relations applied to current events and policy debates. Priority to majors in Political Science and in Global Affairs. so

PLSC 146b / EVST 245b / F&ES 245b, International Environmental Policy and Governance  Benjamin Cashore
The development of international environmental policy and the functioning of global environmental governance. Critical evaluation of theoretical claims in the literature and the reasoning of policy makers. Introduction of analytical and theoretical tools used to assess environmental problems. Case studies emphasize climate, forestry, and fisheries. so

*PLSC 152a / EP&E 245a, Global Firms and National Governments  Joseph LaPalombara
Challenges for political policy makers, governmental regulators, and managers of global corporations when corporations make direct investments in foreign countries. Special attention to emergent exclusionary measures in advanced industrial countries. so

PLSC 165b, International Security  Matthew Kocher
An introduction to international security. General theories of state interests and behavior; the causes, conduct, and regulation of violence among nations. so
PLSC 166a, The New Europe  David Cameron
European politics since World War II, with emphasis on postwar geopolitical settlement, the development of the European Community and Union, the demise of the Soviet Union and other communist regimes, and current challenges facing Europe.  SO

PLSC 168b / LAST 168b, Law and Politics of Globalization  Alec Stone Sweet
The relationship between globalization (primarily economic activity across national borders) and national, international, supranational, and transnational legal systems. Topics include global trade and the World Trade Organization, European integration, the new *lex mercatoria*, and corporate responsibility for violations of human rights and environmental law.  SO

PLSC 174b / GLBL 265b / HIST 133b, Strategic, Political, and Moral Dilemmas of the Nuclear Age  Jonathan Schell
A chronological inquiry into the central questions raised by the invention, deployment, and use of nuclear weapons. Topics include the effects of nuclear weapons on the theory and practice of war, nuclear deterrence, disarmament, proliferation, preemptive war, and the human capacity for self-extinction.  HU, SO

PLSC 179b / EAST 219b, China in World Politics  Jessica Weiss
China’s rise to prominence and its foreign relations from 1949 to the present, focusing on the post-Mao period.  SO

*PLSC 181b / EP&E 425b / SAST 342b, South Asia in World Politics  Elizabeth Hanson
Relations of the major countries of South Asia with each other and with the rest of the world; emphasis on India, Pakistan, and Afghanistan. Identification of the various actors and interests that are fueling current conflicts in the region. Analysis of issues in world politics, including nation building, ethnic conflict, militant extremism, nuclear proliferation, and strategies of development.  SO

*PLSC 183b / EP&E 259b, Europe, the United States, and the Iraq Crisis  Jolyon Howorth
Examination of the contrasting relations between the main European powers and the United States in their approaches to Iraq in order to understand the divisions attending the 2003 war and the subsequent transfer of sovereignty. Topics include the Iran-Iraq War (1980–88), the first Persian Gulf crisis (1990–91), the sanctions regime (1991–2002), problems of peacekeeping and nation building, and the Obama exit strategy.  SO

*PLSC 184a / GLBL 378a, The United Nations and the Maintenance of International Security  Jean Krasno
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.  SO

American Government

PLSC 201b / PSYC 332b, Political Psychology  John Bullock
Examination of mental processes that underpin political judgments. Conformity and social pressure, 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.  SO

*PLSC 202a, EP&E 466a, Children’s Law and Policy  Alexandra Dufresne  
Major themes and controversies in children’s law and policy in the United States. Topics include juvenile justice, child abuse and neglect, special education, and the rights of immigrant and refugee children. Development of skills in legal reasoning, analysis, and policy design. Priority to junior and senior majors in Ethics, Politics, and Economics and in Political Science.  SO

PLSC 203b, Inequality and American Democracy  Jacob Hacker  
Exploration of how inequalities across lines of class, race, and gender affect the working of American democracy. Analysis of ways that public policies contribute to or mitigate such inequalities. Interdisciplinary and multimedia inquiry into participation, policy making, and public policy in the United States.  SO

*PLSC 204a, Courts, Judges, and Controversies  Deborah Beim  
Controversies surrounding courts, judges, and the decisions they make, with a focus on the American judiciary. Topics include affirmative action, race and the death penalty, ethnic bias in judicial decision making, gender and judging, and courts and social change.  SO

PLSC 205a, The American Presidency  Stephen Skowronek  
The historical development and current operations of the American presidency. Topics include constitutional powers, the organization of popular support, the modern executive establishment, and the politics of presidential leadership.  SO

*PLSC 207b, Representation in the United States  Daniel Butler  
Ways in which institutions affect the functioning of democracy in the United States. Focus on representation of citizens’ preferences in the public sphere. Topics include primary elections, redistricting, campaign finance, early voting, multimember districts, term limits, and term lengths.  SO

PLSC 209b, 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.  SO

*PLSC 210a, Political Preferences and American Political Behavior  John Bullock  
Introduction to research methods and topics in American political behavior. Focus on decision making from the perspective of ordinary citizens. Topics include utility theory, heuristics and biases, political participation, retrospective voting, the consequences of political ignorance, the effects of campaigns, and the ability of voters to hold politicians accountable for their actions.  SO

*PLSC 212a, EP&E 390a, 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.  SO
*PLSC 214b, The Politics of Public Policy  Jacob Hacker
Comparative study of the links between politics and policy in the United States, with an introduction to research and theory in the field of public policy. Emphasis on processes of long-term policy development. Topics include American exceptionalism, power and organized economic interests, tax and economic policy, and the welfare state.  so

PLSC 215b / EVST 255b / F&ES 255b, Environmental Politics and Law  John Wargo
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.  so

*PLSC 216a, Polarization in American Politics  Gregory Huber
Contemporary and historical patterns of polarization in American politics at both the mass and elite levels. Evidence for polarization, as well as potential sources and consequences of the phenomenon.  so

PLSC 218b / ECON 275b, Public Economics  Ebonya Washington
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.  so

*PLSC 224b, Political Leadership  Stephen Skowronek
Examination of political leadership as both a concept and a practice. Survey of classic works by Machiavelli, Carlyle, Weber, Lenin, and Schumpeter. Consideration of the difference between transformational leadership and transactional leadership, and between executive leadership and reform leadership. Issues include the conundrum of "democratic leadership" and the role of narrative in leadership.  so

*PLSC 227b / EP&E 310b, Refugee Law and Policy  Alexandra Dufresne
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.  so

PLSC 229b, Election Rules and Campaign Strategy  Eitan Hersh
Examination of political campaigns in the United States. Factors that people use to make voting decisions; the influence of election rules on candidate strategy and on voters’ decision-making processes; reasons candidates choose to pursue specific strategies, and the effectiveness of those strategies at winning votes; critical analysis of opinions voiced by campaign operatives and media personalities.  so

*PLSC 232b, Information, Technology, and Political Power  Eitan Hersh
The role of information in the political process. Effects on politics of information generated through new and old technologies; the decision-making processes of voters, mass mobilizers, and government reformers, as well as elite political actors such as
campaign operatives, bureaucrats, and members of Congress; political and moral issues related to information flows, including privacy, innovation, and collective action. SO

**PLSC 233b, Constitutional Law**  Akhil Amar
An introduction to the main themes of the American Constitution—popular sovereignty, separation of powers, federalism, and rights—and to basic techniques of constitutional interpretation. Special emphasis on the interplay of constitutional text, judicial doctrine, and constitutional decision making outside the judiciary. SO

**PLSC 235a, Political Journalism and Public Policy**  Derek Slap
The effects of political journalism on American public policy from 1960 to the present. Focus on changes in the media during the past few decades. The Dewey-Lippmann debate on the role journalism should play in politics, marketing in the 1968 presidential campaign, broadcast news and audience fragmentation in the 1970s, media dysfunction and the Clinton and Obama health care initiatives, the Internet, hyperpartisanship, media bias, and recent gun control initiatives. SO

**PLSC 238a, Public Opinion and Representation in the United States**  John Bullock
Americans’ views on political issues and the extent to which their views influence, and are influenced by, elected officials. Special attention to opinion polarization, the roles of political knowledge and partisanship, and the effects of public opinion on legislators. Online datasets help answer questions about politics and public opinion. SO

**PLSC 240b / EP&E 443b, Public Schools and Public Policy**  John Bryan Starr
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. SO RP

**PLSC 245a, Urban Politics and Policy**  Cynthia Horan
Approaches to urban politics and political economy. Application of theories to contemporary policy issues such as policing, metropolitan disparities, and inner-city revitalization. SO

**PLSC 246a / EP&E 369a, Ethics and American Business**  Prakash Sethi
Ethical norms and values as they are incorporated in business decisions in the United States. Corporate culture and reward systems that influence ethical concerns; corporate responses to societal pressures to protect individuals and groups; emerging trends in corporate social responsibility, shareholder activism, and civil society organizations; changes in core concepts of economic efficiency and profitability. SO

**PLSC 249b, Introduction to Public Opinion**  Samuel DeCanio
Public opinion in democratic societies. Voter ignorance, representation, elite manipulation of public opinion, and attitude formation. SO

**PLSC 250b / ARCH 347b, Infrastructure: Politics and Design**  Elihu Rubin
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. SO

**PLSC 251aG / AMST 468a / EP&E 396a, Progressivism: Theory and Practice**  Stephen Skowronek
The progressive reform tradition in American politics. The tradition’s conceptual underpinnings, social supports, practical manifestations in policy and in new
governmental arrangements, and conservative critics. Emphasis on the origins of progressivism in the early decades of the twentieth century, with attention to latter-day manifestations and to changes in the progressive impulse over time.  

*PLSC 256b / EP&E 248b, American Political Institutions*  Michael Fotos  
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, Bioethics and Law*  Stephen Latham  
The treatment by American law of major issues in contemporary biomedical ethics: informed consent, assisted reproduction, abortion, end-of-life care, research on human subjects, stem cell research, and public health law. Readings include legal cases, statutes, and regulations. No background in law assumed.  

*PLSC 260a, Public Schools and Politics*  John Bryan Starr  
Investigation of how political decisions that affect public schools are made at local, state, and federal levels. Case studies from both districts and states. Preference to students with training and experience in national, state, and local politics.  

*PLSC 264b, Big City Politics in America: New York, Los Angeles, Chicago*  Cynthia Horan  
How globalization and responses to it are changing the politics of New York, Los Angeles, and Chicago. Focus on economic restructuring, government reorganization, transformations of urban space, immigration, racial conflicts, and grassroots mobilization.  

*PLSC 269b / SOCY 253b, Ethnography of Everyday Political Life*  Matthew Mahler  
Introduction to ethnographic research for examining the sociological underpinnings that shape, structure, and inform everyday political life in the United States. Empirical realities of organized political life are approached through close analysis of political memoirs and biographies. Various sociological theories are introduced, including interactionism, dramaturgy, cultural sociology, phenomenology, and practice theory.  

*PLSC 270bG, Capitalism: Success, Crisis, and Reform*  Douglas Rae  
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.  

*PLSC 272a, U.S. Party Formation*  Samuel DeCanio  
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 277b, Politics and Digital Media*  Cynthia Farrar  
A study of changes taking place in contemporary American journalism. The impact of these changes on government and political campaigns.  

*PLSC 278b, Politics and the Supreme Court*  Kelly Rader  
The role of the U.S. Supreme Court in the American political system. Ways in which the political preferences of Congress, the President, and the American public shape,
constrain, or compel the Court’s decision making. Supreme Court justices as political actors who issue decisions that make policy.  

*PLSC 280b, Poverty, Politics, and Policy in the American City  
Cynthia Horan  
Examination of how politics informs the formulation and implementation of policies to address urban poverty. Consideration of alternative explanations for poverty and alternative government strategies. Focus on efforts by local organizations and communities to improve their situations within the context of government actions.  

Political Philosophy

PLSC 281a / PHIL 334a / RLST 273a
Stephen Latham  
A selective survey of issues in biomedical ethics. Comparison of different points of view about biomedical issues, including religious vs. secular and liberal vs. conservative. Special attention to issues in research and at the beginning and end of life.  

*PLSC 283a G / EP&E 235a / PHIL 457a G, Recent Work on Justice  
Thomas Pogge  
In-depth study of one contemporary book, author, or debate in political philosophy, political theory, or normative economics. Focus varies from year to year based on student interest and may include a ground-breaking new book, the life’s work of a prominent author, or an important theme in contemporary political thought.  

*PLSC 287a / EP&E 411a, Democracy and Distribution  
Ian Shapiro and Michael Graetz  
An examination of relations between democracy and the distribution of income and wealth. Focus on ways in which different classes and coalitions affect, and are affected by, democratic distributive politics. Open to juniors and seniors.  

*PLSC 288a / EP&E 287a, Liberty in Politics, Markets, and Society  
Andrew Sabl  
Key questions regarding liberty explored through critical examination of classic texts by Locke, Montesquieu, Smith, Tocqueville, and Mill. The definition, origins, and foundations of liberty; whether liberty in some realms might require the restriction of freedom in others.  

PLSC 290a / HUMS 302a / SOCY 151a, Foundations of Modern Social Theory  
Emily Erikson  
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, Kant, Adam Smith, Marx, Freud, Peirce, Weber, and Durkheim.  

*PLSC 291a, A History of Compromise  
Alin Fumurescu  
History of the concept of compromise in politics, with a focus on early modern France and England. Connections between the idea of compromise and other key political concepts such as representation, self-representation, and social contract. Political rhetoric surrounding compromise, including when it is considered beneficial and when it is avoided.  

*PLSC 293a G / PHIL 328a G, European Political Thought from Weber to Derrida  
Seyla Benhabib  
A survey of major themes in twentieth-century Continental political thought. Topics include reason and rationalization in modernity; legality, legitimacy, and sovereignty;
III. Subjects of Instruction

*PLSC 296a\textsuperscript{G} / HUMS 329a / PHIL 456a\textsuperscript{G}, Contemporary Theory: Berlin, Oakeshott, and Strauss  Steven Smith
Close reading of works by three major figures in twentieth-century political philosophy — Isaiah Berlin, Michael Oakeshott, and Leo Strauss. The authors’ critiques of social science, and their views on the Enlightenment and on the role of the university in a free society.  so

*PLSC 207a / EP&E 312a, Moral Choices in Politics  Boris Kapustin
A study of how and why people make costly moral choices in politics. Figures studied include Thomas More, Abraham Lincoln, Nelson Mandela, Václav Havel, and Aung San Suu Kyi.  so

*PLSC 302a\textsuperscript{G} / EP&E 459a, Modern Liberty  Bryan Garsten
Commercial society and representative democracy during the age of revolution, as treated by European political theorists including Montesquieu, Adam Smith, Emmanuel Sieyes, Benjamin Constant, François Guizot, Alexis de Tocqueville, G. W. F. Hegel, and Karl Marx.  so

*PLSC 304b / EP&E 410b, Business Ethics  Charles Ellis and Vikram Mansharamani
Current ethical problems facing business leaders. Visible and invisible factors that make ethical decisions complex and difficult to analyze. Anticipating ethical dilemmas; framing decisions and gathering information; the difficulties of taking appropriate, timely action.

*PLSC 305b / EP&E 353b, Critique of Political Violence  Boris Kapustin
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.  so

*PLSC 306a\textsuperscript{G} / EP&E 255a, Sovereignty  Andrew March
The history of the concept of sovereignty, including current debates over its meaning in political philosophy, international relations, and jurisprudence. Discussion of how these debates relate to both historical and contemporary political problems.  so

*PLSC 311b, We the People  Alin Fumurescu
The evolving idea of "the people" in American political history from the colonial era to the Civil War. Basic tenets of republicanism and governmental contractarianism, and of liberalism and social contract theory. Different understandings of concepts such as "the people" and "the state" in both traditions. The combination of republican and liberal language in American political thought and the practical consequences of this mixture.  so

*PLSC 315b / EP&E 458b / PHIL 461b, Egalitarianism  Christopher Lebron
The concept of equality in normative political theory explored through contemporary philosophical texts. Reasons why oppressed, marginalized, and systematically disadvantaged groups express their claims in terms of equality; racial inequality as a case study.  so
*PLSC 317a / HIST 239Ja / HUMS 313a / PHIL 421a, John Locke in Historical Context
Steven Pincus
Locke’s thinking about political resistance, religious toleration, and political economy examined in light of the writings and activities of his contemporaries. Introduction to methodological questions in the history of political thought. WR, HU

PLSC 318bG / HUMS 312b, Lincoln’s Statecraft and Rhetoric
Steven Smith
Close reading of major speeches and letters by Abraham Lincoln, with a focus on his views concerning slavery, equality, and race in American society. The relation of words to deeds in Lincoln’s practice of statecraft; his place in the history and theory of statesmanship. The emergence of Lincoln’s thought from an engagement with views of the American founders; ways in which his vision of American democracy both drew upon and transformed the founders’ vision. S0

*PLSC 322b / EP&E 469b, Toleration in Theory and Practice
Andrew Sabl
Toleration as a political practice that allows people with fundamentally different beliefs to live together; necessary limits, real or alleged, of that practice. Perspectives from the fields of history and political science and from moral, political, and legal theory. Origins and varieties of toleration; case studies in the United States and abroad, including hate speech, Amish exemptions from general laws, Islam and secularism, and national security as a basis for limits on religious freedom. S0

*PLSC 327a / EP&E 220a, Collective Choice and Political Morality
Thomas Donahue
Social choice theory and its implications for political morality. Challenges involved in creating a collective choice procedure, given diverse individual preferences. Philosophical foundations of social choice theory, including its assumptions about the nature of liberty. The feasibility of democracy and the existence of a public interest. S0

*PLSC 329bG / MMES 389b / RLST 197bG, Islamic Law and Ethics
Andrew March
Introduction to Islamic legal and ethical thought for advanced students of ethics, law, or political philosophy. The history of (Sunni) Islamic jurisprudence and positive law; doctrines and debates on the epistemic status of legal-ethical knowledge and the hermeneutical and analytic methods for deriving it; study of a substantive problem in Islamic legal and ethical thought. S0

*PLSC 337b / EP&E 274b / SOCY 318b, Debates over Capitalism
Thomas Donahue
Theories and arguments that explore capitalism’s positive and negative aspects. The role of capitalism in the production of freedom, wealth, stable democracy, efficiency, exploitation, democratic dysfunction, hierarchical business firms, and environmental destruction. Justifications and critiques of capitalism by Smith, Mill, Marx, Hayek, Schumpeter, Friedman, Nozick, and utopian socialists. S0

*PLSC 338a / EP&E 275a, Capitalism and Ethics
Stephen Latham
Historical and contemporary social theories about the effects of capitalist and late-capitalist business practices on human character and ethics. Ways in which the processes used to make and acquire goods shape concepts of morality. S0

Analytical Political Theory

*PLSC 340a / EP&E 238a, Leadership, Coordination, and Focal Points
Andrew Sabl
Analysis of a leadership model in which the leader’s role is both the coordination of mutually beneficial action among multiple parties and the appeal to focal points,
understood as natural or obvious meeting points for communication or action. Basic concepts of coordination and focal points; the ability of leaders to exert power by creating new focal points, choosing among existing ones, or serving as focal or rallying points themselves; constitutionalism as a solution to coordination problems.  

*PLSC 343b / ECON 473b / EP&E 227b, Equality  
John Roemer  
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, Marxist exploitation, and Nozickian procedural justice. Some discussion of American economic inequality, Nordic social democracy, and the politics of inequality. Recommended preparation: intermediate microeconomics.  

*PLSC 344aG, Game Theory and Political Science  
Staff  
Introduction to game theory – a method by which strategic interactions among individuals and groups in society are mathematically modeled – and its applications to political science. Concepts employed by game theorists, such as Nash equilibrium, subgame perfect equilibrium, and perfect Bayesian equilibrium. Problems of cooperation, time-consistency, signaling, and reputation formation. Political applications include candidate competition, policy making, political bargaining, and international conflict. No prerequisites other than high school algebra. Political Science majors who take this course may not count ECON 159 toward the major.  

*PLSC 345b / EP&E 234b, States, Markets, and Rational Individuals  
Edwin Camp  
Critical evaluation of rational choice theory, with applications to issues in economics and politics. Success and failure of cooperation among individuals; conditions under which markets fail; state facilitation or stifling of market activity; the ability of individuals to make collective decisions.  

Comparative Government

PLSC 347a / AFST 347a / GLBL 243a / LAST 348a, Post-Conflict Politics  
David Simon  
Consideration of a range of issues and challenges faced by countries emerging from domestic conflict. Focus on elements of peace-building – demilitarization, post-conflict elections, institution-building, and reconstruction – as well as modes of transitional justice and mechanisms for truth and reconciliation.  

*PLSC 354aG / EP&E 250a, The European Union  
David Cameron  
Origins and development of the European Community and Union over the past fifty years; ways in which the often-conflicting ambitions of its member states have shaped the EU; relations between member states and the EU’s supranational institutions and politics; and economic, political, and geopolitical challenges.  

PLSC 359a / GLBL 269a, Violence and Civil Strife  
Stathis Kalyvas  
An examination of political violence with an emphasis on civil wars, presently the dominant form of war.  

*PLSC 368a, Global Politics  
Stathis Kalyvas  
Major issues in current international politics, from political economy to international security, with a broad geographic focus. Emphasis on analytic and synthetic skills.
Themes include the politics of economic crisis, global governance, state failure, and political and economic development.

*PLSC 372b / EP&E 242b, Politics and Markets  Peter Swenson
Examination of the interplay between market and political processes in different substantive realms, time periods, and countries. Inquiry into the developmental relationship between capitalism and democracy, including the developmental and functional relationships between the two. Investigation of the politics of regulation in areas such as property rights, social security, international finance, and product, labor, and service markets. Topics include the economic motives of interest groups and coalitions in the political process.

*PLSC 374a / MMES 480a, Comparative Politics of the Middle East  Ellen Lust
Overview of current scholarship on Middle East politics, with attention to ways in which it differs from scholarship based on other regions and to its place in the broader discipline of comparative politics. The relationship between religion and politics; participation in elections, civil society, and political activism; the role of the military; labor and other actors.

PLSC 378b / LAST 214b / SOCY 170b, Contesting Injustice  Elisabeth Wood
Exploration of why, when, and how people organize collectively to challenge political, social, and economic injustice. Cross-national comparison of the extent, causes, and consequences of inequality. Analysis of mobilizations for social justice in both U.S. and international settings. Intended primarily for freshmen and sophomores.

*PLSC 389a / AFST 389a / MMES 181a, Middle East Exceptionalism  Adria Lawrence
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, State and Society in Post-Mao China  Jessica Weiss
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 / MMES 481b, Introduction to Middle East Politics  Ellen Lust
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 these influence regime type, political stability, and economic development.

*PLSC 406a / AFST 406a / GLBL 363a, Sexual Violence and War  Elisabeth Wood
Analysis of patterns of sexual violence in war. Assessment of how well scholars in various disciplines and policy analysts account for these patterns.

*PLSC 407a, The Politics of Nationalism and Ethnicity  Matthew Kocher
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.
*PLSC 412b / EP&E 447b, Global Journalism, National Identities*  James Sleeper
Changes in the relationship between journalism and nationalism as new technologies, capital flows, and human migrations alter public understandings of political legitimacy. The consequences of these shifts for national identity and liberal public spheres in the United States, Europe, and selected Middle Eastern and Asian nations. Implications for a global public sphere.  so

**PLSC 415b / SOCY 172b, Religion and Politics**  Sigrun Kahl
Challenges to the view of religion as an archaic force destined to dwindle away in a secularized society. A historical and comparative investigation of the relationship between religion and politics in Europe and the United States, with comparisons to the Muslim world.  so

*PLSC 420a / ANTH 406a / EVST 424a, Rivers: Nature and Politics*  James Scott
The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them.  so

*PLSC 426a / LAST 308a, Brazil: Land of the Future*  Brian Fried
Analysis of political, social, and economic development in Brazil. Focus on the country’s recent progress in democratic representation, social justice, prosperity, and equality. Explanations for this progress, as well as its potential for sustainability. The rise of identity politics and affirmative action; the role of civil society in addressing political and social ills; Brazil’s growing presence on the world stage.  so

*PLSC 429b, Political Violence*  Stathis Kalyvas
A survey of research on the phenomenon of political violence, including riots, political assassinations, military coups, terrorism, civil wars, and certain types of organized crime. Connections between different forms of political violence; ways in which the rise and decline of each form shape the presence or absence of others.  so

*PLSC 430a / AFST 420a / EP&E 446a / LAST 406a, The Politics of Development Assistance*  David Simon
Study of development assistance, a dominant feature of the political economies of some of the world’s poorest countries. The motivations and politics of aid from donors’ perspectives; the political and economic impact of aid on developing countries. Proposals to make aid a more effective instrument of development.  so

*PLSC 433a, Contemporary Nondemocratic Regimes*  Jeremy Wallace
The politics of nondemocratic regimes and of regime transitions, with an emphasis on empirical analysis. Measurement of regime type, autocratic regimes, development and democracy, regime survival, control and violence, redistribution, elections in nondemocratic states, and information politics.  so

*PLSC 436a / GLBL 361a, Violence: State and Society*  Matthew Kocher
Examination of large-scale violence, generally within sovereign states. Why violence happens, why it takes place in some locations and not others, why it takes specific forms (insurgency, terrorism, civilian victimization), what explains its magnitude (the number of victims), and what explains targeting (the type or identity of victims).  so

*PLSC 440b / EAST 421b, Politics of China*  Jeremy Wallace
Introduction to Chinese political history of the twentieth and twenty-first centuries, with emphasis on the past thirty years. Factionalism and elite politics, economic reforms, contemporary social movements, development, international relations, and
inequality. Methods and approaches used by scholars to explore Chinese politics. SO RP

**PLSC 446a / EP&E 258a / SOCY 369a, Welfare States across Nations**  Sigrun Kahl
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. SO

**PLSC 447bG / AFST 447bG / EP&E 271b / ER&M 271b, The Rwandan Genocide in Comparative Context**  David Simon
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. SO

**PLSC 461bG / SAST 242b, India and Pakistan: Democracy, Conflict, and Development**  Steven Wilkinson
The variation in democracy, conflict, and development between India and Pakistan since 1947, as well as variation within each country. Management of ethnic and religious conflicts, secularism, secessionist movements in Kashmir and elsewhere, the tension between economic growth and equity, and problems of governance. SO

**PLSC 466b / EP&E 236b, Ethics and the Multinational Business Firm**  Susan Rose-Ackerman
Ethical challenges facing modern business leaders, with a focus on multinational corporations conducting business in developing countries. Topics include the normative basis of the market and firm, labor rights, environmental harms, corruption and fraud, and obligations of managers to shareholders and to other stakeholders. Priority to junior and senior majors in Ethics, Politics, and Economics. SO

**Statistical and Mathematical Methods**

Statistical analysis of politics, elections, and political psychology. Problems presented with reference to a wide array of examples: public opinion, campaign finance, racially motivated crime, and public policy. QR

Descriptive and inferential statistics applied to analysis of data from the social sciences. Introduction of concepts and skills for understanding and conducting quantitative research. QR

**Advanced Courses**

**PLSC 471a and PLSC 472b, Individual Reading for Majors**  Staff
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. All coursework must be submitted no later than the last day of reading period.

*PLSC 474b, Directed Reading and Research for Junior Intensive Majors  Staff
For juniors preparing to write yearlong 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. All coursework
must be submitted no later than the last day of reading period.

*PLSC 480a or b, One-Term Senior Essay  Staff
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  Peter Swenson
Presentation and discussion of students’ research proposals, with particular attention
to choice of topic and research design. Each student frames the structure of the essay,
chooses research methods, begins the research, and presents and discusses a draft of the
introductory section of the essay. Enrollment limited to Political Science majors writing
a yearlong senior essay.

*PLSC 491b, The Senior Essay  Staff
Each student writing a yearlong senior essay establishes a regular consultation schedule
with a department member who, working from the prospectus prepared for PLSC 490,
advises the student about preparation of the essay and changes to successive drafts.
Enrollment limited to Political Science majors writing a yearlong senior essay.

*PLSC 493b, Senior Essay for Intensive Majors  Staff
Each student in the intensive major establishes a regular consultation schedule with
a department member who, working from the prospectus prepared for PLSC 490,
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. 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; span-port.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 110. 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 140 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 491 or 492. 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 placement test will be given at the beginning of the fall term; see the *Calendar for the Opening Days of College* and the departmental Web site (http://span-port.yale.edu/undergraduate-placement-exam-and-information) for details.

**REQUIREMENTS OF THE MAJOR**

**Prerequisite**  PORT 140 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 491 or 492) or dept exam

**Courses**

*PORT 001b / LAST 001b / SPAN 050b, Latin American Short Fiction*  Paulo Moreira
Introduction to Latin American literature through one of its highest achievements: the short narrative from Brazil and Spanish America. Works of Brazilian authors (Machado de Assis, Guimarães Rosa, Graciliano Ramos, Clarice Lispector) compared with short stories from Spanish America (Quiroga, Rulfo, Carpenter, Borges) and the United States (Faulkner, Ellison, Chopin). Narrative structure and expressive qualities of the texts; literary currents; and social, psychological, and existential themes. Readings and discussion in English; texts available in the original languages. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU  Tr

*PORT 110a, Elementary Portuguese I*  Marta Almeida
Basic vocabulary and fundamentals of grammar through practice in speaking, reading, and writing, with stress on audio-lingual proficiency. Introduces Brazilian and
Portuguese culture and civilization. Credit only on completion of PORT 120.  L1  RP 1½ Course cr

**PORT 120b, Elementary Portuguese II**  Marta Almeida and staff
Continuation of PORT 110. To be followed by PORT 130. Prerequisite: PORT 110. Qualifies students for summer study abroad.  L2  RP 1½ Course cr

**PORT 130a, Intermediate Portuguese I**  Marta Almeida
Contemporary and colloquial usage of Portuguese in the spoken and written language of Brazil. Grammar review and writing practice. Readings on Brazilian society and history are used to build vocabulary. Exercises develop students’ oral command of the language.  L3  RP 1½ Course cr

**PORT 140b, Intermediate Portuguese II**  Marta Almeida
Continuation of PORT 130. Grammar review, conversation, cultural topics, and readings from Brazilian literature. Prerequisite: PORT 130.  L4  RP 1½ Course cr

* **PORT 150a, Advanced Practice in Portuguese**  Marta Almeida
Advanced conversation and composition, with an introduction to Luso-Brazilian literature and culture. After PORT 140 or equivalent. May be repeated for credit.  L5  RP

* **PORT 247b / LAST 247b / SPAN 247b, Introduction to the Cultures of Latin America**  Paulo Moreira
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. May count toward the major in Portuguese, with written permission of the director of undergraduate studies.  L5, HU

* **PORT 360a / EALL 286a, The Modern Novel in Brazil and Japan**  Seth Jacobowitz
Brazilian and Japanese novels from the late nineteenth century to the present. Representative texts from major authors are read in pairs to explore their commonalities and divergences. Topics include nineteenth-century realism and naturalism, the rise of mass culture and the avant-garde, and existentialism and postmodernism. No knowledge of Portuguese or Japanese required.  HU Tr

* **PORT 392a / LAST 392a / LITR 296a, Brazil’s Modern Art Movement**  K. David Jackson
A study of Brazilian modernism in literature and the arts, centered on São Paulo’s "Modern Art Week" of 1922 from the perspective of the European avant-gardes (cubism, futurism, surrealism). The *Cannibal Manifesto* and cultural independence from Europe; avant-garde practices in literature and the arts from the 1920s to the construction of Brasília. Reading knowledge of French and Portuguese helpful but not required.  WR, HU Tr

**PORT 396a / LAST 396a / LITR 292a, Modern Brazilian Literature in Translation**  K. David Jackson
Study of major writers, movements, and works in Brazilian literature, including drama, poetry, essay, manifesto, memoir, and fiction. Introduction to canonical writers, works, and movements, including naturalism, realism, modernism, social realism, innovative
writing, and postmodern trends. General introduction to key concepts in Brazilian civilization. Conducted in English.  WR, HU  Tr

*PORT 471a and PORT 472b, Directed Reading or Directed Research  
K. David Jackson
Individually for qualified students under the supervision of a faculty member selected by the student. Approval of the director of undergraduate studies is required.

*PORT 491a and PORT 492b, The Senior Essay  K. David Jackson
A research project designed under a faculty director, resulting in a substantial paper written in Portuguese, submitted to the DUS and a second designated reader.

Psychology

Director of undergraduate studies: Laurie Santos, 213 SSS, 432-4524, 
psychdus@yale.edu; senior thesis director: Julia Kim-Cohen, 317 K, 432-7581, 
 julia.kim-cohen@yale.edu; psychology.yale.edu

FACULTY OF THE DEPARTMENT OF PSYCHOLOGY

Professors  Woo-kyoung Ahn, Stephen Anderson, Amy Arnstien, John Bargh, Paul 
Bloom, Thomas Brown, Tyrone Cannon, Joseph Chang, Marvin Chun, Margaret Clark, 
Ravi Dhar, John Dovidio, Carol Fowler (Adjunct), Tamar Gendler, Jeannette Ickovics, 
Marcia Johnson, Dan Kahan, Alan Kazdin, Frank Keil, Joshua Knobe, Marianne 
LaFrance, Linda Mayes, Gregory McCarthy, Nathan Novemsky, Peter Salovey, Brian 
Scholl, Jane Taylor, Tom Tyler, Fred Volkmar, Victor Vroom, Karen Wynn

Associate Professors  Robert Kerns, Jr., Maria Piñango, Laurie Santos, Glenn Schafe, 
Mary Schwab-Stone

Assistant Professors  Yarrow Dunham, June Gruber, Julia Kim-Cohen, Hedy Kober, 
Jaime Napier, David Rand, Gregory Samanez-Larkin

Lecturers  Nancy Close, Nelson Donegan, Carla Horwitz, David Klemanski, Kristi 
Lockhart, Benjamin Toll, Marney White

The introduction to psychology is PSYC 110, the general survey course. PSYC 110 is a 
prerequisite for other 100-level courses only if indicated in their course descriptions; it 
is a prerequisite for all courses numbered 200 or above.

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 that require permission 
of the adviser and the director of undergraduate studies.
The standard major  The major in Psychology requires twelve term courses beyond PSYC 110, including the senior requirement.

1. Because psychology is so diverse a subject, every student is required to take four courses from the list below. Two of these courses must be from the social science point of view in psychology and two must be from the natural science point of view. At least one from each group must be a course designated as "Core" in the course listings. Students are expected to take their two core courses as early as possible in the major, normally within two terms after declaring their major.

Social science:  PSYC 125, 126, 127, 128, 131, 140, 150, 231, 250, 260, 330, 355, 356

Natural science:  PSYC 130, 137, 160, 270, 304, 318, 321, 327, 350, 376

2. Because statistical techniques and the mode of reasoning they employ are fundamental in psychology, a course in statistics (PSYC 200) is required, preferably prior to the senior year. A student may substitute STAT 103 for PSYC 200 or may substitute an examination arranged with the instructor of PSYC 200 for the course requirement. Students may take the 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 research methods requirement. (The same course may satisfy both this and the first requirement.)

4. To encourage 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. Appropriate courses are offered in anthropology, cognitive science, computer science, philosophy, political science, sociology, and the biological sciences. 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 interested in research are encouraged to take an independent study course (PSYC 490, 491, 492, 493) as early as the sophomore year. Students may also take PSYC 495 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.

B.S. degree  The B.S. degree is typically awarded to students who conduct empirical research through a directed research course. B.S. candidates must fulfill the statistics and research methods requirements of the major before starting the senior year. An empirical research project normally includes designing an experiment and collecting and analyzing the data.

B.A. degree  The B.A. degree is typically awarded to students who conduct a nonempirical literature review. There are no restrictions in the research format for the B.A.

Senior requirement  Majors are required to earn two course credits from courses numbered PSYC 400–495. At least one of these course credits must be taken during
the senior year and, for the B.S. degree, at least one must be a directed research course (PSYC 492 or 493) taken during the senior year. Juniors may preregister for senior seminars at the end of the junior year. In order to count credits obtained from PSYC 400–495 toward the senior requirement, a student must submit a substantial final paper (a minimum of 20 pages for a one-credit course, 10 pages for a half-credit course).

**Credit/D/Fail**  No more than two term courses taken Credit/D/Fail may be applied toward the major; no 200-level course taken Credit/D/Fail may be applied toward the major.

**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 with the director of undergraduate studies. For questions concerning special tracks, students should consult with the advisers for the neuroscience and philosophy tracks in Psychology.

**Distinction in the Major**  To be considered for a B.S. degree with Distinction, a student must first submit a research proposal of one to two single-spaced pages, signed by the senior essay adviser, by the end of the registration period in the fall term of the senior year. The proposal must specify a research hypothesis, a rationale for the hypothesis, and proposed methods for collecting and analyzing data.

To be considered for a B.A. degree with Distinction, a student must first submit a senior essay proposal of one to two pages, signed by the essay adviser and specifying the research topic, by the end of the registration period in the fall term of the senior year.

Additionally, to be considered for Distinction in the Major with either degree, students must submit a senior essay to the Psychology department at least one week before the last day of classes in the final term of enrollment. The senior essay must be written during the senior year and must be a product of one or two of the 400-level courses taken to fulfill the senior requirement. Senior essays that are submitted after the deadline will be subject to grade penalties.

**Computer Science and Psychology major**  The interdepartmental major in 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.

**Neuroscience track in Psychology**  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). Interested students are encouraged to meet with the track adviser, Glenn Schafe, DL 204, 432-3461, glenn.schafe@yale.edu. Majors in the
neuroscience track meet with the track adviser at the beginning of each term in their junior and senior years.

Students in the Class of 2014 may fulfill the requirements for the neuroscience track in Psychology as described below for the Class of 2015 and subsequent classes. Alternatively, they may fulfill the requirements for the neuroscience track that were in place when they entered the major, as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS).

Requirements for the neuroscience track for the Class of 2015 and subsequent classes are the same as for the standard major, with the following exceptions:

1. Two terms of introductory biology are required for the major, either MCDB 120 or BIOL 101 and 102, and either E&EB 122 or BIOL 103 and 104. Students who have scored 5 on the Advanced Placement test in Biology may place out of these courses; such students are required to replace the introductory courses with two additional term courses in Psychology, Ecology and Evolutionary Biology, or Molecular, Cellular, and Developmental Biology.

2. Students must take PSYC 160 or PSYC 170 and a data-collection course chosen from PSYC 230L or 270. MCDB 320 may substitute for the PSYC 160 or PSYC 170 requirement, or MCDB 320 and 321L may substitute for the PSYC 230L or 270 requirement, but not both. If MCDB 320 is substituted for a Psychology course, it cannot be counted as one of the two advanced science courses outside the department (see item 4 below).

3. At least seven courses must be taken in the Psychology department. As required for the standard major, students in the neuroscience track must take two courses from the social science list above, at least one of which must be designated as "Core" in the course listings. Students in the neuroscience track must also take a course from the natural science list in addition to the courses specified in item 2 above.

4. At least two advanced science courses must be chosen from Molecular, Cellular, and Developmental Biology and Ecology and Evolutionary Biology courses numbered 200 and above that deal with human and/or animal biology; recommended courses include MCDB 200, 202, 205, 210, 240, 300, 315, 320, E&EB 220, 225, and 240. Certain courses outside of these departments may also meet the advanced science requirement, including BENG 350, 421, CPSC 475, MB&B 300, 301, 420, 435, 443, 452, MATH 222, 225, 230, 231, and STAT 241. Other courses may qualify for this requirement with permission of the neuroscience track adviser. Laboratory courses do not count toward the advanced science requirement. Students should note that many advanced science courses have prerequisites that must be taken first.

5. The senior requirement for the neuroscience track is the same as for the standard major, except that the two required course credits from PSYC 400–495 must have neuroscience content. Students pursuing the B.S. degree in the track must carry out a neuroscientific empirical project in PSYC 492 or 493 and must be supervised by a faculty member within the neuroscience area of the Psychology department. Students who wish to work with an affiliated faculty member studying neuroscience outside the department must obtain permission from the neuroscience track adviser.
Philosophy track in Psychology  Students in the Class of 2014 who have elected the philosophy track in Psychology may fulfill its requirements as described in previous editions of this bulletin (http://www.yale.edu/printer/bulletin/archivepdffiles/YCPS). The adviser for the philosophy track is Brian Scholl, 304 SSS, 432-4629, brian.scholl@yale.edu.

Students in the Class of 2015 and subsequent classes whose interests encompass both philosophy and psychology should consider the psychology track offered by the Philosophy department.

REQUIREMENTS OF THE MAJOR

STANDARD MAJOR

Prerequisite  PSYC 110
Number of courses  12 courses beyond prereq (incl senior req)
Specific course required  PSYC 200
Distribution of courses  B.A. — 2 social science courses and 2 natural science courses, as specified; 1 course numbered PSYC 210–299; B.S. — Same, with completion of the statistics and research methods reqs before senior year
Substitution permitted  For PSYC 200, STAT 103 or exam arranged with instructor; up to 3 relevant courses in other depts, with DUS permission
Senior requirement  B.A. — 2 course credits from PSYC 400–495, 1 during senior year;
                          B.S. — PSYC 492 or 493 taken during senior year; 1 addtl course credit from PSYC 400–495

NEUROSCIENCE TRACK

Prerequisite  PSYC 110
Number of courses  12 courses beyond prereq (incl senior req)
Specific courses required  PSYC 160 or PSYC 170; PSYC 200; PSYC 230L or 270;
                          MCD 120 or BIOL 101 and 102; E&EB 122 or BIOL 103 and 104
Distribution of courses  B.A. — At least 7 courses in Psych, incl 2 in social science and 1 addtl course in natural science, as specified; at least 2 advanced science courses, as specified; B.S. — Same, with completion of the statistics and research methods reqs before senior year
Substitution permitted  MCD 320 for PSYC 160 or PSYC 170, or MCD 320 and 321L for PSYC 230L or 270; for PSYC 200, STAT 103 or exam arranged with instructor
Senior requirement  B.A. — 2 course credits from PSYC 400–495 with neuroscience content, 1 during senior year; B.S. — PSYC 492 or 493 taken during senior year, with neuroscience content in research project; 1 addtl course credit from PSYC 400–495 with neuroscience content

Courses

*PSYC 110a or b, Introduction to Psychology  Marvin Chun [F] and Paul Bloom [Sp]
A survey of major psychological approaches to the biological, cognitive, and social bases of behavior.  SO
III. Subjects of Instruction

*PSYC 120a / CGSC 201a, Brain and Thought: An Introduction to the Human Brain
Amy Arnsten
An introduction to human brain anatomy, physiology, and function, designed for neuroscience-related majors but accessible to nonscience majors. Focus on basic concepts of neural function and on brain mechanisms underlying perception, memory, and higher cognitive abilities, and how these are altered in neurological and neuropsychiatric disorders. SC
Psychology: Core
Psychology: Natural Science

*PSYC 125a / CHLD 125a / EDST 125a, Child Development
Nancy Close and Carla Horwitz
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. WR, SO
Psychology: Social Science

PSYC 126b, Attraction and Relationships
Margaret Clark
Theory and empirical research on the antecedents and consequences of attraction, and on intra- and interpersonal processes that either facilitate or interfere with the formation and maintenance of close relationships. Methodological bases for rigorous study of these topics. SO
Psychology: Social Science

*PSYC 127a / CHLD 127a / EDST 127a, Early Childhood Education: Implications of Curriculum and Policy
Carla Horwitz
Development of curricula for preschool children—infants through five-year-olds—in light of current research and child development theory. WR, SO RP
Psychology: Social Science

*PSYC 128b / CHLD 128b / EDST 128b, Language, Literacy, and Play
Nancy Close and Carla Horwitz
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. WR, SO RP
Psychology: Social Science

PSYC 130a / CGSC 110a, Introduction to Cognitive Science
Brian Scholl
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. SO
Psychology: Core
Psychology: Natural Science

*PSYC 131a, Human Emotion
June Gruber
Introduction to major discoveries in human emotion. Evolutionary theories of anger, love, and disgust; emotion and morality; cultural and gender differences; emotion
and the brain; relation between emotion and thinking; development of emotion; and abnormal emotions in mental illness. SO RP

Psychology: Social Science

**PSYC 137a / LING 117a**6, *Language and Mind*  
Maria Piñango  
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. SO

Psychology: Natural Science

**PSYC 140a, Developmental Psychology**  
Frank Keil and staff  
An introduction to research and theory on the development of perception, action, emotion, personality, language, and cognition from a cognitive science perspective. Focus on birth to adolescence in humans and other species. Prerequisite: PSYC 110. SO

Psychology: Core

Psychology: Social Science

**PSYC 147a, Animal Models of Clinical Disorders**  
Nelson Donegan  
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. SC, SO

Psychology: Natural Science

**PSYC 150b, Social Psychology**  
John Bargh  
Study of social cognition, attitudes and persuasion, group processes, intergroup processes, prosocial behavior, aggression, and conformity. Theories, methodology, and applications of social psychology. Prerequisite: PSYC 110. SO

Psychology: Core

Psychology: Social Science

**PSYC 160b, The Human Brain**  
Gregory McCarthy  
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. Prerequisite: PSYC 110. SC

Psychology: Core

Psychology: Natural Science

**PSYC 181b / CGSC 281b / PHIL 181b, Philosophy and the Science of Human Nature**  
Tamar Gendler  
Central texts from the Western philosophical tradition paired with recent findings in cognitive science and related fields. Plato’s discussion of parts of the soul and contemporary work on dual processing; Aristotle’s conception of character and modern research in social psychology; Epictetus’s writings on human flourishing and contemporary work on happiness; writings on morality by Kant and Mill and recent research on moral intuitions. HU
Psychology: Social Science

**PSYC 200b, Statistics**  Gregory Samanez-Larkin
Measures of central tendency, variability, association, and the application of probability concepts in determining the significance of research findings.  QR

**PSYC 231a, Research Methods in Happiness**  June Gruber
Methods of research in the study of happiness and human emotion. Psychophysiology, behavioral observation and coding, and self-report assessment instruments. Attention to experimental design, data acquisition, computerized methods of analysis, and writing research reports. Prerequisites: PSYC 110 and a course in statistics, or with permission of instructor. Recommended preparation: research experience.  So
Psychology: ResearchMethods
Psychology: Social Science

**PSYC 232b, Research Methods in Social Decision Making**  David Rand
Methods of research in social interaction and decision making. Game theory, economic modeling, and evolutionary modeling applied to experimental psychology. Students design and conduct a research study, analyze the data, and write a research report. Prerequisites: PSYC 110 and a course in statistics, or with permission of instructor. Recommended preparation: research experience. Enrollment limited.  So
Psychology: ResearchMethods
Psychology: Social Science

**PSYC 250a, Research Methods in Clinical Psychology**  Alan Kazdin
Introduction to the underpinnings, processes, and methods of scientific research utilized in clinical psychology. Rationale for various methods, generating and testing hypotheses, nonhuman animal models, laboratory and applied studies, assessment methods, ethical issues, protection of participants, and research findings in relation to public life and policy.  So
Psychology: ResearchMethods
Psychology: Social Science

**PSYC 260b, Research Methods in Behavioral Genetics**  Tyrone Cannon
Methods of human behavioral genetics research. Focus on the genetics of psychiatric disorders, personality, and cognition. Students design and perform genetic-association analyses of behavioral traits, using existing datasets supplied by the instructor.  So
Psychology: ResearchMethods
Psychology: Social Science

**PSYC 270b, Research Methods in Behavioral Neuroscience**  Nelson Donegan
Laboratory course in which students design and conduct research to study brain function and behavior. Emphasis on hands-on participation in behavioral and neuroscience techniques. Prerequisites: PSYC 160 or , and a course in statistics, or with permission of instructor.  Sc
Psychology: Natural Science
Psychology: ResearchMethods

**PSYC 304a / CGSC 304a, The Mental Lives of Babies and Animals**  Karen Wynn
Interdisciplinary exploration of the cognitive, social, and emotional capacities of creatures lacking language and culture. The extent to which our complex psychology is unique to mature humans; the relative richness of a mental life without language or
culture. Some attention to particular human populations such as children with autism and adults with language disorders.  

**Psychology: Natural Science**

**PSYC 318b / LING 220b**, **General Phonetics**  Jelena Krivokapic  
Investigation of possible ways to describe the speech sounds of human languages. Acoustics and physiology of speech; computer synthesis of speech; practical exercises in producing and transcribing sounds. (Formerly LING 120)  

**Psychology: Natural Science**

**PSYC 319b / HLTH 215b**, **Health Psychology**  Benjamin Toll  
An introduction to health behaviors and ways in which they can be altered. Health-compromising behaviors such as the use of alcohol, drugs, and tobacco; the impact of health psychology on problems such as stress, pain management, AIDS, and cancer.  

**Psychology: Social Science**

**PSYC 321b**, **Psychopharmacology**  Thomas Brown  
Study of therapeutic and recreational drugs that affect the central nervous system and influence mood, cognition, perception, and behavior. Drugs considered vary from psychototropic to hypnotic to narcotic. Prerequisite: PSYC 160 or or equivalent, or permission of instructor.  

**Psychology: Natural Science**

**PSYC 322a / LING 130a**, **Evolution of Language**  Stephen Anderson  
The origin and evolution of human language from an interdisciplinary perspective. Topics include the design features of language, the structure of evolutionary theory, elementary molecular genetics and genetic evidence for language evolution, cognitive continuity and discontinuity with other species, hominid evolutionary history, domain specificity and generality of the language faculty, evidence for evolutionary shaping of physical and cognitive structures.  

**Psychology: Natural Science**

**PSYC 327b / LING 227b**, **Language and Computation**  Gaja Jarosz  
Design and analysis of computational models of language. Topics include finite state tools, computational morphology and phonology, grammar and parsing, lexical semantics, and the use of linguistic models in applied problems. Prerequisite: Prior programming experience or permission of instructor. (Formerly LING 141)  

**Psychology: Natural Science**

**PSYC 330a**, **Psychology and the Law**  Kristi Lockhart  
Contributions of psychological theory and research to our understanding of the law and the criminal justice system. Topics include criminality, eyewitness testimony, lie detection, jury decision making, the death penalty, the insanity defense, civil commitment, prisons, repressed memories, children as witnesses and defendants, and the role of psychologists as expert witnesses and trial consultants.  

**Psychology: Social Science**

**PSYC 331b / LING 231b**, **Neurolinguistics**  Maria Piñango  
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. SO

PSYC 332b / PLSC 201b, Political Psychology  John Bullock
Examination of mental processes that underpin political judgments. Conformity and social pressure, 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. SO

*PSYC 350a or b / CHLD 350a or b, Autism and Related Disorders  James McPartland
Weekly seminar focusing on autism and related disorders of socialization. A series of lectures on topics in etiology, diagnosis and assessment, treatment and advocacy, and social neuroscience methods; topics cover infancy through adulthood. Supervised experience in the form of placement in a school, residence, or treatment setting for individuals with autism spectrum disorders. Details about admission to the course are explained at the first course meeting. Prerequisite: an introductory psychology course. SO

Psychology: Natural Science

*PSYC 355a and PSYC 356b, Clinical Psychology in the Community  Kristi Lockhart
Mental disorders as they are treated within a community setting. Students participate in a fieldwork placement, working either one-on-one or in groups with the psychiatrically 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 or permission of instructor. Credit for PSYC 355 only on completion of PSYC 356. Psychology: Social Science

*PSYC 360a / LING 361a, Topics in Syntax: The Mental Lexicon  Maria Piñango
Definitions of lexical knowledge; views of the lexicon as a repository of information vs. a "generative" system; the case of idioms; the lexicon and the grammar-conceptual structure interface; acquisition of the lexicon. (Formerly LING 260) SO

PSYC 376a, Learning and Memory  Thomas Brown
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. SC, SO Psychology: Natural Science

*PSYC 402b, Topics in Infant Studies  Karen Wynn
Advanced topics in infant cognitive, social, and emotional development. Attention to infant attachment strategies as well as maternal and paternal investment and attachment. Perspectives from biology, anthropology, and developmental, comparative, clinical, physiological, and evolutionary psychology. SO

*PSYC 414a / WGSS 466a, Gender Images: A Psychological Perspective  Marianne LaFrance
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. SO

*PSYC 425b/G / CGSC 425b, Social Perception  Brian Scholl
Connections between visual perception, among the earliest and most basic of human cognitive processes, and social cognition, among the most advanced forms of higher-level cognition. The perception of animacy, agency, and goal-directedness; biological motion; face perception (including the perception of facial attractiveness); gaze processing and social attention; "thin-slicing" and "perceptual stereotypes"; and social and cultural influences on perception. SO

*PSYC 456b, Developmental Psychopathology  Julia Kim-Cohen
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 or permission of instructor. SO

*PSYC 458a, Decision Neuroscience  Gregory Samanez-Larkin
The decision-making process examined from the perspective of neuroscience. Research from cognitive neuroscience, psychology, public health, behavioral economics, finance, marketing, and computer science. Topics include reinforcement learning, risky decision making, intertemporal choice, social decision making, impulsivity and self control, development and aging, psychopathology, and commercial and public health applications. SO

*PSYC 479b, Thinking  Woo-kyoung Ahn
A survey of psychological studies on thinking and reasoning, with discussion of ways to improve thinking skills. Topics include judgments and decision making, counterfactual reasoning, causal learning, inductive inferences, analogical reasoning, problem solving, critical thinking, and creativity. SO

*PSYC 489b, Principles of Cognitive and Behavior Therapy  Alan Kazdin
An examination of the diverse theories, principles, and treatments in behavior therapy, including operant and classical conditioning, cognitive behavioral approaches, and social learning. Enrollment limited to senior Psychology majors. SO

*PSYC 490a and PSYC 491b, Directed Reading  Laurie Santos
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 PSYC 493b, Directed Research  Laurie Santos
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  Laurie Santos
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/oci, 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.
½ Course cr

Public Health

For information about Yale College course offerings related to health, see under Global Health Studies.

The five-year B.A.–B.S./M.P.H. degree program  The B.A.–B.S./M.P.H. degree 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 complete 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 fulfill the remaining program requirements for the M.P.H. 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 YSPH application forms and 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 on the YSPH Web site (http://publichealth.yale.edu/admissions/programs/select).

Religious Studies

Director of undergraduate studies: Kathryn Lofton, 451 College St., 432-0830, kathryn.lofton@yale.edu; religiousstudies.yale.edu

FACULTY OF THE DEPARTMENT OF RELIGIOUS STUDIES

Professors  Gerhard Böwering, Vasudha Dalmia, Stephen Davis, Carlos Eire, Steven Fraade, Paul Franks, Bruce Gordon, Philip Gorski, Phyllis Granoff, Frank Griffel, John Hare, Christine Hayes (Chair), Bentley Layton, Ivan Marcus, Dale Martin, Sally Promey, Harry Stout, Denys Turner, Robert Wilson

Associate Professors  Kathryn Lofton, Hindy Najman

Assistant Professors  Zareena Grewal, Noreen Khawaja, Andrew Quintman, Eliyahu Stern

Senior Lecturers  John Grim, Stephen Latham, Koichi Shinohara, Mary Evelyn Tucker

Lecturers  Hugh Flick, Jr., Margaret Olin, George Syrimis
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 major 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 involves the comparative study of world religions; for qualifying courses in 2013–2014, consult the director of undergraduate studies. Three core courses are in the historical or textual study of specific religious traditions, most commonly from Group B. Each of the three courses must focus on a different tradition; at least one must focus on a monotheistic religion (e.g., Judaism, Christianity, or Islam) and one on a non-monotheistic religion (e.g., 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 490, 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.

Program 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 concentration 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.

**Program 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
ey 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 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 course,
RLST 491 and 492, 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.

**Courses in the Divinity School** Students in Yale College may take certain courses in
the Divinity School, and Divinity School faculty are eligible to advise senior essays.
Information about courses and faculty may be found in the Divinity School bulletin
(http://www.yale.edu/printer/bulletin/htmlfiles/div). 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** 12 term courses (incl senior req)
Specific course required  RLST 490

Distribution of courses  Both programs—1 course in world religions; 3 courses in
historical or textual study of religious traditions, as specified; 1 course in systematic
thought, as specified; 1 sem other than junior sem, as specified; Program I—4
electives; Program II—4 nonintro courses in another subject linked with senior
essay, approved by DUS

Substitution permitted  Both programs—Divinity School courses, with DUS
permission; Program I—2 related courses in other depts, with DUS permission

Senior requirement  Senior essay (RLST 491, 492)

Freshman Seminars

*RLST 013b / EAST 013b / SAST 056b, The Dalai Lama  Andrew Quintman
The institution of the Dalai Lama and the individuals who have filled that role from
fifteenth-century Tibet to twenty-first-century exile in India. Survey of the most
important Dalai Lamas; regional histories of Buddhism; the Tibetan tradition of
recognized reincarnations and the Buddhist philosophical principles that support it;
activities of the current Dalai Lama as interpreted by Chinese government media,
Indian exile communities, and the modern West. Enrollment limited to freshmen.
Preregistration required; see under Freshman Seminar Program.

*RLST 050b / MMES 050b, Islam and Modernity  Frank Griffel
Introduction to contemporary Islam and to the notion of modernity. Focus on
whether Islam excludes modernity and a democratic society and how Muslims see the
relationship among Islam, modernity, and democracy. Enrollment limited to freshmen.
Preregistration required; see under Freshman Seminar Program.  HU

General, Comparative, and Thematic Courses (Group A)

RLST 105a / SAST 175a, Religious Movements in Modern India  Vasudha Dalmia
Sacred texts and religious practices of India as they have been disseminated,
reinterpreted, and enlisted in various political and cultural projects during the colonial
and postindependence periods. Focus on Hindu traditions, with some attention to
Christianity, Buddhism, and Islam. Readings include theological writings, doctrinal
tracts, novels, anthropological and sociological analyses, poetry, autobiography, and
historical overviews.  HU

RLST 107a, Theism and Atheism  Nancy Levene
Introduction to key ideas in modern religious and philosophical thought in the West,
such as faith, doubt, God, freedom, obedience, law, and the problem of meaning. Focus
on where thinkers fall on the spectrum from theism to atheism, and on diversity and
common themes in religious and postreligious worldviews. Works by Descartes, Pascal,
Spinoza, Kierkegaard, Nietzsche, Dostoevsky, Sartre, and Camus.  HU

RLST 108a / AMST 150a G / HIST 145a, Religion in Modern America, 1865–2000
Kathryn Lofton
An examination of U.S. religious history from the close of the Civil War to the present
day, a period of climactic change in the histories of capitalism, pluralism, secularization,
and globalization. Locations discussed include Indian reservations and world fairs,
auto plants and soap factories, storefront churches and stadiums; individuals include
female evangelists and talk show hosts, presidents and pariahs, traveling monks and pop rabbis. Focus on how subjects are selected for historical inquiry.  

**RLST 114b**, Prophecy in Context  Hindy Najman and Robert Wilson
Comparative study of the religious phenomenon of prophecy, with a focus on Jewish and Christian traditions. Biblical narratives about prophetic activity explored in their original Near Eastern and Greek cultural settings; the role of prophecy in the Hebrew Bible and in later interpretive traditions; modern examples of the relationship between prophecy and apocalypse.  

**Surveys of Religious Traditions (Group B)**

**RLST 125a / SAST 267a, Introduction to Buddhist Thought and Practice**  Andrew Quintman
Significant aspects of Buddhism as practiced mainly in India and South Asia, including philosophy and ethics, monastic and ascetic life, meditation and ritual practices, and the material culture of Buddhist societies. The Mahayana tradition that emerged in the first century B.C.E.; later forms of esoteric Buddhism known as tantra; the development of modern Buddhism in Asia and its manifestation in the West. Readings from Buddhist texts in translation.  

**RLST 130a / EALL 241a / HUMS 418a / SAST 367a, Traditional Literature of India, China, and Japan**  Koichi Shinohara and Phyllis Granoff
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.  

**RLST 145a / HUMS 349a / JDST 110a, The Bible**  Christine Hayes
The writings common to both Jewish and Christian scripture examined as diverse and often conflicting expressions of the religious life and thought of ancient Israel. The works’ cultural and historical setting in the ancient Near East; the interpretive history of selected passages influential in Western culture. Introduction to a wide range of critical and literary approaches to biblical studies. Students view course lectures, which survey the entire Bible, on line; class time focuses on specific biblical passages and their subsequent interpretation in Jewish and Christian culture.  

**RLST 147b / JDST 235b**, Introduction to Judaism in the Ancient World  Steven Fraade
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 sacrificial cult; interpretations of scriptures; law and life; the rabbi; the synagogue; faith in reason; Sabbath and festivals; history and its redemption. No prior background in Jewish history assumed.  

**RLST 148a / ER&M 219a / HIST 219a / JDST 200a / MMES 149a, History of the Jews and Their Diasporas to Early Modern Times**  Ivan Marcus
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 European or non-Western distributional credit within the History major, upon application to the director of undergraduate studies. 

**RLST 155b** / **HIST 351b / MMES 193b, The Golden Age of Islam**  
Gerhard Böwering  
The development of Islamic civilization in the Middle East, North Africa, Spain, Iran, and India from Muhammad through the Mongol invasions to the rise of the Ottoman, Safavid, and Mughal empires (600–1500 C.E.). Emphasis on the intellectual and religious history of Islam in the age of the caliphates and during the rule of regional dynasties. 

**RLST 160a / HIST 280a / HUMS 348a, The Catholic Intellectual Tradition**  
Carlos Eire and staff  
Introductory survey of the interaction between Catholicism and Western culture from the first century to the present, with a focus on pivotal moments and crucial developments that defined both traditions. Key beliefs, rites, and customs of the Roman Catholic Church, and the ways in which they have found expression; interaction between Catholics and the institution of the Church; Catholicism in its cultural and sociopolitical matrices. Close reading of primary sources.

**RLST 170a / MMES 192a, The Religion of Islam**  
Gerhard Böwering  
The rise of Islam in Arabia; Muhammad and the Qur’an; Muslim tradition and religious law; crucial issues of Islamic philosophy and theology; basic beliefs and practices of the Muslim community; Sufism and Shi’ism; religious institutions and modern trends; fundamentalism and violence; freedom and democracy.

**Topics in Religious Studies (Group C)**

* **RLST 183b, The Bhagavad Gita**  
Hugh Flick, Jr.  
An examination of the Bhagavad Gita in its historical and religious context. Exploration of the major interpretations of this important religious text. All readings in translation.

**RLST 187a / HSAR 142a / SAST 265a, Introduction to the History of Art: The Classical Buddhist World**  
Mimi Yiengpruksawan  
Buddhist art and architecture of India, Pakistan, Afghanistan, and central Asia from earliest beginnings to the tenth century, and including Greco-Roman, Persian, and Islamic contact.

**RLST 188b / HSAR 143b / SAST 260b, Introduction to the History of Art: Buddhist Art and Architecture, 900 to 1600**  
Mimi Yiengpruksawan  
Buddhist art and architecture of East Asia, Southeast Asia, and Tibet from the tenth century to the early modern period. Emphasis on cross-regional engagements including the impact of Islam.

* **RLST 190b / HUMS 449b / SAST 466b, Narrative Space in Asian Religions**  
Phyllis Granoff and Koichi Shinohara  
The many spaces of Asian religious practice, good and bad, real and imaginary, explored through readings from Indian, Chinese, and Japanese texts in translation.

**RLST 193a, Zionism**  
Eliyahu Stern  
Introduction to the core ideas of the Zionist movement from the mid-nineteenth century to the mid-twentieth. Focus on internal Jewish debates and criticism of the movement by European and Middle Eastern intellectuals. Social, political, cultural, and
messianic ideological strands within the movement and their interpretations of various historical experiences and ideas located in the Jewish tradition. HU

*RLST 197bG / MMES 389b / PLSC 329bG, Islamic Law and Ethics  Andrew March
Introduction to Islamic legal and ethical thought for advanced students of ethics, law, or political philosophy. The history of (Sunni) Islamic jurisprudence and positive law; doctrines and debates on the epistemic status of legal-ethical knowledge and the hermeneutical and analytic methods for deriving it; study of a substantive problem in Islamic legal and ethical thought. SO

*RLST 206aG / HUMS 327a, Secularism from the Enlightenment to the Present  Eliyahu Stern
The historical construction of secularism from the eighteenth century to the twentieth. Attention to recent scholarship on the formation of secular ideologies and their effect on conceptions of time, space, and knowledge. Readings include works by Jose Casanova, Reinhart Koselleck, Charles Taylor, and Talal Asad. HU

RLST 214bG / HIST 248bG / JDST 293bG, Introduction to Modern Jewish Thought  Eliyahu Stern
An overview of Jewish philosophical trends, movements, and thinkers from the seventeenth century to the twenty-first. Topics include enlightenment, historicism, socialism, secularism, religious radicalism, and Zionism. HU

*RLST 227bG / HIST 258jbG / JDST 278bG, Jewish Citizenship in Modern Europe  Eliyahu Stern
Seventeenth- to twentieth-century responses to Jewish citizenship in modern European states. Religious law; modern Jewish identity; Zionism; Judaism as a religion vs. a nation; the place of minorities in contemporary Europe. WR, HU

RLST 240a, The Historical Jesus  Dale Martin
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. HU

*RLST 253bG / HIST 211b / NECL 380bG, The Making of Monasticism  Bentley Layton
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. Readings in translation. (Formerly RLST 420) HU

*RLST 255aG / JDST 239aG, Paths of Purity in Ancient Judaism  Yishai Kiel
The cultural and ideological underpinnings and the social and religious functions of purity systems in ancient Judaism, from biblical systems and their ancient Near Eastern context, through the purity debates of the Second Temple period, to rabbinic and early Christian discussions. The distinct religious realms associated with purity, including ritual purity, moral purity, holiness, and eating taboos; insights from recent scholarship in the field. HU
*RLST 267b / ENGL 175b / HSAR 287b, Sacred and Profane in Late Medieval Europe  
Jessica Brantley and Christopher Wood  
The interdependence and collaborations of the sacred and the profane in late medieval European literature and visual art. Close reading of primary texts; analysis of paintings, sculptures, manuscripts, printed books, and prints in Yale University collections. Ways in which disciplinary difference matters to the understanding of culture. WR, HU

RLST 269b / HIST 282b / HUMS 413b, Golden Age Spain  
Carlos Eire  
Survey of Spanish history, culture, and religion from 1500 to 1700. Emphasis on cultural history and the integration of various approaches to the past. HU

RLST 273a G / PHIL 334a / PLSC 281a, Ethical and Social Issues in Bioethics  
Stephen Latham  
A selective survey of issues in biomedical ethics. Comparison of different points of view about biomedical issues, including religious vs. secular and liberal vs. conservative. Special attention to issues in research and at the beginning and end of life. SO

*RLST 282a, American Indian Religions and Ecology  
Staff  
Study of the religious beliefs of diverse Native American peoples from a history-of-religions perspective. Oral-narrative and textual forms in which these beliefs have been recorded. Focus on myths, symbols, and rituals, and their relationships with native homelands, geography, and biodiversity. The significance of traditional environmental knowledge. HU

*RLST 283b / HIST 215b, Reformation Europe, 1450–1650  
Bruce Gordon  
Examination of a series of religious revolutions in Europe between 1450 and 1650. The causes and nature of the reformatations that changed the religious, political, social, and economic landscapes of early modern Europe and shaped the course of Western civilization as a whole. HU

*RLST 287a G / MMES 391a, Islamic Theology and Philosophy  
Frank Griffel  
Historical survey of major themes in Muslim theology and philosophy, from teachings of the Qur’an to contemporary Muslim thought. The systematic character of Muslim thought and of the arguments given by thinkers; reason vs. revelation; the emergence of Sunnism and Shi‘ism; the reaction of Muslim theology (from 1800) to the challenges of the West. HU

*RLST 312b G / GMAN 302b G / HUMS 332b, Faith and Knowledge in Hegel and Derrida  
Paul North  
Examination of the frequently opposed human capacities of faith and knowledge through close reading of essays by Hegel and Derrida. Differences between conceptualizations of the two concepts and of human capacities at these two points in the history of philosophy. Some attention to contemporary background materials and to literary texts by Hölderlin and Kafka that offer strong counterpoints to the philosophical accounts. Discussion in English; readings in German or English. HU Tr

*RLST 313a G / HIST 343Ja G / MMES 344a / NELC 316a, Iran’s Prophets of Protest  
Abbas Amanat  
Iranian messianic movements from ancient to modern. Emphasis on continuity in patterns of dissent, social impact and challenges to religious and political establishments, and influences on the Islamic world and beyond. Zoroastrian apocalyptic origins, Manichean moral community and Mazdakite protocommunism,
emergence of the Mahdi and Shi’i movements from Isma’ilis to Safavids, "Universal Peace" from Mughal India to Babi-Baha’i modernity, and messianic trends from the Islamic Revolution to contemporary Iran.  HU

*RLST 322aG / GMAN 388aG / GMST 369aG / HUMS 410a / LITR 327a, Translating the Sacred  Hindy Najman and Kirk Wettes
Historical dynamics of cultural transfer, translation, reinterpretation of religious revelations, and foundational narratives from antiquity to modernity. Readings from ancient scripture, modern literary works, and theoretical reflections.  HU

*RLST 330bG / JDST 330bG / MMES 350b, Multiculturalism and Jewish Law in Israel  Yuval Sinai
Introduction to the history of pluralism and multicultural models in the Jewish legal tradition. The role of Jewish law in contemporary Israeli society; tensions between Jewish law and secular law; possible reconciliation of these tensions in light of both Jewish legal tradition and the realities of the modern Jewish and democratic state of Israel.  HU

*RLST 331aG / JDST 331aG / MMES 351a, Jewish Law in the State of Israel  Yuval Sinai
A historical study of Jewish law as the basis for modern Israeli law. Examination of cases in Israeli secular civil courts and in rabbinical courts. Attention to the wide range of subjects in which Jewish law has been utilized: public law, war and peace, criminal law, torts and biomedical law, morality, employment, judicial processes of procedure and evidence, and civil rights.  HU

*RLST 382a / HSAR 477a / SAST 462a, Yoga in Art, Text, and Practice  Tamara Sears and Andrew Quintman
Critical investigation of texts, images, and the practice of yoga, focusing on Indian traditions of Hinduism, Buddhism, and Jainism, as well as modern manifestations in the West. Themes include contemplative practices, bodily disciplines, ritual, narrative painting, architecture, and the role of yoga in tantra. Readings emphasize primary sources and theoretical frameworks.  HU

*RLST 383bG / SAST 467b, Biography in Asian Religions  Andrew Quintman
The significance of life writing in the religious traditions of Asia. Readings both from primary texts in translation and from theoretical works on biography and autobiography.  HU

*RLST 384b / EAST 424b, Religion and National Identity in Modern Korea  Se-woong Koo
Religion in modern Korea and its relation to the development of Korean national identity since c. 1900. Introduction of the modern concepts of religion and the nation-state in Korean culture. Ways in which various religious systems have been defined, categorized, managed, rewarded, and punished toward political ends. Both religion and nation as fundamental to Koreans’ overall conception of their collective identity.
Advanced Topics in Religious Studies (Group D)

*RLST 400a / JDST 256a, The Dead Sea Scrolls and the History of Ancient Judaism: The Damascus Document  Steven Fraade

Study of the Damascus Document, one of the most important of the Dead Sea Scrolls. Attention to the document’s 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.  1.5, HU

RLST 402b / PHIL 326b, The Philosophy of Religion  John Pittard

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.  HU

*RLST 405bG / JDST 392bG, Mishnah Seminar: Tractate Rosh HaShanah  Steven Fraade

Close study of a tractate of the Mishnah, the earliest digest of rabbinic law, and its accompanying Tosefta, dealing with rules for the establishment of New Moons, the intercalation of the lunar calendar, the testimony and examination of witnesses, the festival of the New Year (Rosh HaShanah), and the sounding of the Shofar. Dual attention to the historical significance of the legal and ritual institutions represented and to the cultural significance of the rhetoric of that representation, including the interplay of law and narrative. Prerequisite: reading fluency in ancient Hebrew.  1.5, HU

*RLST 411aG / JDST 413aG / NEIC 165aG, Biblical, Qumranic, and Targumic Aramaic  Aharon Maman

Survey of the historical and philological aspects of biblical, Qumranic, and Targumic Aramaic. Comparison of the dialects’ grammar and historical development; some attention to topics in comparative Semitic philology and historical linguistics; the influence of Hebrew and Aramaic on one another over time. Reading and extensive philological analysis of texts in each of the three dialects. Prerequisite: HEBR 140 or equivalent.  HU

*RLST 425bG / JDST 414bG, Talmudic Narratives in Context  Yishai Kiel

Critical study of Talmudic narrative through analysis of selected stories from the Babylonian Talmud. Historical, literary, cultural, philological, comparative, and theological perspectives on the narratives. The role of the Babylonian redactors and storytellers and the significance of their cultural context in the formation of Talmudic stories; implications of the narratives for historical reconstructions; tools of theoretical and methodological analysis used in the field of Talmudic studies. Prerequisite: HEBR 140 or equivalent.  HU

Other Courses

*RLST 490b, Approaches to the Study of Religion  Kathryn Lofton

An examination of current debates in the study of religion. Focus on the methods used in religious studies scholarship. Required for all junior majors; open to others with permission of the instructor.
**RLST 491a and RLST 492b, The Senior Essay**  Kathryn Lofton
Students writing their senior essays meet periodically in the fall and weekly in the spring for a 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.

**Russian and East European Studies**

Director of undergraduate studies: Bella Grigoryan, 2705 HGS, 432-1301, bella.grigoryan@yale.edu

**FACULTY ASSOCIATED WITH THE MAJOR**

**Professors** Vladimir Alexandrov (*Slavic Languages & Literatures*), Paul Bushkovitch (*History*), Katerina Clark (*Comparative Literature, Slavic Languages & Literatures*), Laura Engelstein (*History*), John Gaddis (*History*), Harvey Goldblatt (*Slavic Languages & Literatures*), John MacKay (*Slavic Languages & Literatures, Film Studies*), Timothy Snyder (*History*)

**Associate Professors** Douglas Rogers (*Anthropology*), Marci Shore (*History*)

**Assistant Professors** Marijeta Bozovic (*Slavic Languages & Literatures*), Molly Brunson (*Slavic Languages & Literatures*), Bella Grigoryan (*Slavic Languages & Literatures*), Jason Lyall (*Political Science*)

**Lecturer** Hilary Fink

**Senior Lectors II** Irina Dolgova

**Senior Lectors** Krystyna Illakowicz, Constantine Muravnik, Julia Titus, Karen von Kunes

The major in Russian and East European Studies, administered by the Department of Slavic Languages and Literatures, offers an interdisciplinary approach to the study of a broad region: Russia, Ukraine, Belarus, the Caucasus, and Central Asia; Poland, Hungary, the Czech and Slovak Republics, and other areas in east central Europe; and the Balkans. The program is appropriate for students considering careers in international public policy, diplomacy, or business, and is also suited to students wishing to continue academic work.

**Languages** A full understanding of the area demands a knowledge of its languages. Students must demonstrate either proficiency in Russian or intermediate-level ability in an East European language. Students may demonstrate proficiency in Russian by (1) completing fourth-year Russian (RUSS 160, 161); (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.
Electives are chosen in consultation with the director of undergraduate studies from
an annual list of offerings. 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 490, 491. At the
beginning of the senior year, students enroll in RSEE 490 and arrange for a faculty
member to serve as senior adviser. By the third Friday of October, majors submit a
detailed prospectus of the essay, with bibliography, to the adviser. A draft of at least
ten pages of the text of the 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 490. The senior essay takes the form of a substantial
article, no longer than 13,000 words, excluding footnotes and bibliography. Three
copies of the essay are due in the Slavic departmental office by April 11, 2014. A member
of the faculty other than the 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. Students who spend all or
part of the academic year in the region participating in established academic programs
usually receive Yale College credit, and 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 they complete 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; at least 1 course in social sciences

**Senior requirement** Senior essay (RSEE 490, 491)

*\*RSEE 240a / CZEC 246a / FILM 364a, Milos Forman and His Films*  Karen von Kunes
An in-depth examination of selected films by Milos Forman and 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.  

*RSEE 255b / LITR 206b / RUSS 255b, Studies in the Novel: Tolstoy*  
Vladimir Alexandrov
A survey of Leo Tolstoy’s legacy. Readings include early stories, *War and Peace* and *Anna Karenina,* and short later works. Close textual analysis, with primary attention to the interrelation of theme, form, and literary and cultural contexts. Readings and discussion in English.  

*RSEE 256a / LITR 208a / RUSS 256a, Studies in the Novel: Dostoevsky*  
Molly Brunson
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.  

*RSEE 321b / FILM 441b / LITR 391b / RUSS 245b, Russian Film*  
Katerina Clark and Mihaela Mihailova
Overview of Russian, Soviet, and post-Soviet cinema, from the inception of silent film in prerevolutionary Russia to the present. Theoretical writings and canonical films of important figures such as Sergei Eisenstein, Dziga Vertov, Andrei Tarkovsky, Kira Muratova, Alexei German, and Alexander Sokurov. Special attention to films by Soviet minority directors. The genre diversity of Soviet and post-Soviet film, including animation, musical comedy, rock film, and historical drama.  

*RSEE 327a / FILM 409a / HUMS 452a / LITR 306a / RUSS 327a, The Danube in History and Culture*  
Marijeta Bozovic
The Danube River in the film, art, and literature of various Danubian cultural traditions, from the late nineteenth century to the present. Geography and history of the region that includes the river’s shores and watershed; physical, historical, and metaphoric uses of the Danube; the region as a contested multilingual, multicultural, and multinational space, and as a quintessential site of cross-cultural engagement.  

*RSEE 390b / HIST 237b / HUMS 285b / RUSS 241b, Russian Culture: The Modern Age*  
John MacKay and Paul Bushkovich
An interdisciplinary exploration of Russian cultural history, focusing on literature, art, religion, social and political thought, and film. 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; the impact of the Bolshevik Revolution and its aftermath.  

*RSEE 490a and RSEE 491b, The Senior Essay  Bella Grigoryan  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. Credit for RSEE 490 only on completion of RSEE 491.  

Related Courses That Count toward the Major  

Students are encouraged to examine the offerings in Slavic Languages and Literatures and other departments, as well as residential college seminars, for additional related courses that may count toward the major.  

ANTH 209b, Eurasia after the Soviet Union  Douglas Rogers  Changes in the lives of former Soviet citizens following the Soviet Union’s disintegration in 1991. Transformations in politics, culture, religion, gender, consumption patterns, and national identity; interconnections among these issues. Changes in Eurasia viewed as windows onto global transformations of knowledge, power, and culture at the turn of the twenty-first century.  

Anthropology: Sociocultural  

*ANTH 438a, Culture, Power, Oil  Douglas Rogers  The production, circulation, and consumption of petroleum as they relate to globalization, empire, cultural performance, natural resource extraction, and the nature of the state. Case studies include the United States, Saudi Arabia, Nigeria, Venezuela, and the former Soviet Union.  

Anthropology: Sociocultural  

*HIST 221Jb, Memoirs of Twentieth-Century Europe  Laura Engelstein  Exploration of how men and women of twentieth-century Europe (including Russia) made sense of their lives in the context of war, revolution, and cultural conflict. Focus on first-person narratives, some by professional writers, others by ordinary people searching for personal and cultural identity.  

WR, HU  

HIST 290a, Russia from the Ninth Century to 1801  Paul Bushkovitch  The mainstream of Russian history from the Kievan state to 1801. Political, social, and economic institutions and the transition from Eastern Orthodoxy to the Enlightenment.  

History: Preindustrial  

*LITR 466a / FILM 429a, War in Literature and Film  Katerina Clark  Representations of war in literature and film; reasons for changes over time in portrayals of war. Texts by Stendahl, Tolstoy, Juenger, Remarque, Malraux, and Vonnegut; films by Eisenstein, Tarkovsky, Joris Ivens, Coppola, Spielberg, and Altman.  

HU  

Science  

Yale College offers two yearlong interdepartmental course sequences for freshmen with strong preparation in the sciences, and a one-term seminar intended for a more general student population. SCIE 030 and 031, 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. SCIE 198 and 199, 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. SCIE 141, Science and Pseudoscience, is a seminar designed for students who do not plan to major in the sciences. Although SCIE 141 is open to all classes, freshmen and sophomores are given preference in enrollment.

Students may apply to either SCIE 030 and 031 or SCIE 198 and 199 during the summer before their freshman year. Application information is available on the Freshman Seminar Web site (http://yalecollege.yale.edu/content/freshman-seminar-program-2) (SCIE 030, 031) and on the Freshman Web site (http://yalecollege.yale.edu/content/perspectives-science-and-engineering-pse) (SCIE 198, 199).

Courses

*SCIE 030a and SCIE 031b, Current Topics in Science  
Douglas Kankel
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. Credit for SCIE 030 only on completion of SCIE 031; one course credit is awarded for successful completion of the year’s work. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  
sc  
½ Course cr per term

*SCIE 141b, Science and Pseudoscience  
Frank Robinson and Michael Faison
Study of the science behind hypotheses and theories that have been subjects of public debate, including evolution, global warming, cellular phone use and brain cancer, and the possibility of alien visits to Earth. Basic concepts from disciplines such as geology and geophysics, evolutionary and molecular biology, astronomy, and physics. Intended for non-science majors; preference to freshmen and sophomores.  
sc

*SCIE 198a and SCIE 199b, Perspectives on Science and Engineering  
William Segraves
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. Credit for SCIE 198 only on completion of SCIE 199; one course credit is awarded for successful completion of the year’s work. Enrollment limited to freshmen.  
½ Course cr per term

Slavic Languages and Literatures

Director of undergraduate studies: Bella Grigoryan, 2705 HGS, 432-1301, bella.grigoryan@yale.edu; language coordinator: Irina Dolgova, 2704A HGS, 432-1307, irina.dolgova@yale.edu; slavic.yale.edu
FACULTY OF THE DEPARTMENT OF SLAVIC LANGUAGES AND LITERATURES

Professors  Vladimir Alexandrov, Katerina Clark, Harvey Goldblatt, John MacKay
Assistant Professors  Marijeta Bozovic, Molly Brunson, Bella Grigoryan
Lecturer  Hilary Fink
Senior Lectors II  Irina Dolgova
Senior Lectors  Krystyna Illakowicz, 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 151. The department offers two sequences of language courses to fulfill the prerequisite: either (1) RUSS 110, 120, 130, 140, 150, and 151 or (2) RUSS 125, 145, 150, and 151. Prospective majors should complete RUSS 140 or 145 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 at least 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 250 and 253.
3. Two terms of Russian literature read and discussed in the original language, 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 requirement in mind.
5. RUSS 490. 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 151. 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 outside the Department of Slavic Languages and Literatures that are relevant to the major in the context of comparative studies of literature, selected in consultation with the director of undergraduate studies.

Senior requirement  All majors write a senior essay (RUSS 490), an independent project carried out under the guidance of a faculty member. Three copies of the essay are due in the Slavic departmental office on April 11, 2014.

Placement examination  A departmental placement examination will be given before the first day of classes in the fall term; see the Center for Language Study Web site (http://cls.yale.edu/placement-testing) for the time and location. 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.

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.

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.

REQUIREMENTS OF THE MAJOR

Prerequisite  RUSS 151

Number of courses  11 term courses beyond prereq (incl senior essay)

Specific courses required  Both programs—RUSS 160, 161, 250, 253

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 151; Program II—4 courses relevant to major in other depts, with DUS approval

Senior requirement  Senior essay (RUSS 490)

Courses in Czech, Polish, and Romanian

CZEC 110a, Elementary Czech I  Karen von Kunes
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., Hasek’s Svejk, Kundera’s Joke and Unbearable Lightness of Being, and Havel’s
Private View. Audio- and videotapes. Credit only on completion of CZEC 120. L1 RP 1½ Course cr

CZEC 120b, Elementary Czech II  Karen von Kunes
Continuation of CZEC 110. After CZEC 110 or equivalent. L2 RP 1½ Course cr

CZEC 130a, Intermediate Czech  Karen von Kunes
Continuation of CZEC 120. Grammar and usage, with emphasis on idiomatic expressions, syntax, and stylistics. Readings in modern Czech history, prose, and poetry; discussion of economic, political, and social issues. After CZEC 120 or equivalent. L3 RP 1½ Course cr

CZEC 140b, Advanced Czech  Karen von Kunes
Continuation of CZEC 130. Emphasis on writing skills and spoken literary Czech. After CZEC 130 or equivalent. L4 RP 1½ Course cr

*CZEC 246a / FILM 364a / RSEE 240a, Milos Forman and His Films  Karen von Kunes
An in-depth examination of selected films by Milos Forman and representatives of the New Wave, cinématheque 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. HU

PLSH 110a, Elementary Polish I  Krystyna Illakowicz
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 120. L1 RP 1½ Course cr

PLSH 120b, Elementary Polish II  Krystyna Illakowicz
Continuation of PLSH 110. After PLSH 110 or equivalent. L2 RP 1½ Course cr

PLSH 130a, Intermediate Polish I  Krystyna Illakowicz
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. After PLSH 120 or equivalent. L3 RP 1½ Course cr

PLSH 140b, Intermediate Polish II  Krystyna Illakowicz
Continuation of PLSH 130. After PLSH 130 or equivalent. L4 RP 1½ Course cr

*PLSH 248b / THST 370b, Polish Theater and Its Traditions  Krystyna Illakowicz
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 at live theater events as well as meetings with Polish theater groups and actors. HU Tr

*ROMN 110a, Elementary Romanian I  Mona Momescu
The first half of a two-term introduction to Romanian language, grammar, and cultural literacy centered around the theme of life in Bucharest. Topics, vocabulary, and grammar lessons based on everyday linguistic interactions in the city. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail
minjin.hashbat@yale.edu for more information. Credit only on completion of ROMN 120. L1

*ROMN 120b, Elementary Romanian II  Mona Momescu
The second half of a two-term introduction to Romanian language, grammar, and cultural literacy centered around the theme of life in Bucharest. Topics, vocabulary, and grammar lessons based on everyday linguistic interactions in the city. Prerequisite: ROMN 110. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail minjin.hashbat@yale.edu for more information. L2

Group A Courses

Unless otherwise noted, all Group A courses are conducted in Russian.

RUSS 110a, First-Year Russian I  Julia Titus
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 120. L1  RP  ½ Course cr

RUSS 120b, First-Year Russian II  Julia Titus
Continuation of RUSS 110. After RUSS 110 or equivalent. L2  RP  ½ Course cr

RUSS 125a, Intensive Elementary Russian  Constantine Muravnik
An intensive course that covers in one term the material taught in RUSS 110 and 120. 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. L1, L2  RP 2 Course cr

RUSS 130a, Second-Year Russian I  Irina Dolgova
A course to improve functional competence in all four language skills (speaking, writing, reading, and listening comprehension). Audio activities, for use both in the classroom and independently, are designed to help students improve their listening comprehension skills and pronunciation. Lexical and grammatical materials are thematically based. After RUSS 120 or equivalent. L3  RP  ½ Course cr

RUSS 140b, Second-Year Russian II  Irina Dolgova
Continuation of RUSS 130. After RUSS 130 or equivalent. L4  RP  ½ Course cr

RUSS 145b, Intensive Intermediate Russian  Constantine Muravnik
A continuation of RUSS 125 that covers in one term the material taught in RUSS 130 and 140. For students of superior linguistic ability. Prerequisite: RUSS 125. L3, L4  RP 2 Course cr

RUSS 150a, Third-Year Russian I  Constantine Muravnik
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 RUSS 140 or 145 or equivalent. L5  RP  ½ Course cr
RUSS 151b, Third-Year Russian II  Constantine Muravnik
Continuation of RUSS 150. After RUSS 150 or equivalent.  L5  RP  1½ Course cr

RUSS 160a, Fourth-Year Russian I  Irina Dolgova
Discussion topics include Russian culture, literature, and self-identity; the old and new
capitals of Russia, the cultural impact of the Russian Orthodox Church, and Russia at
war. Readings from mass media, textbooks, and classic and modern literature. Use
of video materials. After RUSS 151 or equivalent.  L5

RUSS 161b, Fourth-Year Russian II  Irina Dolgova
Continuation of RUSS 160. After RUSS 160 or equivalent.  L5

*RUSS 178b, The Russian Short Story  Julia Titus
Chronological study of celebrated Russian short stories. Authors include Pushkin,
Gogol, Tolstoy, Dostoevsky, Chekhov, Nabokov, and Tolstaya. Readings and discussion
in Russian. Prerequisite: RUSS 140, 145, or equivalent.  L5, HU

*RUSS 179a, The Grotesque in Victor Pelevin  Constantine Muravnik
Major novels and short stories by contemporary Russian writer Victor Pelevin. Focus
on the theory of the grotesque and on the relationship between imagination and reality.
Diverse conceptions of the grotesque; the ethical and aesthetic significance of the
conflict between the real and the fantastic; Pelevin’s place in the specifically Russian
grotesque tradition of Gogol and Nabokov. Prerequisite: RUSS 140 or equivalent.  L5,
HU  RP

Group B Courses

The courses in this group, conducted in English, are open to all Yale College students.

*RUSS 022a, The Divine and the Human in Russian Fiction  Vladimir Alexandrov
A study of major works by several of the greatest writers in nineteenth- and twentieth-
century Russian literature: Dostoevsky, Tolstoy, Bely, Nabokov, and Bulgakov. Primary
attention to the ways the authors embody in their themes, devices, and forms the
link between the human realm and the transcendent, a central preoccupation of
Russian culture. Readings and discussion in English. Enrollment limited to freshmen.
Preregistration required; see under Freshman Seminar Program.  WR, HU  Tr

RUSS 241b / HIST 237b / HUMS 285b / RSEE 390b, Russian Culture: The Modern
Age  John MacKay and Paul Bushkovitch
An interdisciplinary exploration of Russian cultural history, focusing on literature, art,
religion, social and political thought, and film. 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; the impact of
the Bolshevik Revolution and its aftermath.  HU

*RUSS 245b / FILM 441b / LITR 391b / RSEE 321b, Russian Film  Katerina Clark
and Mihaela Mihailova
Overview of Russian, Soviet, and post-Soviet cinema, from the inception of silent
film in prerevolutionary Russia to the present. Theoretical writings and canonical
films of important figures such as Sergei Eisenstein, Dziga Vertov, Andrei Tarkovsky,
Kira Muratova, Alexei German, and Alexander Sokurov. Special attention to films by
Soviet minority directors. The genre diversity of Soviet and post-Soviet film, including animation, musical comedy, rock film, and historical drama. **HU Tr**

*RUSS 250a / HUMS 276a, Masterpieces of Russian Literature I* Molly Brunson
Introduction to major texts of the nineteenth-century Russian literary tradition. Works by Pushkin, Gogol, Lermontov, Turgenev, Dostoevsky, Tolstoy, and Chekhov examined in their social and historical contexts. Emphasis on the authors’ use of genre, language, and literary devices to explore pressing questions posed by Russian modernity. Readings and discussion in English. **HU Tr**

*RUSS 253b / HUMS 203b, Masterpieces of Russian Literature II* Marijeta Bozovic
A survey of major writers and literary movements, focusing on the intersection of art and revolution in twentieth-century Russian literature. 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; contemporary literary rebellions against the political and artistic legacies of the past. Works by Chekhov, Bely, Babel, Akhmatova, Bulgakov, Pasternak, and Pelevin. Readings and discussion in English. **HU Tr**

RUSS 255b / LITR 206b / RSEE 255b, Studies in the Novel: Tolstoy
Vladimir Alexandrov
A survey of Leo Tolstoy’s legacy. Readings include early stories, *War and Peace* and *Anna Karenina*, and short later works. Close textual analysis, with primary attention to the interrelation of theme, form, and literary and cultural contexts. Readings and discussion in English. **HU Tr**

RUSS 256a / LITR 208a / RSEE 256a, Studies in the Novel: Dostoevsky
Molly Brunson
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. **HU Tr**

*RUSS 221a / HUMS 212a / LITR 205a, Capitalism and the Nineteenth-Century European Novel* Bella Grigoryan and Vadim Shneyder
The cultural significance and literary representations of capitalism in nineteenth-century Europe. Labor and leisure; material culture and consumerism; social and geographic mobility; constitution of the modern self; the public sphere; private life; economics and literary form. Works by Balzac, Gogol, Dickens, Flaubert, Dostoevsky, Tolstoy, and Zola supplemented by selections from theoretical writings. Readings and discussion in English. **WR, HU Tr**

*RUSS 223b / HUMS 225b / LITR 241b, City and Country in the Nineteenth-Century Novel* Molly Brunson
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. **HU Tr**
*RUSS 327a / FILM 409a / HUMS 452a / LITR 306a / RSEE 327a, The Danube in History and Culture  Marijeta Bozovic
The Danube River in the film, art, and literature of various Danubian cultural traditions, from the late nineteenth century to the present. Geography and history of the region that includes the river’s shores and watershed; physical, historical, and metaphorical uses of the Danube; the region as a contested multilingual, multicultural, and multinational space, and as a quintessential site of cross-cultural engagement.  HU Tr

Group C Courses

*RUSS 480a and RUSS 481b, Directed Reading in Russian Literature  Bella Grigoryan
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  Bella Grigoryan
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.

*SLAV 485a or b, Directed Reading or Individual Research in Slavic Languages and Literatures  Bella Grigoryan
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.

Sociology

Director of undergraduate studies: Philip Gorski, 493 College St., 432-3730, philip.gorski@yale.edu; www.yale.edu/sociology

FACULTY OF THE DEPARTMENT OF SOCIOLOGY

Professors  Julia Adams, Jeffrey Alexander, Elijah Anderson, †James Baron, Scott Boorman, Richard Breen, Nicholas Christakis, †Paul Cleary, Deborah Davis, Ron Eyerman, Philip Gorski, †Vicki Schultz, Philip Smith, †Olav Sorensen, Frederick Wherry

Associate Professors  Andrew Papachristos, Peter Stamatov

Assistant Professors  Rene Almeling, Emily Erikson, Lloyd Grieger, Marcus Hunter, †Sigrun Kahl, Vida Maralani, Christopher Wildeman, Jonathan Wyrtzen

Lecturers  Jasmina Beširevic-Regan, Matthew Mahler

†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 209, 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. A maximum of two courses taken Credit/D/Fail may count
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 151, Foundations of Modern Social
Theory, and 152, Topics in Contemporary Social Theory, are the required courses for
theory. SOCY 160, Methods of Inquiry, and one additional Sociology course numbered
between SOCY 161 and SOCY 169 are required for methods. Students planning to
study abroad in their junior year are strongly encouraged to begin meeting the theory
and methods requirements in their sophomore year. They should also discuss the
options for their course of study with the director of undergraduate studies before
finalizing their plans.

3. One advanced seminar in Sociology (SOCY 300–399).

4. For students in the intensive major, a two-term senior essay and colloquium,
SOCY 493, 494. 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 491.

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. A maximum of two courses taken
Credit/D/Fail may count 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 151, Foundations of Modern Social
Theory, and 152, Topics in Contemporary Social Theory, are the required courses for
theory. SOCY 160, Methods of Inquiry, and one additional Sociology course numbered
between SOCY 161 and SOCY 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. 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 (SOCY 493, 494). 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 SOCY 491.

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 (SOCY 300–399) and write a one-credit senior essay during the senior year (SOCY 491). 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 SOCY 491 to receive credit for the senior essay. To register for this course, students must submit a written plan of study approved by a faculty adviser to the director of undergraduate studies no later than the end of registration period in the term in which the senior essay is to be written. Nonintensive majors are not eligible to graduate with Distinction in the Major.

**Senior requirement for the intensive major** The intensive major gives students an opportunity to undertake a yearlong program of original research resulting in a contribution to sociological knowledge. The yearlong project requires substantial independent research and knowledge of a sociological subfield. Students use research methods such as data gathering through participant observation, in-depth interviewing, conducting of small-scale surveys, or secondary analysis of existing data. They may present findings in a variety of forms, from ethnographic narratives to analytical statistics. Students select primary and secondary advisers from the faculty. Students in the intensive major enroll in SOCY 493, 494, 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 under "Honors" in Undergraduate Curriculum) and submit a senior essay written in SOCY 493, 494.

**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 freshman sem or intro course (SOCY 110–149) or equivalent

**Number of courses** 13 term courses (incl prereq and senior essay)

**Specific courses required** SOCY 151, 152, 160, 1 addtl Sociology course numbered 161–169
Distribution of courses  Program I—at least 11 courses in Sociology at intermediate and advanced levels, 1 Sociology sem at 300 level; Program II—9 or 10 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 491); Intensive major—senior essay (SOCY 493, 494)

Freshman seminar

*SOCY 086a, Chinese Society since Mao  Deborah Davis
An overview of the major social institutions in contemporary China, with a focus on the changing relationship between individual and society. Use of print and visual sources to explore the social consequences of China’s recent retreat from socialism and its rapid integration into the global economy. May count toward the Sociology major as an intermediate course. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  SO

Introductory courses

SOCY 126b, Health of the Public  Nicholas Christakis
Biological and social factors that jointly determine the health of individuals and populations. The influence of medical care, social networks, and socioeconomic inequality on illness, recovery, and death.  SO

SOCY 133a, Computers, Networks, and Society  Scott Boorman
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; blockmodeling and privacy; legal, ethical, and policy issues. No prior experience with computers required.  SO  RP

SOCY 135a / AFST 280a / MMES 196a, Islamic Society, Culture, and Politics  Jonathan Wyrtzen
The historical development of the global Muslim community, from its origins in seventh-century Arabia through its spread over subsequent centuries into the Middle East, Africa, Central, South, and Southeast Asia, and the West. The tremendous variation and complexity expressed in society, culture, and politics across the Islamic world; Islam as a unifying factor on critical issues such as religious practice, political structure and activism, gender, and cultural expression.  SO

Courses in sociological theory

Open to all students without prerequisite.

SOCY 151a / HUMS 302a / PLSC 290a, Foundations of Modern Social Theory  Emily Erikson
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, Kant, Adam Smith, Marx, Freud, Peirce, Weber, and Durkheim.  SO
*SOCY 152b, Topics in Contemporary Social Theory  Ron Eyerman
An examination of central issues in contemporary social theory. Influential thinkers and their responses to changes in the modern world since the Second World War. Topics include the nature of modern society and the human condition, the selection of rulers, power, punishment, torture, national trauma, and individual and collective identity.

Courses in sociological methods

*SOCY 160a, Methods of Inquiry  Matthew Mahler
The theory and practice of social inquiry. How social scientists – and aspiring social scientists – actually do their work, including designing research, sampling and measuring, and interpreting results. Examination of thesis proposal writing; ethical quandaries involved in social research. No background in social research assumed.  so

*SOCY 162a, Methods in Quantitative Sociology  Vida Maralani
Introduction to methods for reading and conducting quantitative sociological research. Data description and graphical approaches to data analysis; elementary probability theory; assumptions and properties of bivariate and multivariate linear regression; regression diagnostics.  QR, so

*SOCY 167b, Social Networks and Society  Emily Erikson
Introduction to the theory and practice of social network analysis. The role of social networks in contemporary society; basic properties of network measures, matrices, and statistics. Theoretical concepts such as centrality and power, cohesion and community, structural holes, duality of persons and groups, small worlds, and diffusion and contagion. Use of social structural, dynamic, and statistical approaches, as well as network analysis software. No background in statistics required.  so

Intermediate courses

The prerequisite for intermediate courses is one introductory Sociology course or permission of the instructor.

SOCY 170b / LAST 214b / PLSC 378b, Contesting Injustice  Elisabeth Wood
Exploration of why, when, and how people organize collectively to challenge political, social, and economic injustice. Cross-national comparison of the extent, causes, and consequences of inequality. Analysis of mobilizations for social justice in both U.S. and international settings. Intended primarily for freshmen and sophomores.  so

SOCY 172b / PLSC 415b, Religion and Politics  Sigrun Kahl
Challenges to the view of religion as an archaic force destined to dwindle away in a secularized society. A historical and comparative investigation of the relationship between religion and politics in Europe and the United States, with comparisons to the Muslim world.  so

*SOCY 202b, Cultural Sociology  Jeffrey Alexander
Collective meanings that make a profound difference in modern societies; that are symbolic but also sensual, emotional, and moral; that inspire ritual as well as creative performance and strategy. Examination of codes, narratives, icons, and metaphors to analyze how cultural structures energize capitalism, direct politics, create institutions, inspire social movements, and motivate war and peace.  so
SOCY 208a, Guns in the United States  Andrew Papachristos and Tracey Meares
Survey of historical, sociological, psychological, legal, and political research on the multifaceted role guns play in the United States. Historical and constitutional origins of the Second Amendment; the prevalence and distribution of guns; attitudes about gun ownership, possession, and use; illegal and legal gun markets; gun crime and injuries and responses to them, including legislative and political processes.  so

*SOCY 216a / EP&E 267a / WGSS 314a, Social Movements  Ron Eyerman
An introduction to sociological perspectives on social movements and collective action, exploring civil rights, student movements, global justice, nationalism, and radical fundamentalism.  so

*SOCY 228a, Norms and Deviance  Elijah Anderson
A sociological analysis of the origins, development, and reactions surrounding deviance in contemporary society. Group labeling, stigma, power, and competing notions of propriety.  so

*SOCY 232b / MMES 291b, Islamic Social Movements  Jonathan Wyrtzen
Social movement and network theory used to analyze the emergence and evolution of Islamic movements from the early twentieth century to the present. Organization, mobilization, and framing of political, nonpolitical, militant, and nonmilitant movements; transnational dimensions of Islamic activism. Case studies include the Muslim Brotherhood, Hamas, Hizbollah, Al-Qaeda, Al-Adl wa-Ihsann, and Tablighi Jama’at.  so

*SOCY 253b / PLSC 269b, Ethnography of Everyday Political Life  Matthew Mahler
Introduction to ethnographic research for examining the sociological underpinnings that shape, structure, and inform everyday political life in the United States. Empirical realities of organized political life are approached through close analysis of political memoirs and biographies. Various sociological theories are introduced, including interactionism, dramaturgy, cultural sociology, phenomenology, and practice theory.  so

Advanced courses

Courses in this category are open to students who have completed one intermediate course and any other specified requirement, or by permission of the instructor. Preference is given to Sociology majors in their junior and senior years.

*SOCY 306a / EP&E 337a, Empires and Imperialism  Peter Stamatov
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.  WR, SO

*SOCY 310b / EAST 410b, Civil Society, Public Sphere, and Civic Life in Contemporary China  Deborah Davis
The changing character of civil society and the public sphere under various political conditions in modern China. Key themes are the possibilities for civic action, citizenship, and state-society relations. Prerequisite: a previous course on modern China or extended residence in Taiwan, Hong Kong, or the People’s Republic of
China. Preference to majors in Sociology or East Asian Studies in their junior and senior years. so

*SOCY 313b, Sociology of the Arts and Popular Culture  Ron Eyerman
An advanced introduction to sociological perspectives on the arts and popular culture. Emphasis on the conceptualization of culture within social theory, with the aim of interpreting cultural expressions and artifacts – artworks, music, television, film, and literature. so

*SOCY 314a, Inequality in America  Vida Maralani
Empirical, theoretical, and methodological issues involved in the study of inequalities in occupation, income, wealth, education, health, and neighborhoods. Intergenerational mobility, marriage and family processes, and inequalities of race, ethnicity, and gender. Questions include whether the United States is a land of opportunity and how different social groups fare and why. so

*SOCY 318b / EP&E 274b / PLSC 337b, Debates over Capitalism  Thomas Donahue
Theories and arguments that explore capitalism’s positive and negative aspects. The role of capitalism in the production of freedom, wealth, stable democracy, efficiency, exploitation, democratic dysfunction, hierarchical business firms, and environmental destruction. Justifications and critiques of capitalism by Smith, Mill, Marx, Hayek, Schumpeter, Friedman, Nozick, and utopian socialists. so

*SOCY 321a, Sociology of Markets  Frederick Wherry
The role of culture and politics in shaping markets, with attention to taboo, intimate, and standard market exchanges. The institutions and cultural codes underpinning these markets and the variety of logics actors deploy in making and understanding deals. The influence of morality across all types of markets; ways in which cultural categories steer marketplace practices; the effects of social relationships on economic strategies. No previous knowledge of sociology or economics required. so

*SOCY 334a, Punishment and Inequality  Christopher Wildeman
Massive increases in the American imprisonment rate since the mid-1970s that have rendered contact with the criminal justice system a common event for marginalized Americans. Effects of these increases on inequality in the labor market, family life, politics, and health. so

*SOCY 338b, Modeling the Emergence of Social Structure  Richard Breen
Approaches to developing explanatory theories aimed at addressing specific empirical questions in contemporary sociology. Rational choice, game theory, and social (or endogenous) interaction models. The use of agent-based models and other simulation techniques in building models of social phenomena. Testing of explanatory models against empirical data. so

*SOCY 339b, GLBL 362b / MMES 282b, Imperialism, Insurgency, and State Building in the Middle East and North Africa  Jonathan Wytzten
The historical evolution of political order from Morocco to Central Asia in the past two centuries. Focus on relationships between imperialism, insurgency, and state building. Ottoman, European, and nationalist strategies for state building; modes of local resistance; recent transnational developments; American counterinsurgency and nation-building initiatives in the region. so
*SOCY 352a / HUMS 247a, Material Culture and Iconic Consciousness  
Jeffrey Alexander
Exploration of how and why modern and postmodern societies have continued to sustain material symbolism and iconic consciousness. Theoretical approaches to debates about icons and symbols in philosophy, sociology, linguistics, psychoanalysis, and semiotics. Iconography in advertisements and branding, food and bodies, nature, fashion, celebrities, popular culture, art, architecture, and politics.  
HU, SO

*SOCY 357a, Neighborhoods and Crime  
Andrew Papachristos
The "city problem" of crime contrasted in a variety of neighborhoods; reasons why some neighborhoods have higher rates of crime than others. Topics include street gangs, the underground economy, immigration, and mass incarceration. Attention to ecological, social structural, and cultural aspects of city life.  
SO

*SOCY 361bG, Demography, Gender, and Health  
Vida Maralani
Comparative survey of research in demography. The interplay of population processes and socioeconomic development; trends in fertility, mortality, aging, and health in both richer and poorer nations; the relationship between women’s status and health and demographic outcomes. Readings from a variety of fields, including demography/sociology, economics, epidemiology, and public health.  
SO

*SOCY 363a or b / ER&M 362a or b / GLBL 384a or b, Genocide and Ethnic Conflict  
Jasmina Beširevic-Regan
Exploration of the explosion of genocide and violent ethnic conflict in the past seventy years, including contributory historical and political elements. Consideration of ways to prevent or resolve such conflicts. Focus on questions of identity, religion, class, and nationhood as related to violence and conflict. An analytical framework developed from four case studies: the Holocaust, Cambodia, the former Yugoslavia, and Rwanda.  
SO

*SOCY 367b, Citizenship and Civic Engagement  
Peter Stamatov
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.  
SO

*SOCY 369a / EP&E 258a / PLSC 446a, Welfare States across Nations  
Sigrun Kahl
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.  
SO

*SOCY 372aG / AFST 372a / MMES 105a, Comparative Nationalism in North Africa and the Middle East  
Jonathan Wyrtzen
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).  
SO
*SOCY 395aG / EAST 408a / EP&E 269a, Wealth and Poverty in Modern China  
Deborah Davis

The underlying causes and consequences of the changing distribution of income, 
material assets, and political power in contemporary China. Substantive focus on 
inequality and stratification. Instruction in the use of online Chinese resources relevant 
to research. Optional weekly Chinese language discussions. Prerequisite: a previous 
course on China since 1949.  SO

Individual study and research courses

*SOCY 471a and SOCY 472b, Individual Study  Philip Gorski

Individual study for qualified juniors and seniors under faculty supervision. To register 
for this course, each student must submit to the director of undergraduate studies a 
written plan of study that has been approved by a faculty adviser.

*SOCY 491a or b, Senior Essay and Colloquium for Nonintensive Majors  
Frederick Wherry

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 in 
the first week of the term.

*SOCY 493a and SOCY 494b, Senior Essay and Colloquium for Intensive Majors  
Philip Gorski

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 in the second week of the term.

South Asian Studies

Director of undergraduate studies: Sara Shneiderman, Rm. 126, 10 Sachem St., 
436-4270, sara.shneiderman@yale.edu; www.yale.edu/macmillan/southasia

FACULTY ASSOCIATED WITH THE PROGRAM OF SOUTH ASIAN STUDIES

Professors  Akhil Amar (Law School), Tim Barringer (History of Art), Vasudha 
Dalmia (Religious Studies), Nihal de Lanerolle (School of Medicine), Michael Dove 
(Anthropology, Forestry & Environmental Studies), Sara Suleri Goodyear (English), Phyllis 
Granoff (Religious Studies), Inderpal Grewal (Women’s, Gender, & Sexuality Studies), 
Kalyanakrishnan Sivaramakrishnan (Anthropology, Forestry & Environmental Studies), 
Shyam Sunder (School of Management), Steven Wilkinson (Political Science)

Associate Professors  Karuna Mantena (Political Science), Kishwar Rizvi (History of 
Art), Sarah Weiss (Music)

Assistant Professors  Ashwini Deo (Linguistics), Mayur Desai (Public Health), Zareena 
Grewal (Ethnicity, Race, & Migration), Shital Pravinchandra (English), Andrew 
Quintman (Religious Studies), Tamara Sears (History of Art), Sara Shneiderman 
(Anthropology), Tariq Thachil (Political Science), Mark Turin (Adjunct)
Senior Lecturers  Carol Carpenter (Anthropology, Forestry & Environmental Studies), Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies), Koichi Shinohara (Religious Studies, East Asian Languages & Literatures)

Lecturers  Harry Blair (Political Science), Hugh Flick, Jr. (Religious Studies), Elizabeth Hanson (Political Science), Stanley Scott (Music)

Senior Lector  Seema Khurana

Lectors  David Brick, Swapna Sharma

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 nongovernmental organizations, or business and professional careers in which an understanding of the region is essential.

The South Asian Studies major permits students to choose courses from a wide range of disciplines. Individual programs should have 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 an 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. A maximum of one course taken Credit/D/Fail may count toward the major.

Language requirement  One South Asian language must be studied at the advanced level (courses designated L5). Students who matriculate with advanced proficiency in a South Asian language (excluding English), as demonstrated through testing, are encouraged to study Sanskrit, or to study a second modern language through Yale courses (Hindi, Bengali, Tamil) or through the Directed Independent Language Study program (Urdu, Nepali, Kannada, Sinhala, Punjabi). Students may request substitution of another appropriate language (e.g., Persian or Arabic) for the core language requirement, and they are encouraged to pursue intensive language study through courses or work abroad.
Senior requirement  The senior requirement may be fulfilled by completion of a seminar that culminates in a senior essay. Alternatively, the requirement may be fulfilled by completion of a one-credit, two-term senior research project in SAST 491, 492, or by completion of a one-term, one-credit directed study in SAST 486 that culminates in a senior essay. 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. The director of undergraduate studies must approve senior essay plans early in the student’s senior year.

Courses in the Graduate School  Graduate courses in South Asian Studies are open to qualified undergraduates. Course descriptions appear in the online Graduate School bulletin and are also available in the South Asian Studies program office. Permission of the instructor and of the director of graduate studies is required.

REQUIREMENTS OF THE MAJOR

Prerequisites  None
Number of courses  7 term courses (not incl senior req or lang req)
Distribution of courses  7 courses in South Asian Studies numbered 200 or above, 2 in premodern, 2 sems
Substitution permitted  One relevant course in another dept, with DUS permission
Language requirement  Study in a South Asian lang through L5 level
Senior requirement  Senior essay in sem, or research project in SAST 491, 492, or senior essay in SAST 486

Language and Literature Courses

*BNGL 110a*, Introductory Bengali I  Sreemati Mukherjee
A comprehensive approach to learning all four language skills: speaking, listening, reading, and writing. At the completion of the two-term sequence students are able to read and write in Bengali, and to converse in formal and informal situations. Course taught through distance learning using videoconferencing technology from Cornell University. Enrollment limited; interested students should e-mail minjini.hashbat@yale.edu for more information. Credit only on completion of BNGL 120.  L1  1½ Course cr

*BNGL 120b*, Introductory Bengali II  Sreemati Mukherjee
Continuation of BNGL 110. Prerequisite: BNGL 110 or equivalent. Course taught through distance learning using videoconferencing technology from Cornell University. Enrollment limited; interested students should e-mail minjini.hashbat@yale.edu for more information.  L2  1½ Course cr

*HNDI 110a*, Elementary Hindi I  Swapna Sharma and staff
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 120.  L1  1½ Course cr
HNDI 120b, Elementary Hindi II  Seema Khurana and staff
Continuation of HNDI 110. After HNDI 110 or equivalent. L2 1½ Course cr

HNDI 130a, Intermediate Hindi I  Swapna Sharma and staff
The first half of a two-term sequence designed to develop proficiency in the four language skills. 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 120 or equivalent. L3 1½ Course cr

HNDI 132a, Accelerated Hindi I  Swapna Sharma
A fast-paced course designed for students who are able to understand basic conversational Hindi but who have minimal or no literacy skills. Introduction to the Devanagari script; development of listening and speaking skills; vocabulary enrichment; attention to sociocultural rules that affect language use. Students learn to read simple texts and to converse on a variety of everyday personal and social topics. L3

HNDI 140b, Intermediate Hindi II  Seema Khurana and staff
Continuation of HNDI 130. After HNDI 130 or equivalent. L4 1½ Course cr

HNDI 142b, Accelerated Hindi II  Swapna Sharma
Continuation of HNDI 132. Development of increased proficiency in the four language skills. Focus on reading and higher language functions such as narration, description, and comparison. Reading strategies for parsing paragraph-length sentences in Hindi newspapers. Discussion of political, social, and cultural dimensions of Hindi culture as well as contemporary global issues. L4

HNDI 150a, Advanced Hindi  Seema Khurana
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 140 or permission of instructor. L5

HNDI 198a and b, Advanced Tutorial  Seema Khurana
For students with advanced Hindi language skills who wish to engage in concentrated reading and research on material not otherwise offered by the department. Work must be supervised by an adviser and must terminate in a term paper or the equivalent. Permission to enroll requires submission of a detailed project proposal and its approval by the language studies coordinator. Prerequisite: HNDI 150 or equivalent.

*SKRT 110a / LING 115a, Introductory Sanskrit I  David Brick
An introduction to Sanskrit language and grammar. Focus on learning to read and translate basic Sanskrit sentences in Devanagari script. No prior background in Sanskrit assumed. L1 1½ Course cr

SKRT 120b / LING 125b, Introductory Sanskrit II  David Brick
Continuation of SKRT 110. Focus on the basics of Sanskrit grammar; readings from classical Sanskrit texts written in Devanagari script. After SKRT 110. L2 1½ Course cr
SKRT 130a/G / LING 138a, Intermediate Sanskrit I  David Brick
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 Bhagavadgita. After SKRT 120 or equivalent.  L3  1½ Course cr

SKRT 140b/G / LING 148b/G, Intermediate Sanskrit II  David Brick
Continuation of SKRT 130, focusing on Sanskrit literature from the kavya genre. Readings include selections from the Jatakas of Aryasura and the opening verses of Kalidasa’s Kumarasambhava. After SKRT 130 or equivalent.  L4  1½ Course cr

*SKRT 150a, Advanced Sanskrit: Dharmasastra  David Brick
Introduction to Sanskrit commentarial literature, particularly to Dharmasastra, an explication and anlayasis of dharma (law or duty). Discussion of normative rules of human behavior; historical traditions of writing on the Indian subcontinent. Prerequisite: SKRT 140 or equivalent.  L5

*TAML 110a/G, Introductory Tamil I  Staff
An in-depth introduction to modern Tamil, focusing on skills in comprehension, speaking, reading, and writing 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. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail minjin.hashbat@yale.edu for more information. Credit only on completion of TAML 120.  L1  1½ Course cr

TAML 120b/G, Introductory Tamil II  Staff
Continuation of TAML 110. After TAML 110. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail minjin.hashbat@yale.edu for more information.  L2  1½ Course cr

TAML 130a/G, Intermediate Tamil I  Staff
The first half of a two-term sequence designed to develop proficiency in comprehension, speaking, reading, and writing through the use of visual media, newspapers and magazines, modern fiction and poetry, and public communications such as pamphlets, advertisements, and government announcements. Prerequisite: TAML 120 or equivalent. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail minjin.hashbat@yale.edu for more information.  L3  RP  1½ Course cr

*TAML 140b, Intermediate Tamil II  D. Sudanantha
The second half of a two-term sequence designed to develop proficiency in listening, speaking, reading, and writing. Focus on the communicative aspects of the language. Some attention to Tamil culture since the Sangam period. Prerequisite: TAML 130 or equivalent. Course taught through distance learning using videoconferencing technology from Columbia University. Enrollment limited; interested students should e-mail minjin.hashbat@yale.edu for more information.  L4  1½ Course cr
General Courses in South Asian Studies

*SAST 056b / EAST 013b / RLST 013b, The Dalai Lama  Andrew Quintman
The institution of the Dalai Lama and the individuals who have filled that role from fifteenth-century Tibet to twenty-first-century exile in India. Survey of the most important Dalai Lamas; regional histories of Buddhism; the Tibetan tradition of recognized reincarnations and the Buddhist philosophical principles that support it; activities of the current Dalai Lama as interpreted by Chinese government media, Indian exile communities, and the modern West. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.

SAST 175a / RLST 105a, Religious Movements in Modern India  Vasudha Dalmia
Sacred texts and religious practices of India as they have been disseminated, reinterpreted, and enlisted in various political and cultural projects during the colonial and postindependence periods. Focus on Hindu traditions, with some attention to Christianity, Buddhism, and Islam. Readings include theological writings, doctrinal tracts, novels, anthropological and sociological analyses, poetry, autobiography, and historical overviews.  HU

SAST 219a / ANTH 276a, South Asian Social Worlds  Sara Shneiderman
Study of a series of texts that introduce anthropological and critical approaches to South Asia’s peoples and cultures while questioning the historical and political possibility of understanding such a diverse region.  WR, SO

SAST 221a / HIST 310a, History of Modern South Asia  Juned Shaikh
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.  HU

SAST 223b / HIST 352b / WGSS 330b, Reinventing Gender in Modern India  Tanika Sarkar
A study of changing gender norms and practices in India in the nineteenth and early twentieth centuries. Widow immolation and remarriage, child marriage and the age of consent, arranged vs. love-based marriages, education and domestic roles, religious life, sex workers, female labor in mills and in agriculture, caste and tribes, gender behavior in political life.  WR, HU

*SAST 242b / PLSC 461b, India and Pakistan: Democracy, Conflict, and Development  Steven Wilkinson
The variation in democracy, conflict, and development between India and Pakistan since 1947, as well as variation within each country. Management of ethnic and religious conflicts, secularism, secessionist movements in Kashmir and elsewhere, the tension between economic growth and equity, and problems of governance.  SO

SAST 256b / HSAR 383b, Art of India, 300 B.C.-A.D. 1650  Tamara Sears
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.  HU
III. Subjects of Instruction

SAST 259b / MUSI 357b, Indian Music Theory and Practice  Stanley Scott
Introduction to the concepts and culture of music in South Asia from Vedic times to the present, with a focus on North Indian classical music. Discussion of history and theory is enriched by practical instruction and live performances. Topics include raga (melody), tala (meter), musical forms, improvisation, patronage, religion, and gender, with forays into folk music and film. No previous experience in Indian classical music required.  HU

SAST 260b / HSAR 143b / RLST 188b, Introduction to the History of Art: Buddhist Art and Architecture, 900 to 1600  Mimi Yiengpruksawan
Buddhist art and architecture of East Asia, Southeast Asia, and Tibet from the tenth century to the early modern period. Emphasis on cross-regional engagements including the impact of Islam.  HU

SAST 265a / HSAR 142a / RLST 187a, Introduction to the History of Art: The Classical Buddhist World  Mimi Yiengpruksawan
Buddhist art and architecture of India, Pakistan, Afghanistan, and central Asia from earliest beginnings to the tenth century, and including Greco-Roman, Persian, and Islamic contact.  HU

*SAST 266a / ARCH 271a / HSAR 266a / HUMS 450a / MMES 126a, Introduction to Islamic Architecture  Kishwar Rizvi
Introduction to the architecture of the Islamic world from the seventh century to the present, encompassing regions of Asia, North Africa, and Europe. A variety of sources and media, from architecture to urbanism and from travelogues to paintings, are used in an attempt to understand the diversity and richness of Islamic architecture. Field trip to the Metropolitan Museum of Art in New York.  HU

SAST 267a / RLST 125a, Introduction to Buddhist Thought and Practice  Andrew Quintman
Significant aspects of Buddhism as practiced mainly in India and South Asia, including philosophy and ethics, monastic and ascetic life, meditation and ritual practices, and the material culture of Buddhist societies. The Mahayana tradition that emerged in the first century B.C.E.; later forms of esoteric Buddhism known as tantra; the development of modern Buddhism in Asia and its manifestation in the West. Readings from Buddhist texts in translation.  HU

SAST 271a / HIST 309a, History of Ancient India  David Brick
Introduction to Indian society and civilization from its earliest beginnings until c. 1000 C.E. Topics include politics, caste and class, commerce, religion, art and architecture, literature, and science.  HU

*SAST 310b / FILM 317b, Understanding Bollywood  Kedar Kulkarni and staff
Critical introduction to popular cinema of South Asia, its history, culture, and politics. Topics include nationalism, partition, gender, secularism, development, globalization, and diaspora.  HU

*SAST 313b / ANTH 313b, Cultural Aspects of International Development  Kalyanakrishnan Sivaramakrishnan and Sara Shneiderman
Critical analysis of development ideas and projects in Asia, Africa, and Latin America, with a focus on ethnographic research. Development and cultural diversity; social and economic development politics and practices; institutions that design, fund, and
implement development, such as multilateral agencies, governments, and civil society organizations. SO

*SAST 335a, Migration in the Indian Ocean Basin  Rajashree Mazumder
Continuity and change in the Indian Ocean basin from the emergence of Islam in the seventh century C.E. to the intrusion of European powers and the subsequent emergence of the global economy and colonialism in the nineteenth century. Focus on the experiences of people whose lives were shaped by transoceanic networks, including merchants, itinerant pilgrims, soldiers, sailors, pirates, sex workers, and wage laborers. HU

*SAST 342b / EP&E 425b / PLSC 181b, South Asia in World Politics
Elizabeth Hanson
Relations of the major countries of South Asia with each other and with the rest of the world; emphasis on India, Pakistan, and Afghanistan. Identification of the various actors and interests that are fueling current conflicts in the region. Analysis of issues in world politics, including nation building, ethnic conflict, militant extremism, nuclear proliferation, and strategies of development. SO

*SAST 362b / ENGL 347b / HUMS 274b / LITR 264b, South Asian Anglophone Literature  Shital Pravinchandra
Introduction to key works, concepts, and issues in twentieth-century South Asian writing in English. Focus on literature from and about India, Pakistan, Sri Lanka, and Bangladesh. The status of English on the Indian subcontinent; the current popularity of South Asian Anglophone literature; the relation of South Asian literature written in English to literature written in other South Asian languages. WR, HU

*SAST 363a / ANTH 317a / EAST 363a / HSAR 479a or b, Himalayan Collections at Yale  Mark Turin
Online tools and new digital media are used to explore links between four library and museum collections at Yale that are from and about the Himalayan region: Bubrishi’s black-and-white photographs of Nepal; Buddhist scrolls and fabric temple banners; Christian missionary archives; documents on the political history of Nepal. Collective cataloging of materials in the collections. HU

*SAST 367a / EALL 241a / HUMS 418a / RLST 130a, Traditional Literature of India, China, and Japan  Koichi Shinohara and Phyllis Granoff
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. TR

*SAST 369bG / ANTH 353bG, Himalayan Languages and Cultures  Mark Turin
Exploration of social, linguistic, and political aspects of the Himalayan region. Issues include classifications of communities and their languages; census-taking and other state enumeration projects; the crisis of endangered oral cultures and speech forms; the creation and adoption of writing systems and the challenges of developing mother tongue literacy materials. Case studies are drawn from Bhutan, northern India, Nepal, and Tibet. SO
*SAST 370a / HSAR 487a, Visualizing Stories in India  
Tamara Sears
Modes of visual narratives in India. Case studies drawn from Hindu, Buddhist, and Jain traditions in a variety of media: stone sculpture, illustrated manuscripts, painted scrolls, comics, and film.  
HU

*SAST 371a / ENGL 343a / ER&M 353a / HUMS 419a / LITR 268a, Postcolonial Studies  
Shital Pravinchandra
Introduction to key writers, literary works, concepts, and issues in the field of postcolonial studies. Definitions of the term "postcolonial," including to whom it can be applied; the cultural, psychological, and political consequences of colonization; opinions of non-Western writers about current cultural and political climates and the historical processes that shaped them.  
HU

*SAST 374b / LITR 274b, Modern Literature in South Asia  
Benjamin Conisbee Baer
The forms and trajectories of modern literature in the Indian subcontinent. Topics of writing, secrets, and gender in nineteenth- and twentieth-century fiction, with a focus on literary prose. Representations of forbidden relationships, transgression, and intersections of the personal, the sexual, and the political. Writers from the present-day states of India, Pakistan, and Bangladesh and from the South Asian diaspora. Readings in English original or in translation.  
HU

*SAST 378b / EVST 346b, Urbanization and the Environment in China and India  
Karen Seto and Angel Hsu
Study of contemporary urbanization processes in China and India, with a focus on environmental challenges and sustainable development. Energy, food, water, and land-use systems; manufacturing, industry, and technology; cultures and lifestyles. Introduction to conceptual and analytical tools for assessing the effects of urbanization.  
SO

*SAST 379a / LING 248a, Indo-Aryan Languages  
Ashwini Deo
Introduction to the Indo-Aryan language family, its linguistic context, and its evolution from the ancient period to the present. Focus on comparative morphosyntax and semantic phenomena, with some attention to issues of classification and contact.  
SO

*SAST 458a / ER&M 328a / WGSS 328a, Popular Culture and Postcolonial India  
Geetanjali Singh Chanda
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.  
WR

*SAST 462a / HSAR 477a / RLST 382a, Yoga in Art, Text, and Practice  
Tamara Sears and Andrew Quintman
Critical investigation of texts, images, and the practice of yoga, focusing on Indian traditions of Hinduism, Buddhism, and Jainism, as well as modern manifestations in the West. Themes include contemplative practices, bodily disciplines, ritual, narrative painting, architecture, and the role of yoga in tantra. Readings emphasize primary sources and theoretical frameworks.  
HU

*SAST 463a / THST 391a, Indian Theater, 1850 to the Present  
Kedar Kulkarni
Introduction to major movements and playwrights in modern Indian theater. Focus on post-independence drama and its forms that derive from classical Indian, folk, and other sources, both indigenous and foreign.  
HU
*SAST 465a / LITR 419a, Colonization and Psychosis in Modern Literature and Culture  Benjamin Conisbee Baer
The use of psychoanalytic categories in narrations, representations, and descriptions of colonial and postcolonial conditions in the twentieth and twenty-first centuries. Relations between modern representations of colonization and of extreme psychic states; distinctions between social and individual diagnoses; the ethics and politics of applying concepts of psychosis to social situations of domination, exploitation, and racism, and to individual and collective responses to such conditions.  HU

*SAST 466b / HUMS 449b / RLST 190b, Narrative Space in Asian Religions  Phyllis Granoff and Koichi Shinohara
The many spaces of Asian religious practice, good and bad, real and imaginary, explored through readings from Indian, Chinese, and Japanese texts in translation.  HU

*SAST 467b / RLST 383b, Biography in Asian Religions  Andrew Quintman
The significance of life writing in the religious traditions of Asia. Readings both from primary texts in translation and from theoretical works on biography and autobiography.  HU

*SAST 486a or b, Directed Study  Sara Shneiderman
A one-credit, single-term course on topics not covered in regular offerings. To apply for admission, a student should present a course description and syllabus to the director of undergraduate studies, along with written approval from the faculty member who will direct the study.

Senior Essay Course

*SAST 491a and SAST 492b, Senior Essay  Sara Shneiderman
A yearlong research project completed under faculty supervision and resulting in a substantial paper. Credit for SAST 491 only on completion of SAST 492.
½ Course cr per term

Southeast Asia Studies

Program adviser: Benedict Kiernan, 311 LUCE, 432-3431, seas@yale.edu; www.yale.edu/seas

FACULTY ASSOCIATED WITH THE COUNCIL ON SOUTHEAST ASIA STUDIES

Professors  William Burch (Emeritus) (Forestry & Environmental Studies), Harold Conklin (Emeritus) (Anthropology), Michael Dove (Forestry & Environmental Studies), J. Joseph Errington (Anthropology), Benedict Kiernan (History), James Scott (Political Science), Mimi Yiengpruksawan (History of Art)

Associate Professor  Sarah Weiss (Music)

Assistant Professor  Erik Harms (Anthropology)

Senior Lecturer  Carol Carpenter (Forestry & Environmental Studies, Anthropology)

Lecturer  Amity Doolittle (Forestry & Environmental Studies)

Senior Lectora  Quang Phu Van
Senior Lecturer  Indriyo Sukmono
Lector  Dinny Risri Aletheiani

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 (http://www.yale.edu/seas/Courses.htm). Yale maintains extensive library and research collections on Southeast Asia.

Language instruction is offered in two Southeast Asian languages, Indonesian and Vietnamese. The Council on Southeast Asia Studies supports language tables and tutoring in other Southeast Asian languages by special arrangement.

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Indonesian Courses

*INDN 110a, Elementary Indonesian I  Indriyo Sukmono
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 120. Enrollment limited to 15 per section.  1.1  1½ Course cr

*INDN 120b, Elementary Indonesian II  Indriyo Sukmono
Continuation of INDN 110. Introduction to reading, leading to mastery of language patterns, essential vocabulary, and basic cultural competence. After INDN 110 or equivalent. Enrollment limited to 15 per section.  1.2  1½ Course cr

*INDN 130a, Intermediate Indonesian I  Indriyo Sukmono
Continued practice in colloquial Indonesian conversation and reading and discussion of texts. After INDN 120 or equivalent. Limited enrollment.  1.3

*INDN 140b, Intermediate Indonesian II  Indriyo Sukmono
Continuation of INDN 130. After INDN 130 or equivalent. Limited enrollment.  1.4

*INDN 150a, Advanced Indonesian I  Indriyo Sukmono
Development of advanced fluency through discussion of original Indonesian sociohistorical, political, and literary texts and audiovisual sources. Extension of cultural understanding of Indonesia. Prerequisite: INDN 140 or equivalent. May not be taken after INDN  .  1.5
*INDN 160b, Advanced Indonesian II  Indriyo Sukmono  
Continuation of INDN 150. Prerequisite: INDN 150 or equivalent.  L5

*INDN 470a and INDN 471b, Independent Tutorial  Indriyo Sukmono  
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 program adviser.

Vietnamese Courses

VIET 110a, Elementary Vietnamese I  Quang Phu Van  
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 120. No previous knowledge of Vietnamese assumed.  L1  RP  1½ Course cr

VIET 120b, Elementary Vietnamese II  Bich-Ngoc Turner  
Continuation of VIET 110.  L2  RP  1½ Course cr

*VIET 130a, Intermediate Vietnamese I  Quang Phu Van  
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 120 or equivalent.  L3  RP  1½ Course cr

*VIET 140b, Intermediate Vietnamese II  Bich-Ngoc Turner  
Continuation of VIET 130.  L4  RP  1½ Course cr

*VIET 150a, Advanced Vietnamese  Quang Phu Van  
Students improve their fluency and accuracy in Vietnamese and solidify their reading, writing, speaking, and listening skills. Topics include social, economic, and cultural practices, gender issues, notions of power, and taboo. Prerequisite: VIET 140 or equivalent.  L5

VIET 220b, Introduction to Vietnamese Culture, Values, and Literature  
Quang Phu Van  
Introduction to Vietnamese culture and values. Topics include cultural and national identity, aesthetics, the meaning of life, war, and death. Selected readings from Zen poems, folklore, autobiographies, and religious and philosophical writings. Readings in translation. No previous knowledge of Vietnamese required.  HU  Tr

*VIET 470a and VIET 471b, Independent Tutorial  Quang Phu Van  
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 program adviser.
Spanish

Director of undergraduate studies: Susan Byrne, Rm. 205, 82–90 Wall St., 432-1162, susan.byrne@yale.edu; language program director: Ame Cividanes, Rm. 210, 82–90 Wall St., 432-1159, ame.cividanes@yale.edu; span-port.yale.edu

FACULTY OF THE DEPARTMENT OF SPANISH AND PORTUGUESE

Professors  Rolena Adorno (Chair), Aníbal González, Roberto González Echevarría, K. David Jackson, Noël Valis

Associate Professors  Susan Byrne, Paulo Moreira

Assistant Professors  Leslie Harkema, Kevin Poole

Senior Lectors II  Margherita Tortora, Sonia Valle

Senior Lectors  Sybil Alexandrov, Marta Almeida, Pilar Asensio, Teresa Carballal, Mercedes Carreras, Ame Cividanes, Sebastián Díaz, Maripaz García, Oscar González Barreto, María Jordán, Rosamaría León, Juliana Ramos-Ruano, Lissette Reymundi, Lourdes Sabé-Colom, Bárbara Safille, Terry Seymour

Lector  Selma Vital

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, Latin America, and the Caribbean. Today Spanish is the second language of the United States, one of the three most widely spoken languages in the world, and one of the five diplomatic languages of the United Nations. The program in Spanish offers students the opportunity to acquire thorough linguistic proficiency as well as in-depth knowledge of both cultural and literary topics. The major explores literature, history, philosophy, art, and cultural studies, and provides excellent preparation for careers in law, diplomacy, medicine, business, the arts, academics, journalism, and education.

Courses numbered SPAN 110–199 include beginning and intermediate language courses designed to help students develop fluency in understanding, speaking, reading, and writing Spanish. Courses numbered SPAN 200–299 seek to provide students with a broad but solid introduction to the fields of Hispanic literatures and cultures while strengthening their linguistic competence. Courses numbered 300–499 allow students to perfect their linguistic and critical skills through study of a specific problem or issue, e.g., a literary genre, a type of literary or cultural representation, or a specific writer or text. Students desiring more information about either language or literature offerings should consult the director of undergraduate studies.

Placement  Students whose test scores demonstrate advanced ability in Spanish may enroll directly in any L5 course; scores that demonstrate advanced ability include a placement of L5 on the departmental placement examination, a score of 5 on either of the Spanish Advanced Placement tests, a score of 6 or 7 on the International Baccalaureate examination, or a proficiency level of C1 in the Common
European Framework of Reference for Languages. All other students, including native speakers, who have previously studied Spanish formally or informally must take the departmental placement examination in order to enroll in a Spanish course.

**Placement examination and preregistration** Information about the departmental placement examination and about preregistration procedures for Spanish L1–L4 language courses is available on the departmental Web site (http://span-port.yale.edu/undergraduate-placement-exam-and-information).

**Language courses** Students with no previous formal or informal Spanish study ordinarily enroll in SPAN 110. Students who take SPAN 110 must continue with 120 in the following term, and no credit is awarded for 110 until 120 has been successfully completed. Students wishing to take intensive beginning Spanish may, with the instructor’s permission, enroll in SPAN 125, which covers the same material as SPAN 110 and 120, but in one term. SPAN 132 and 142 are designed for heritage speakers and are available only to them. Admission to SPAN 132 and 142 is based on results of the departmental placement examination; interested students should contact the instructor.

**Prerequisite** Prerequisite to the major is SPAN 140, 142, or 145, or the equivalent through advanced placement or study abroad. Equivalent preparation to SPAN 140, 142, or 145 may be demonstrated by the test scores listed above under "Placement."

**The standard major** Beyond the prerequisite, twelve term courses are required, including the senior essay. With prior permission of the director of undergraduate studies, two relevant courses from other departments may be applied toward the major.

**Requirements of the major for the Classes of 2014 and 2015** Students must take SPAN 243, SPAN 244, or 250; SPAN 246 or 247; three courses chosen from SPAN 261, 262, 266, or 267; SPAN 491 (see "Senior requirement" below); five electives numbered SPAN 300 or higher; and one additional elective numbered SPAN 200 or higher. Successful completion of a special examination given at the beginning of each term may exempt Spanish majors from SPAN 243 and fulfill the requirement for SPAN 243, SPAN 244, or 250. Details about the examination may be obtained from the course instructor.

**Requirements of the major for the Class of 2016 and subsequent classes** Students must take SPAN 250; SPAN 246 or 247; three courses chosen from SPAN 261, 262, 266, or 267; SPAN 491 (see "Senior requirement" below); five electives numbered SPAN 300 or higher; and one additional elective numbered SPAN 200 or higher.

**Senior requirement** Seniors write the senior essay in SPAN 491 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 491 in the fall of their senior year. Seniors in SPAN 491 are expected to submit their completed essay to the director of undergraduate studies at 82–90 Wall Street by 4 p.m. on April 25 in the spring term, or by 4 p.m. on December 6 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.
Intensive major  Students in the intensive major both present a senior essay and take a departmental examination.

Two majors  Students electing Spanish as one of two majors should consult the director of undergraduate studies about a specialized course of study.

Courses in the Graduate School  Juniors and seniors majoring in Spanish may, with 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.

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; New Haven and Quito, Ecuador; or New Haven and Lima, Peru. A five-week Spanish course at the L5 level is also offered in Buenos Aires, Argentina. More information is available on the Yale Summer Session Web site (http://summer.yale.edu). For information about the Year or Term Abroad program, see under "Special Arrangements" in the Academic Regulations. Students who wish to count courses taken abroad toward the major should consult with the director of undergraduate studies before going abroad.

REQUIREMENTS OF THE MAJOR

Prerequisite  SPAN 140, 142, 145, or equivalent

Number of courses  12 term courses (incl senior req)

Specific courses required  Classes of 2014 and 2015—SPAN 243, SPAN 244, or 250;
SPAN 246 or 247; 3 from SPAN 261, 262, 266, 267; Class of 2016 and subsequent classes—SPAN 250; SPAN 246 or 247; 3 from SPAN 261, 262, 266, 267

Distribution of courses  5 electives numbered SPAN 300 or higher; 1 addtl elective numbered SPAN 200 or higher

Substitution permitted  Up to 2 relevant courses in other depts, with DUS permission

Senior requirement  Standard major—Senior essay (SPAN 491); Intensive major—Senior essay (SPAN 491) and dept exam

Courses

*SPAN 050b / LAST 001b, Latin American Short Fiction  Paulo Moreira  Introduction to Latin American literature through one of its highest achievements: the short narrative from Brazil and Spanish America. Works of Brazilian authors (Machado de Assis, Guimarães Rosa, Graciliano Ramos, Clarice Lispector) compared with short stories from Spanish America (Quiroga, Rufio, Carpenter, Borges) and the United States (Faulkner, Ellison, Chopin). Narrative structure and expressive qualities of the texts; literary currents; and social, psychological, and existential themes. Readings and discussion in English; texts available in the original languages. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU  Tr

*SPAN 060a, Freshman Colloquium: Literary Studies in Spanish  Leslie Harkema  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). Open to students who have placed into L5 courses. Counts toward the requirements of the Spanish major with
permission of the director of undergraduate studies. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. L5, HU

*SPAN 075b, Golden Age Theater  Susan Byrne
Theater as a social and cultural phenomenon in sixteenth- and seventeenth-century Spain. Analysis of the written scripts of canonical works; semiotics of staged productions, including acting, staging, sound, and wardrobe. Works by Juan de la Cueva, Miguel de Cervantes, Lope de Vega, Tirso de Molina, and Calderón de la Barca. Theoretical views on what theater is and should be. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the requirements of the Spanish major with permission of the director of undergraduate studies. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. L5, HU

*SPAN 110a or b, Elementary Spanish I  Maripaz García
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 120. Credit only on completion of SPAN 120. Does not count toward the Spanish major. L1 RP 1½ Course cr

SPAN 120a or b, Elementary Spanish II  Juliana Ramos-Ruano
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 110 or in accordance with placement results. Admits to SPAN 130 or 145. Does not count toward the Spanish major. L2 RP 1½ Course cr

*SPAN 125a, Intensive Elementary Spanish  Lourdes Sabé-Colom
An intensive beginning course in spoken and written Spanish that covers the material of SPAN 110 and 120 in one term. Conducted in Spanish. Admits to SPAN 130 or 145. Not open to students who have completed SPAN 110 or 120. Does not count toward the Spanish major. L1, L2 RP 2 Course cr

SPAN 130a or b, Intermediate Spanish I  Lissette Reymundi
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 140. Does not count toward the Spanish major. L3 RP 1½ Course cr

*SPAN 132a, Spanish for Heritage Speakers I  Sybil Alexandrov
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. Does not count toward the Spanish major. L3
SPAN 140a or b, Intermediate Spanish II  Rosamaria León
Continuation of SPAN 130. 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. Does not count toward the Spanish major.  L4  RP  1½ Course cr

*SPAN 142b, Spanish for Heritage Speakers II  Sybil Alexandrov
Continuation of SPAN 132. 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 132 or in accordance with placement results. Does not count toward the Spanish major.  L4

*SPAN 145b, Intensive Intermediate Spanish  Pilar Asensio and Bárbara Salille
An intensive intermediate course in spoken and written Spanish that covers the material of SPAN 130 and 140 in one term. Conducted in Spanish. Admits to L5 courses. Not open to students who have completed SPAN 130 or 140. Does not count toward the Spanish major.  L3, L4  RP  2 Course cr

*SPAN 222a / LAST 222a, Legal Spanish  Mercedes Carreras
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*SPAN 223b / LAST 223b, Spanish in Film: An Introduction to the New Latin American Cinema  Margherita Tortora
Development of proficiency in Spanish through analysis of critically acclaimed Latin American films. Includes basic vocabulary of film criticism in Spanish as well as discussion and language exercises. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*SPAN 225b, Spanish for the Medical Professions  Mercedes Carreras
Topics in health and welfare. Conversation, reading, and writing about medical issues for advanced Spanish-language students, including those considering careers in medical professions. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major.  L5

*SPAN 227b / LAST 227b, Creative Writing  María Jordán
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. Open to students who have placed into L5 courses or who have
successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major. 15

*SPAN 243a or b / LAST 243a or b, Advanced Spanish Grammar  Terry Seymour
A comprehensive, in-depth study of grammar intended to improve students’ spoken and written command of Spanish. Linguistic analysis of literary selections; some English-to-Spanish translation. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Enrollment limited to 18. A maximum of one 200-level course may count as an elective toward the Spanish major. 15

[ SPAN 246, Introduction to the Cultures of Spain ]

*SPAN 247b / LAST 247b / PORT 247b, Introduction to the Cultures of Latin America  Paulo Moreira
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. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. May count toward the major in Portuguese, with written permission of the director of undergraduate studies. 15, HU

*SPAN 250a, Composition and Analysis  Susan Byrne
Composition in Spanish, with a focus on academic writing. Close analysis of language use in literary texts to improve fluidity and precision in students’ own writing. Frequent composition assignments to practice the forms and functions studied. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. 15, HU

SPAN 261a / LAST 261a, Studies in Spanish Literature I  Kevin Poole
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, and works by Miguel de Cervantes and Calderón de la Barca. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. 15, HU

*SPAN 262b / LAST 262b, Studies in Spanish Literature II  Leslie Harkema
An introduction to Spanish prose, drama, and lyric poetry from the eighteenth century to the present, centered on the conflict between modernity and tradition and on the quest for national identity. Texts by Bécquer, Unamuno, Lorca, Sender, Machado, and Cernuda. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. 15, HU

[ SPAN 266, Studies in Latin American Literature I ]

[ SPAN 267, Studies in Latin American Literature II ]

*SPAN 300a / LITR 180a, Cervantes’s Don Quijote  Roberto González Echevarría
A detailed study of the Quijote in the aesthetic and historical context of Renaissance and baroque Spain. The significance of the Quijote for modern European and Latin American fiction. Readings also include Cervantes’s Exemplary Stories and Elliott’s Imperial Spain. Conducted in English; a section in Spanish available depending on demand. Counts toward the Spanish major. HU Tr
*SPAN 309a, Science and Religion in Spanish Narrative, 1885–1915  Leslie Harkema
The literary response to debates surrounding scientific advances and religious belief in
Spanish novels and stories of the modernist era. Authors include Benito Pérez Galdós,
Emilia Pardo Bazán, Santiago Ramón y Cajal, Miguel de Unamuno, and Pío Baroja.
Open to students who have placed into L5 courses or who have successfully completed
an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

*SPAN 324a, Lorca: Poetry and Plays  Noël Valis
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. Open to students who have placed into L5 courses or who
have successfully completed an L4 course in Spanish. Counts toward the Spanish major.
L5, HU

*SPAN 327bG / LAST 362b, Religion and Literature in the Spanish Middle Ages
Kevin Poole
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. Open to
students who have placed into L5 courses or who have successfully completed an L4
course in Spanish. Counts toward the Spanish major.  HU

*SPAN 344a / LAST 344a, Narrative and Music in Hispanic Caribbean Culture
Aníbal González
The development of the narrative genre in Cuba, the Dominican Republic, and Puerto
Rico from its origins in the nineteenth century to the present. Focus on how music
is represented and incorporated into the discourse of Hispanic Caribbean novels and
stories. Authors include Villaverde, Carpentier, Cabrera Infante, Nicolás Guillén, Ana
Lydia Vega, and Luis Palés Matos. Open to students who have placed into L5 courses or
who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.
L5, HU

*SPAN 350a / LAST 351a, Borges: Literature and Power  Aníbal González
An introduction to the work of Jorge Luis Borges, focusing on the relation between
literature and power as portrayed in selected stories, essays, and poems. Topics include
Borges and postmodernity; writing and ethics; and Borges’s politics. Works include
Ficciones, Otras inquisiciones, El aleph, El hacedor, El informe de Brodie, and Obra poética.
Open to students who have placed into L5 courses or who have successfully completed
an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

*SPAN 354b, Indigenism in Spanish-American Literature and Culture
Aníbal González and Mariana Melo-Vega
Study of Indigenismo, a cultural movement from the 1930s to the 1950s that upheld the
rights and dignity of Spanish America’s indigenous peoples. The roots of indigenism in
the works of colonial mestizo writers and nineteenth-century reformists, its flowering
in twentieth-century visual art and narration, and its echoes in contemporary political
movements, popular music, and film in South America. Open to students who have
placed into L5 courses or who have successfully completed an L4 course in Spanish.
Counts toward the Spanish major.  L5, HU
*SPAN 363b / LAST 363b, History of the Spanish Language  Kevin Poole
The linguistic evolution of Spanish from Latin in the Middle Ages. The development of Spanish into a language of political, ecclesiastic, and literary prestige during the modern period. Phonetics, syntax, dialectology, sociolinguistic theory, and the relation of these elements to the literature of Spain and Hispanic America. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

*SPAN 367b / HIST 227b, The Spanish Civil War: Words and Images  Noël Valis
An introduction to the history and cultural-literary impact of the Spanish Civil War (1936–39) from national and international perspectives. Views both from within and from outside the war; women and the war; memory and the war. Authors include George Orwell, Ernest Hemingway, Javier Cercas, Alberto Méndez, Mercè Rodoreda, Ramón J. Sender, W. H. Auden, and Stephen Spender. Open to students who have placed into L5 courses or who have successfully completed an L4 course in Spanish. Counts toward the Spanish major.  L5, HU

*SPAN 478a and SPAN 479b, Directed Readings and/or Individual Research  Susan Byrne
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. Counts toward the Spanish major.

*SPAN 491a or b, The Senior Essay  Susan Byrne
A research project completed under faculty supervision and resulting in a paper of considerable length, in Spanish.

Special Divisional Majors

Director of undergraduate studies: Jasmina Beširevic-Regan, Dean’s Office TC, 432-0722, jasmina.besirevic@yale.edu

A Special Divisional Major affords an alternative for students whose academic interests cannot be met by an existing departmental or special major. Students may, with the approval of the Committee on Honors and Academic Standing, design majors of their own in consultation with members of the faculty and in accordance with the procedures outlined below.

Special Divisional Majors differ so widely in content that there is no uniform format, but two patterns prevail. Some majors combine two disciplines (e.g., music and English, religious studies and anthropology), while others draw from several departments to focus on a particular culture, period, or problem (e.g., French studies, medieval studies, urban studies). Students interested in pursuing a Special Divisional Major in Renaissance studies should visit the Renaissance Studies program Web site (http://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. 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 491, 492, 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 491 and/or 492), or, with DUS
permission, written or oral exam, or grad course, or tutorial

Courses

*SPEC 491a and SPEC 492b, The Senior Project* Jasmina Beširevic-Regan
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: Joseph Chang, 24 Hillhouse Ave., 432-0642,
Joseph.chang@yale.edu [F]; Andrew Barron, 24 Hillhouse Ave., 432-0634,
andrew.barron@yale.edu [Sp]; statistics.yale.edu

FACULTY OF THE DEPARTMENT OF STATISTICS

**Professors** †Donald Andrews, Andrew Barron, Joseph Chang, John Hartigan
(Emeritus), †Theodore Holford, †Peter Phillips, David Pollard, †Heping Zhang,
†Hongyu Zhao, Huibin Zhou

**Associate Professors** John Emerson (Adjunct), †Sekhar Tatakonda

**Assistant Professors** Lisha Chen, Jing Zhang

**Senior Lecturer** Jonathan Reuning-Scherer

**Lecturer** David Salsburg

†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 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 120 and MATH 222 or 225, 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 241 and 251), two courses emphasizing the theory of statistical inference (STAT 242 and 312), and two courses in the methods and practice of data analysis, chosen from STAT 230, 361, and 363. STAT 238 may be substituted for STAT 241 with the permission of the director of undergraduate studies. All majors are also required to take a course in computing (ENAS 130 or CPSC 112). 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** The program requires twelve term courses beyond the prerequisites. In addition to the courses indicated for the B.A. degree, the B.S. degree requires a course in mathematical analysis (MATH 260, 300, or 301) and an additional Statistics elective numbered above MATH 200.

**Senior requirement** In the senior year, majors in both degree programs complete a research project in STAT 490. 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 120 and MATH 222 or 225, 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 241, 242, 251, 312; 2 from STAT 230, 361, 363; ENAS 130 or CPSC 112; B.S. — same, plus MATH 260, 300, or 301
Distribution of courses  B.A. — 2 Stat electives numbered above 200, as specified;  
B.S. — 3 Stat electives numbered above 200, as specified

Substitution permitted  STAT 238 for STAT 241, with DUS permission; courses in 
other depts or grad courses, with DUS permission

Senior requirement  Both degrees — Senior project (STAT 490)

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 in 
this group 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 100 or 109.

Students enrolled in STAT 101–106 who wish to change to STAT 109, or those enrolled 
in STAT 109 who wish to change to STAT 101–106, must submit a course change 
notice, signed by the instructor, to their residential college dean by Friday, September 
27. The approval of the Committee on Honors and Academic Standing is not required.

STAT 101aG / E&EB 210a, Introduction to Statistics: Life Sciences
Jonathan Reuning-Scherer and Walter Jetz
Statistical and probabilistic analysis of biological problems, presented with a unified 
foundation in basic statistical theory. Problems are drawn from genetics, ecology, 
epidemiology, and bioinformatics.  QR

STAT 102aG / EP&E 203a / PLSC 452a, Introduction to Statistics: Political Science
Jonathan Reuning-Scherer and Alan Gerber
Statistical analysis of politics, elections, and political psychology. Problems presented 
with reference to a wide array of examples: public opinion, campaign finance, racially 
motivated crime, and public policy.  QR

STAT 103aG / EP&E 209a / PLSC 453a, Introduction to Statistics: Social Sciences
Jonathan Reuning-Scherer
Descriptive and inferential statistics applied to analysis of data from the social sciences. 
Introduction of concepts and skills for understanding and conducting quantitative 
research.  QR

STAT 105a, Introduction to Statistics: Medicine  Jonathan Reuning-Scherer 
and David Salsburg
Statistical methods used in medicine and medical research. Practice in reading medical 
literature competently and critically, as well as practical experience performing 
statistical analysis of medical data.  QR
Courses in Statistics

STAT 100bG, Introductory Statistics  Joseph Chang
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. May not be taken after STAT 101–
106 or 109.  QR
EP&E: Intro Statistics

General concepts and methods in statistics. Meets for the first half of the term only.
May not be taken after STAT 100 or 101–106.  ½ Course cr

STAT 230bG, Introductory Data Analysis  John Emerson
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.  QR
EP&E: Intro Statistics

STAT 238aG, Probability and Statistics  Jing Zhang and staff
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: parameter
estimation, likelihood, prior and posterior distributions, Bayesian inference using
Markov chain Monte Carlo. Introduction to regression and linear models. Computers
are used for calculations, simulations, and analysis of data. After MATH 118 or 120.  QR

STAT 241aG/MATH 241a, Probability Theory  Huibin Zhou
Introduction to probability theory. Topics include probability spaces, random variables,
extpectations and probabilities, conditional probability, independence, discrete and
continuous distributions, central limit theorem, Markov chains, and probabilistic
modeling. After or concurrently with MATH 120 or equivalent.  QR

STAT 242bG/MATH 242b, Theory of Statistics  Lisha Chen
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 241 and concurrently with or after MATH 222 or 225, or
equivalents.  QR

STAT 251bG/MATH 251b, Stochastic Processes  Staff
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 chosen
from image reconstruction, Bayesian statistics, finance, probabilistic analysis of
algorithms, and genetics and evolution. After STAT 241 or equivalent.  QR
STAT 312aG, Linear Models  Joseph Chang
The geometry of least squares; distribution theory for normal errors; regression, analysis of variance, and designed experiments; numerical algorithms, with particular reference to the R statistical language. After STAT 242 and MATH 222 or 225.  QR

STAT 330bG / MATH 330b, Advanced Probability  David Pollard
Measure theoretic probability, conditioning, laws of large numbers, convergence in distribution, characteristic functions, central limit theorems, martingales. Some knowledge of real analysis assumed.  QR

STAT 361aG / AMTH 361aG, Data Analysis  Lisha Chen
Selected topics in statistics explored through analysis of data sets using the R statistical computing language. Topics include linear and nonlinear models, maximum likelihood, resampling methods, curve estimation, model selection, classification, and clustering. Weekly sessions in the Statistical Computing laboratory. After STAT 242 and MATH 222 or 225, or equivalents.  QR

STAT 363bG, Multivariate Statistics for Social Sciences  Jonathan Reuning-Scherer
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.  QR

STAT 364bG / AMTH 364bG / EENG 454bG, Information Theory  Andrew Barron
Foundations of information theory in communications, statistical inference, statistical mechanics, probability, and algorithmic complexity. Quantities of information and their properties: entropy, conditional entropy, divergence, redundancy, mutual information, channel capacity. Basic theorems of data compression, data summarization, and channel coding. Applications in statistics and finance. After STAT 241.  QR

STAT 365bG, Data Mining and Machine Learning  Lisha Chen
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 242.  QR

*STAT 480a or b, Individual Studies  Joseph Chang [F] and Andrew Barron [Sp]
Directed individual study for qualified students who wish to investigate an area of statistics not covered in regular courses. A student must be sponsored by a faculty member who sets the requirements and meets regularly with the student. Enrollment requires a written plan of study approved by the faculty adviser and the director of undergraduate studies.

*STAT 490b, Senior Seminar and Project  Andrew Barron
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 on the departmental Web site at http://statistics.yale.edu. Permission of the instructor and of the director of graduate studies is required.

Study of the City

Courses

*STCY 176b / ARCH 230b, Introduction to the Study of the City  Alexander Garvin
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.  so

Theater Studies

Director of undergraduate studies: Dominika Laster, Rm. 102, 220 York St., 432-1310; theaterstudies.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF THEATER STUDIES

Professors  Vasudha Dalmia (Religious Studies), Richard Lalli (Adjunct) (Music),
*Lawrence Manley (English), Donald Margulies (Adjunct) (English, Theater Studies),
J. D. McClatchy (Adjunct) (English), *Charles Musser (Film Studies, American Studies, Theater Studies), *Joseph Roach (English, African American Studies, Theater Studies),
*Marc Robinson (School of Drama, Theater Studies, English), Ellen Rosand (Music),
*Robert Stepoto (African American Studies, English, American Studies), Katie Trumpener (Comparative Literature)

Associate Professors  *Murray Biggs (Adjunct) (Theater Studies, English), *Toni Dorfman (Adjunct) (Theater Studies), Gundula Kreuzer (Music), Joan MacIntosh (Adjunct) (Theater Studies, School of Drama), *Deb Margolin (Adjunct) (Theater Studies)

Assistant Professors  Sarah Demers (Physics), William Fleming (Theater Studies, East Asian Languages & Literatures), Sam See (English), Christopher Semk (French)

Lecturers  Jessica Berson, Emily Coates, Lacina Coulibaly, Daniel Egan, Andrew Gerle, Grant Herreid, Annette Jolles, Michael Korie, Kedar Kulkarni, Frederick Lamp, Daniel Larham, Dominika Laster, Elise Morrison, Maria-Christina Olveras, Lynda Paul, Rashida Shaw, Rachel Sheinkin, Nicole Stanton, Robert Woodruff

Senior Lectors  Krystyna Illakowicz, Bábara Safille

*Member of the Executive Committee for the program.

As a branch of the humanities and as a complex cultural practice, theater claims a rich history and literature and an equally rich repertoire of embodied knowledge and theory. Theater Studies emphasizes the reciprocal relationship between practice and scholarly study. The major combines practical training with theory and history, while stressing creative critical thinking. Students are encouraged to engage intellectual and physical
approaches to explore diverse cultural forms, historical traditions, and contemporary life.

The study of theater is interdisciplinary in scope and global in perspective. Students are expected to take courses in cognate disciplines such as history, philosophy, anthropology, political science, film, art, literature, and foreign languages. Faculty members are affiliated with a range of departments; their diverse expertise lends breadth and depth to course offerings and enables students to devise a course of study reflective of their developing interests.

Special features of the program are the production seminars and guided independent study projects. 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.

The major The major consists of ten term courses beyond the introductory prerequisites (THST 110, 111), one of which must be THST 210. 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.

Credit/D/Fail courses For the Class of 2016 and subsequent classes, courses taken Credit/D/Fail may not be counted toward the requirements of the major in Theater Studies.

Senior requirement Majors satisfy the senior requirement in one of two ways. They may undertake a one-term senior project (THST 491) or, with the approval of the director of undergraduate studies, they may take one of the dramatic literature or theater history courses 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 491. 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. Proposals for senior project productions will normally be approved only for students who have previously served as producers of other students’ senior projects.

Courses in the School of Drama 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, with permission of the instructor. For a description of these courses, see the director of undergraduate studies. Meeting times and places are posted in Online Course Information (http://www.yale.edu/oci).

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.

Requirements of the Major

Prerequisites THST 110, 111
Number of courses 10 term courses beyond prereqs (incl senior req)
Specific course required THST 210
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 491)

Core Curriculum in Theater Studies

THST 110a and THST 111b, Survey of Theater and Drama William Fleming and Dominika Laster
An introduction to theater history, plays, aesthetic theories, and performance techniques. From antiquity to the Restoration period in the fall and continuing through to the present in the spring. HU

*THST 210a, Introduction to Performance Concepts Deb Margolin and staff
A studio introduction to the basic techniques of acting, including the actor’s vocabulary and performance tools. Improvisation, performance exercises, and scene work based
Drama and Dance: History, Theory, Literature

*THST 099a / FILM 045a, Dance on Film  Emily Coates  
An examination of dance on film from c. 1920 to the present, including early Hollywood pictures, the rise of Bollywood, avant-garde films of the postwar period, translations of stage choreography to screen, music videos, and dance film festivals. The impact of industry, circulation and audience, aesthetic lineages, and craft in the union of the two mediums. Students develop an original short film for a final class project. No prior dance or filmmaking experience necessary. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program.  HU

*THST 236a / MUSI 246a, American Musical Theater History  Daniel Egan  
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.  WR, HU  RP

*THST 265a / FREN 265a, French Classical Tragedy  Christopher Semk  
Comprehensive survey of seventeenth-century French tragedy, with an emphasis on performance. Stylistic features and major themes of tragedy; the material conditions of early modern performance; the art of declamation; recent productions, including both those that seek to reproduce early modern practices and those that modernize the plays. Works by Bernard, Corneille, Racine, and Rotrou.  LS, HU

*THST 289b / EALL 222b, Kabuki Theater from Its Origins to the Present  William Fleming  
The conventions, repertoire, and historical development of kabuki theater since its origins in the early seventeenth century. The significance of the popular stage in early modern society; kabuki’s influence on popular literature and adaptation into other media; the role of censorship and politics. No knowledge of Japanese required. Formerly JAPN 290.  HU

*THST 291a / ENGL 288a, Eloquence: Classical Rhetoric for Modern Media  Joseph Roach  
Classical rhetoric, from Demosthenes to the digital age: the theory and practice of persuasive public speaking and speech writing. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

*THST 295b, Performance Studies  Joseph Roach  
An introduction to the field of performance studies, with attention to events in music, theater, dance, performance art, and social practice. Live performances interpreted using strategies of observer-participant analysis. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU
*THST 330b / AMST 331b / FILM 428b / MUSI 330b, Alternate Realities and Musical Multimedia  Lynda Paul
The role of music and other kinds of sound in the creation and experience of alternate realities, from video games to theme parks and theatrical multimedia. Perspectives from recent work in film and media studies, theater and performance studies, anthropology, cognitive science, and a variety of musicological and ethnomusicological subdisciplines, such as popular music studies, opera studies, and ritual studies.  HU

*THST 348b / ENGL 383bG / LITR 275b, The Common Wealth of Drama  Murray Biggs
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.  WR, HU

THST 351b / GMST 194b / LITR 243b / MUSI 363b, Cabaret  Lynda Paul
An exploration of cabaret as both a historical and a contemporary form of musical-literary-theatrical performance. Famous historical cabarets, with a focus on Europe in the late nineteenth and early twentieth centuries; films, plays, novels, and short stories based on the genre; cabaret songs and famous performers. Analysis of works by contemporary American cabaret artists. Students collaborate to write, produce, and perform three cabaret events.  HU

*THST 369a / AFAM 369a / AMST 378a / ENGL 364a / LITR 271a, African American Theater  Staff
African American dramatic literature and theater history from the nineteenth century to the present. Key events in black theater history, including the emergence of black musical comedy, the Federal Theatre Project, and the Black Arts movement. Plays by Langston Hughes, Lorraine Hansberry, Adrienne Kennedy, August Wilson, Amiri Baraka, and others. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  WR, HU

*THST 370b / PLSH 248b, Polish Theater and Its Traditions  Krystyna Illakowicz
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 at live theater events as well as meetings with Polish theater groups and actors.  HU  Tr

*THST 380b / AMST 370b, The History of Dance  Emily Coates
An examination of major movements in the history of concert and social dance from the late nineteenth century to the present, including ballet, tap, jazz, modern, musical theater, and different cultural forms. Topics include tradition versus innovation, the influence of the African diaspora, and interculturalism. Exercises are used to illuminate analysis of the body in motion. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU
*THST 384b / FILM 440b / HUMS 242b / LITR 313b, Modernism in Northern Europe, 1880–1918  Katie Trumpener and Carolyn Sinsky
The roots of modernism in Scandinavia, Russia, Germany, and Ireland from 1880 to 1918. Experiments with artistic forms, cultural institutions, and social theories such as feminism, Marxism, and psychoanalysis. Works from experimental theater, cinema, fiction, poetry, and the visual arts. HU

*THST 391a / SAST 463a, Indian Theater, 1850 to the Present  Kedar Kulkarni
Introduction to major movements and playwrights in modern Indian theater. Focus on post-independence drama and its forms that derive from classical Indian, folk, and other sources, both indigenous and foreign. HU

*THST 398a / AMST 371a / ENGL 366a, American Experimental Theater  Marc Robinson
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. WR, HU

*THST 399a / HUMS 208a, Politics of Performance  Dominika Laster
The political strands of modern and postmodern theater and performance. Overlty political performance trends in the twentieth century, such as Soviet agitprop, Italian futurism, and the work of Bertolt Brecht, Augusto Boal, and Ngugi wa Thiong’o. Sociopolitical activism of contemporary performance artists and collectives; performative strategies of activist and resistance movements such as Madres de Plaza de Mayo, Orange Alternative, culture jamming, hactivism, and subvertising. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. HU

*THST 410b / AMST 338b / ENGL 414b / WGSS 333b, Gertrude Stein  Sam See
An exploration of Gertrude Stein’s major works, including her nonfiction prose, narrative prose fiction, verse, and drama. Special attention to Stein’s modernist legacy and its divergence from the “Men of 1914” strain of modernism. Several class sessions at the Beinecke Library for inspection and discussion of archival materials. HU

*THST 411b / ENGL 390b, Art and the Stage in Britain  Joseph Roach
The intersection of the fine and performing arts in London and in the British provinces and colonies, from the stage designs of Inigo Jones in the seventeenth century to those of David Hockney in the twentieth and twenty-first. Survey of major styles in stage design, theatrical portraiture, theater architecture, and ephemera. Extensive use of collections in the Yale Center for British Art. WR, HU

*THST 415b / FILM 463b, Eastern European Master Directors  Dominika Laster
The theories and methods of both theater and film directors in the Eastern European tradition, Focus on directors whose research and creative work is paradigmatic of theatrical and cinematic trends in the twentieth and twenty-first centuries. The directors’ artistic visions, work with actors, texts or scripts, use of light and space, performance construction, and montage techniques. Open to junior and senior Theater
Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

*THST 416b / ENGL 384b / FILM 461b, British Cinema from Documentary to Reality Fiction  Murray Biggs
Study of twentieth-century British film and culture. Focus on four periods: the 1930s, the Second World War, the late 1950s and early 1960s, and the past thirty years. Relations between film and the social, political, and aesthetic conditions of the period. Works directed by Grierson, Jennings, Reed, Lean, Powell and Pressburger, Richardson, Reisz, Anderson, Leigh, and from Ealing Studios.  WR, HU  RP

*THST 422a, The Senses in Visual and Performance Arts  Frederick Lamp
Sensory aspects of the material arts, theater, musical and movement performance, ritual, and architectural space. Cultural translation and presentation; theories on the arts and the senses throughout history. Includes museum visits and theater attendance. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

*THST 444b, Theories of Embodiment  Jessica Berson
Examination of theories about the body and its motion. The inscription of identity on and through the body; ways in which the body resists and rewrites identity through movement. The body as a physical, social, and phenomenological entity; institutional, normative, aesthetic, and virtual bodies. Practical workshops and exercises include movement experiences. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term.  HU

Playwriting, Production, and Performance

*THST 211b, Intermediate Acting  Joan MacIntosh and staff
Continued study of acting as an art, building on performance concepts introduced in THST 210. 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 210.  HU  RP

*THST 224a / MUSI 228a, Musical Theater Performance I  Andrew Gerle
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 211 and 219, or with permission of instructor. Admission by audition only. May be repeated for credit. For audition information e-mail dan.egan@yale.edu.  HU  RP

*THST 230b, Advanced Acting and Scene Study  Deb Margolin
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. May be taken more than once. Prerequisite: THST 211.  RP

*THST 300a, The Director and the Text I  Toni Dorfman
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. Prerequisite: THST 210.  HU  RP

*THST 303b / ENGL 336b / LITR 323b, The Opera Libretto  J. D. McClatchy
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.  WR, HU

*THST 315a, Shakespeare Acted  Murray Biggs
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 audition. Preference to seniors and juniors; open to nonmajors.  HU  RP

*THST 318b / MUSI 322b, Analyzing, Directing, and Performing Early Opera
Grant Herreid and Ellen Rosand
Study of a seventeenth-century Venetian opera, with attention to 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 211 and 219. Admission by audition only. May be repeated for credit. For audition information e-mail grant.herreid@yale.edu.  HU  RP

*THST 320a / ENGL 453a, Playwriting  Donald Margulies
A seminar and workshop in writing for the stage. Readings include modern American and British plays by Pinter, Mamet, Churchill, Kushner, Williams, and Wilder. Emphasis on play structure, character, and conflict. In addition to weekly exercises, students write a one-act play.

*THST 321a, Production Seminar: Playwriting  Deb Margolin
A seminar and workshop in playwriting. Emphasis 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.  RP

*THST 322b, Advanced Playwriting  Deb Margolin
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 320 or 321, or a college seminar in playwriting, or equivalent experience.  RP
*THST 324b, Playwright-Director Laboratory  Toni Dorfman
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 210; for directors: THST 300; for playwrights: THST 320, 321; or with permission of instructor.  RP

*THST 327b / ENGL 468b, Advanced Playwriting Workshop  Donald Margulies
An intensive workshop in advanced playwriting techniques. Discussion of works by contemporary playwrights. In addition to weekly exercises, students write a full-length play. Prerequisite: an intermediate course in playwriting or screenwriting, or with permission of the instructor.  RP

*THST 335a / AFST 435a, West African Dance: Traditional to Contemporary  Lacina Coulibaly
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.  HU  RP

*THST 341b, Comedy in Performance  Daniel Larlham
Comic performance explored through discussion, exercises, and collaborative projects, with an emphasis on improvisation, playfulness, and physical engagement. Use of circus, commedia dell’arte, clowning, and other body-based techniques to extend physical and imaginative capabilities and expressiveness. Experimentation with the language of comedic storytelling through devised performance projects. Admission by audition.

*THST 376b, Digital Media in Performance  Elise Morrison
Practical and theoretical innovations in contemporary theater and performance brought about by new technologies and forms of information exchange in the late twentieth and early twenty-first centuries. Exploration of how the live body on stage is reconfigured and reimagined through technological intervention. Priority to majors in Theater Studies, in Art, and in Computing and the Arts. Students must preregister during the reading period of the preceding term.  HU

*THST 387b, Advanced Dance Composition  Susan Rethorst
A seminar and workshop in dance-theater composition. Focus on the history of dance composition, 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.  HU  RP

*THST 400b, Performance and the Moving Image  Emily Coates and staff
The boundaries between live and mediated performance explored through the creation of an original work that draws on methods in experimental theater, dance, and video art. Questions concerning live versus mediated bodies, the multiplication of time, space, and perspective through technology, and the development of moving images. The final production includes both a live performance and an art video. Admission by application in December. Open to students of all levels and majors.  WR, HU
III. Subjects of Instruction

*THST 404b, Elements of Composition for the Stage  Robert Woodruff
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. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. Prerequisites: THST 210 and 300, or with permission of instructor. HU

*THST 407b, Music and Theater of Appalachia  Annette Jolles
Production of a new musical exploring the people and music of Appalachia in the early twentieth century. Study of the history, mores, and culture of the period as preparation for staging the play. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. HU RP

*THST 408a / FREN 323a, Actor and the Text: The Misanthrope  Toni Dorfman
Critical and practical exploration of Molière’s Misanthrope, culminating in a public performance. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. HU

*THST 412bG, Libretto Writing for Musical Theater  Rachel Sheinkin
Practical instruction in book writing for musical theater combined with close reading of historical and contemporary examples of the genre. Weekly exercises focus on issues of craft, creativity, and collaboration. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. RP

*THST 414a, Lyric Writing for Musical Theater  Michael Korie
The craft of lyric writing in musical theater, opera, and crossover works. Both historical models and new composition used as objects of study. Analysis of song form and placement, and of lyric for character, tone, and diction. Creation of lyrics in context. May not be repeated for credit. Open to junior and senior Theater Studies majors, and to nonmajors with permission of the instructor. Students must preregister during the reading period of the preceding term. HU RP

*THST 418a, Actors and the Art of Acting  Daniel Larlham
Investigation of the actor’s various modes of concentration, imaginative projection, and physical awareness. A laboratory environment combines rigorous conceptual analysis and practical experiment. Intellectual and physical engagement with texts and techniques of acting theory from Quintilian and Zeami to Boal and Anne Bogart. Admission by audition during the first class session. Preference to Theater Studies majors. Prerequisites: THST 210, 211, and 230, or with permission of instructor. RP

Special Projects

*THST 471a and THST 472b, Directed Independent Study  Daniel Larlham and Dominika Laster
An independent study should generally conform to the standards and procedures of the senior project, THST 491, 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 fifteen pages, worth about half the final grade.
Although the project’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 ten days after the
performance closes, and no later than the first day of the final examination period.
An essay project entails substantial reading, at least four meetings with the adviser,
and a paper or papers totaling at least twenty pages. A playwriting project normally
requires twenty 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 210 and one seminar.

*THST 473a and THST 474b / ENGL 438a and ENGL 439b, Directed Independent
Study: Eugene O’Neill  Murray Biggs
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. Open to junior and senior Theater Studies
majors, and to nonmajors with permission of the instructor. Students must preregister
during the reading period of the preceding term.

*THST 491a or b, Senior Project in Theater Studies  Staff
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.

Urban Studies

FACULTY ASSOCIATED WITH URBAN STUDIES

Professors  Katerina Clark (Comparative Literature, Slavic Languages & Literatures),
Kathryn Dudley (Anthropology, American Studies), Keller Easterling (School of
Architecture), Dolores Hayden (School of Architecture, American Studies), Matthew
Jacobson (History, American Studies), Jennifer Klein (History), Alan Plattus (School
of Architecture), Douglas Rae (School of Management, Political Science), Helen Siu
(Anthropology), Robert Solomon (Law School), Jay Winter (History)

Associate Professor  Michael Rowe (School of Medicine)

Lecturers  Karla Britton (Architecture), Gordon Geballe (Forestry & Environmental
Studies), Jay Gitlin (History), Cynthia Horan (Political Science), Virginia Jewiss
(Humanities)

Courses related to urban studies may be found in a number of different departments
and programs, particularly American Studies, Anthropology, Architecture,
Environmental Studies, 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."

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 the seminar Poverty, Politics, and Policy in the American City (PLSC 280) 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.

Women’s, Gender, and Sexuality Studies

Director of undergraduate studies: Joseph Fischel, 319 WLH, 432-1291, joseph.fischel@yale.edu; wgss.yale.edu

FACULTY ASSOCIATED WITH THE PROGRAM OF WOMEN’S, GENDER, AND SEXUALITY STUDIES

**Professors** Julia Adams (Sociology), Elizabeth Alexander (African American Studies), Carol Armstrong (History of Art), Hannah Brueckner (Sociology), Jill Campbell (English), Hazel Carby (African American Studies, American Studies), Kang-i Sun Chang (East Asian Languages & Literatures), George Chauncey (History), Kamari Clarke (African American Studies, Anthropology), Deborah Davis (Sociology, East Asian Studies), Ron Eyerman (Sociology), Glenda Gilmore (History), Jacqueline Goldsby (African American Studies, English), Inderpal Grewal (American Studies, Anthropology, Women’s, Gender, & Sexuality Studies), Dolores Hayden (School of Architecture, American Studies), Margaret Homans (English, Women’s, Gender, & Sexuality Studies), Marcia Inhorn (Anthropology, Global Affairs), Jennifer Klein (History), Marianne LaFrance (Psychology, Women’s, Gender, & Sexuality Studies), Mary Lui (American Studies, History), Kobena Mercer (History of Art, African American Studies), Joanne Meyerowitz (American Studies, History), Priyamvada Natarajan (Astronomy), Sally Promey (American Studies, Institute of Sacred Music), Frances Rosenbluth (Political Science), Cynthia Russett (History), Alicia Schmidt Camacho (American Studies), William Summers (Molecular Biophysics & Biochemistry), John Treat (East Asian Languages & Literatures), Michael Warner (English, American Studies), Laura Wexler (American Studies, Women’s, Gender, & Sexuality Studies)

**Associate Professors** Moira Fradinger (Comparative Literature), Janet Henrich (School of Medicine), Kathryn Lofton (American Studies, Religious Studies), Deb Margolin (Adjunct) (Theater Studies), Karen Nakamura (Anthropology, East Asian Studies), Naomi Rogers (History of Medicine, History), Sarah Weiss (Music)

**Assistant Professors** Jafari Allen (African American Studies, Anthropology), Rene Almeling (Sociology), GerShun Avilez (African American Studies), Crystal Feimster
(African American Studies), Joseph Fischel (Women’s, Gender, & Sexuality Studies),
Marcus Hunter (Sociology), Sam See (English, American Studies)

**Senior Lecturers**
Geetanjali Singh Chanda (Women’s, Gender, & Sexuality Studies),
Kathleen Cleaver (African American Studies), Becky Conekin (History), Ron Gregg
(Film Studies), Rebecca Tannenbaum (History), Maria Trumpler (Women’s, Gender, &
Sexuality Studies)

**Lecturers**
Melanie Boyd (Women’s, Gender, & Sexuality Studies), George Syrimis
(Hellenic Studies)

Genders and sexualities are powerful organizing forces: they shape identities and
institutions, nations and economies, cultures and political systems. Careful study
of gender and sexuality thus explains crucial aspects of our everyday lives on both
intimate and global scales. The scholarship in Women’s, Gender, and Sexuality Studies
is interdisciplinary and wide-ranging, drawing on history, literature, cultural studies,
social sciences, and natural science to study genders and sexualities as they intersect
with race, ethnicity, class, nationality, transnational processes, disability, and religion.

Students majoring in Women’s, Gender, and Sexuality Studies take a series of core
courses, develop an individual area of concentration, and write a two-term senior essay.
The program encourages work that is interdisciplinary, intersectional, international,
and transnational. Individual concentrations evolve along with students’ intellectual
growth and academic expertise. Recent examples of concentrations include literature
and queer aesthetics; transnational feminist practices; the intellectual history of civil
rights activism; AIDS health policies; gender, religion, and international NGOs;
women’s health; food, sexuality, and lesbian community; and gender and sexuality in
early education.

**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, including one gateway course, one intermediate course, one transnational
perspectives course, one methodology course, the junior sequence, and the senior
sequence. The area of concentration consists of at least five courses, the majority of
which should be drawn from program offerings. Courses for the area of concentration
may also fulfill the requirements in transnational perspectives and methodology.
Substitutions to the major requirements may be made only with the written permission
of the director of undergraduate studies.

**Gateway course**
The gateway courses (WGSS 110, WGSS 111, 115, 120, 200, and
201) offer broad introductions to the fields of women’s, gender, and sexuality
studies. Potential majors should aim to take a gateway course during the freshman or
sophomore year.

**Intermediate course**
There are two intermediate courses: Globalizing Gender
(WGSS 295) and Introduction to LGBT Studies (WGSS 296). Majors are encouraged
to take both but need take only one, preferably after the gateway course and prior to the
junior sequence.

**Transnational perspectives course**
Ideally, each student’s course work engages a
broad diversity of cultural contexts, ethnicities, and global locations. Such study
illuminates the links among nations, states, cultures, regions, and global locations.
Most students take several classes that focus on genders and sexualities outside the U.S. context; majors are required to take at least one. (WGSS 295 cannot fulfill both the transnational perspectives and the intermediate requirements.)

**Methodology course** Given its interdisciplinary nature, Women’s, Gender, and Sexuality Studies necessarily relies on a wide range of methodologies: literary criticism, ethnography, visual analysis, historiography, and quantitative data analysis, among others. Each student is expected to acquire competence in at least one methodology relevant to his or her own concentration and planned senior essay. In preparation for the senior essay, students are advised to complete the methods requirement in the junior year.

**Junior sequence** The two-term junior sequence consists of Feminist and Queer Theory (WGSS 340) and Junior Seminar: Theory and Method (WGSS 398). All students must take both courses. (Individualized alternatives are found for students who study abroad during the junior year.)

**Senior sequence and senior essay** The two-term senior sequence consists of the Senior Colloquium (WGSS 490), in which students begin researching and writing a senior essay, followed by the Senior Essay (WGSS 491), in which students complete the essay. The senior essay is developed and written under the guidance and supervision of a WGSS-affiliated faculty member with expertise in the area of concentration. Students are expected to meet with their essay advisers on a regular basis.

**Requirements of the major**

**Prerequisites** None

**Number of courses** 12 term courses (incl senior req)

**Specific courses required** WGSS 340, 398

**Distribution of courses** 1 gateway course; 1 intermediate course; 1 transnational perspectives course; 1 methodology course; 5 electives in area of concentration

**Senior requirement** Senior colloq and senior essay (WGSS 490, 491)

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**Gateway Courses**

**WGSS 115b / AMST 115b / ANTH 115b, Gender in a Transnational World**

Inderpal Grewal

Gender and sex as constituted in modern nation-states through the divisions between domestic and foreign spheres. Ways in which the interactions between international and national issues shape gender and sexuality in everyday life. Topics include science, race, and empire; nation and identity formation; media, representation, and art practices; and migration, displacement, and globalization. So

**WGSS 120a, Women, Food, and Culture**

Maria Trumpler

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. So
**WGSS 200a / AMST 135a / HIST 127a, U.S. Lesbian and Gay History**  
George Chauncey  
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 trans*gender*ism; 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.  

**WGSS 201b / AMST 271b / HIST 171b, Women in Modern America**  
Joanne Meyerowitz  
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.  

**Intermediate Courses**

**WGSS 295a, Globalizing Gender**  
Geetanjali Singh Chanda  
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 296b, Introduction to LGBT Studies**  
Joseph Fischel  
Sexuality explored as a historical production. Focus on the dynamic, contested relationship between the concepts of gender and sexuality. Investigation of sexuality at the sites of racial difference, psychoanalysis, AIDS, transnationality, U.S. law, publicity, and politics. Includes guest lectures and four screenings on Thursday evenings.  

**Junior Seminars**

**WGSS 340a / ENGL 357a, Feminist and Queer Theory**  
Margaret Homans  
Historical survey of feminist and queer theory from the Enlightenment to the present, with readings from key British, French, and American works. Focus on the foundations and development of contemporary theory. Shared intellectual origins and concepts, as well as divergences and conflicts, among different ways of approaching gender and sexuality.  

**WGSS 398b, Junior Seminar: Theory and Method**  
Joseph Fischel and Inderpal Grewal  
An interdisciplinary approach to studying gender and sexuality. Exploration of a range of relevant theoretical frameworks and methodologies. Prepares students for the senior essay.
Senior Courses

*WGSS 490a or b, The Senior Colloquium  Joseph Fischel
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  Joseph Fischel
Independent research on, and writing of, the senior essay.

Electives

*WGSS 032b, History of Sexuality  Maria Trumpler
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. WR, HU

*WGSS 045b, Cross-Cultural Narratives of Desire  William Summers
Shifting notions of gender and sexuality; intersections with race, class, and culture. How desire is recognized, represented, and understood in diverse cultures and subcultures, especially as it relates to sexual minorities. Accounts of same-sex desire and love in Asian cultures from ancient times to the present. Analysis of traditional cultural contexts, artistic styles, and cross-cultural interpretations. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. HU

WGSS 211b / AMST 211b / ENGL 293b / ER&M 210b, Race and Gender in American Literature  Birgit Brander Rasmussen
The role of literature in constructing representations of America as an idea, a nation, a colonial settlement, and a participant in world affairs. What kind of place America is and who belongs there; the consequences of America’s history for its national literature. Emphasis on the ways texts represent and contest social concepts of race and gender difference. HU

WGSS 226bG / ARCG 223bG / NELC 220bG, Lives in Ancient Egypt  Colleen Manassa
Introduction to the social history of ancient Egypt from 3,100 to 30 B.C.E. Focus on the lives of particular individuals attested in the textual and archaeological record, from pharaohs and queens to artists, soldiers, and farmers. Reading of primary sources in translation; course projects integrate ancient objects in Yale collections. HU

*WGSS 234a / ANTH 234a, Disability and Culture  Karen Nakamura
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. SO RP

*WGSS 245a / FILM 243a / HUMS 206a / LITR 312a / MGRK 218a, Family in Greek Literature and Film  George Syrimis
The structure and multiple appropriations of the family unit, with a focus on the Greek tradition. The influence of aesthetic forms, including folk literature, short stories, novels, and film, and of political ideologies such as nationalism, Marxism, and totalitarianism. Issues related to gender, sibling rivalry, dowries and other economic
factors, political allegories, feminism, and sexual and social violence both within and beyond the family.  \textit{WR, HU} \textit{Tr}

*WGSS 261a / FILM 421a / HUMS 414a / MGRK 213a, Cinema of Migration  
\textit{George Syrimis}  
Cinematic representations of the migrant experience in the past thirty years, with some emphasis on the post–Cold War period. Focus on southeastern Europe and its migrant populations. Topics include identity, gender, sexual exploitation and violence, and nationalism and ethnicity.  \textit{WR, HU} \textit{Tr}

WGSS 272b / AMST 272b / ER&M 282b / HIST 183b, Asian American History, 1800 to the Present  
\textit{Mary Lui}  
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.  \textit{HU}

*WGSS 314a / EP&E 267a / SOCY 216a, Social Movements  
\textit{Ron Eyerman}  
An introduction to sociological perspectives on social movements and collective action, exploring civil rights, student movements, global justice, nationalism, and radical fundamentalism.  \textit{SO}

*WGSS 327b / ER&M 327b / MMES 311b, Constructing the Self: From Autobiography to Facebook  
\textit{Getanjanji Singh Chanda}  
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; autobiography as a horizontal community formation.  \textit{WR, HU}

*WGSS 328a / ER&M 328a / SAST 458a, Popular Culture and Postcolonial India  
\textit{Getanjanji Singh Chanda}  
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.  \textit{WR}

WGSS 330b / HIST 352b / SAST 223b, Reinventing Gender in Modern India  
\textit{Tanika Sarkar}  
A study of changing gender norms and practices in India in the nineteenth and early twentieth centuries. Widow immolation and remarriage, child marriage and the age of consent, arranged vs. love-based marriages, education and domestic roles, religious life, sex workers, female labor in mills and in agriculture, caste and tribes, gender behavior in political life.  \textit{WR, HU}

*WGSS 333b / AMST 338b / ENGL 414b / THST 410b, Gertrude Stein  
\textit{Sam See}  
An exploration of Gertrude Stein’s major works, including her nonfiction prose, narrative prose fiction, verse, and drama. Special attention to Stein’s modernist legacy and its divergence from the "Men of 1914" strain of modernism. Several class sessions at the Beinecke Library for inspection and discussion of archival materials.  \textit{HU}
*WGSS 343b / AFAM 352b / AMST 438b / ER&M 291b / LITR 293b, 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.  HU

*WGSS 354a / HIST 191Ja, Women, Gender, and Grassroots Politics in the United States after World War II  Jennifer Klein
American politics and grassroots social movements from 1945 to the present explored through women’s activism and through gender politics more broadly. Ideas about gender identities, gender roles, and family in the shaping of social movements; strategies used on the local, regional, national, and international levels. Connections between organizing and policy, public and private, state and family, and migration, immigration, and empire.  WR, HU

*WGSS 371b / AMST 322b / ER&M 323b, Gender, Family, and Cultural Identity in Asia and the United States  Gceanjali Singh Chanda
A cross-cultural dialogue focusing on family, gender, and identity. 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.  WR, HU

*WGSS 372b, Theory and Politics of Sexual Consent  Joseph Fischel
Political, legal, and feminist theory and critiques of the concept of sexual consent. Topics such as sex work, nonnormative sex, and sex across age differences explored through film, autobiography, literature, queer commentary, and legal theory. U.S. and Connecticut legal cases regarding sexual violence and assault.  SO

*WGSS 380a / AMST 402a / ANTH 302a / FILM 324a, Gender and Sexuality in Media and Popular Culture  Laura Wexler
Investigation of visual media and popular culture in the United States and transnationally. Gender, race, class, and sexuality in relation to the production, circulation, consumption, and reception of media culture. Focus on theories of media and the visual. Significant lab component in which students use media technologies to make and illustrate theoretical arguments.  HU

*WGSS 402bG / EALL 365bG, Homosexual Desire in East Asian Literatures  John Treat
Survey of homosexual themes in traditional and modern Chinese, Japanese, and Korean literature. Prerequisite: WGSS 296. Formerly EALL 330.  HU  Tr

*WGSS 406b / AFAM 375b / AMST 362b / ER&M 406b, Gender in Caribbean Women’s and Latina Literature  Dixa Ramirez
Gender in the Caribbean and its diaspora explored through women’s literature and other cultural production. Ways in which gender has overlapped with other categories such as race and class; its effects on narratives of colonialism, imperialism, travel, and migration. The marginalization of Caribbean women’s cultural labor.  HU

*WGSS 408a / ENGL 350a / HUMS 288a, Queer Mythologies  Sam See
The use of mythology and mythopoeia (myth-making) by twentieth-century British and American writers to develop queer literary and historical communities. Texts include classical, biblical, Yorùbá, and Aztec myths as background for readings in
modernist and postmodernist literature. Authors include Sigmund Freud, Hilda Doolittle, Jeanette Winterson, Tony Kushner, and Tarell Alvin McRaney. WR, HU

*WGSS 411a / AFAM 411a / AMST 426a / ER&M 413a, The Fiction of Imaginary or Iminent Futures  Hazel Carby
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. HU

*WGSS 428b / HIST 169jb, Labor and Democracy in the Twentieth-Century United States  Jennifer Klein
A history of work, labor relations, social movements, and labor policy in the United States since 1890; the history of class politics and economic development in modern America. Racial and gender hierarchies from farms to factories to sweatshops; labor rights as part of broader struggles over citizenship rights and democracy. Topics include various forms of labor organizing and protest, limits and possibilities of solidarity, braceros and migrant workers, civil rights, the Cold War, politics and policy, and Wal-Mart. WR, HU

*WGSS 431b / ANTH 451bG, Intersectionality and Women’s Health  Marcia Inhorn
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, and gender. SO

*WGSS 438b / AFAM 414b, Women, Law, and the Black Freedom Movement  Kathleen Cleaver
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. SO

*WGSS 452a / AMST 473a, Affect in the Writing of History  Laura Wexler and Michael Amico
Methods for analyzing, interpreting, and writing about emotion experienced in the past. Focus on ways in which lived sexuality has shaped the feelings of people and the emotional tone of events in history. Psychoanalytical and affect theories as tools for studying the ephemeral, the ineffable, and what can be seen only in emotional reflections. Broader understandings of evidence and causality in historical analysis. HU

*WGSS 454a / AMST 352a / FILM 377a, Postwar Queer Avant-Garde Film  Ron Gregg
Production, exhibition, and aesthetic practices in postwar queer underground cinema in the United States as it developed from the 1930s to the early 1970s. The films of gay or bisexual filmmakers such as Willard Maas, Andy Warhol, Jack Smith, Kenneth Anger, and José Rodriguez-Soltero; the work of antiheteronormative female filmmakers such as Barbara Rubin and Marie Menken; the links between avant-garde cinema, theater, and other arts, as well as the political context. HU
*WGSS 459bG / ANTH 455bG, Masculinity and Men’s Health  Marcia Inhorn
Ethnographic approaches to masculinity and men’s health around the globe. Issues of ethnographic research design and methodology; interdisciplinary theories of masculinity; contributions of men’s health studies from Western and non-Western sites to social theory, ethnographic scholarship, and health policy.  SO  RP

*WGSS 466a / PSYC 414a, Gender Images: A Psychological Perspective
Marianne LaFrance
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.  SO

*WGSS 471a or b, Independent Directed Study  Joseph Fischel
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 along with a letter of support from the adviser. The prospectus must include a description of the research area, a core bibliography, and the expected sequence and scope of written assignments.
THE WORK OF YALE UNIVERSITY

The work of Yale University is carried on in the following schools:

**Yale College** Est. 1701. Courses in humanities, social sciences, natural sciences, mathematical and computer sciences, and engineering. Bachelor of Arts (B.A.), Bachelor of Science (B.S.). 203 432-9300  [http://admissions.yale.edu](http://admissions.yale.edu)

**Graduate School of Arts and Sciences** Est. 1847. Courses for college graduates. Master of Arts (M.A.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Doctor of Philosophy (Ph.D.). 203 432-2771  [www.yale.edu/graduateschool](http://www.yale.edu/graduateschool)

**School of Medicine** Est. 1810. Courses for college graduates and students who have completed requisite training in approved institutions. Doctor of Medicine (M.D.). Postgraduate study in the basic sciences and clinical subjects. Five-year combined program leading to Doctor of Medicine and Master of Health Science (M.D./M.H.S.). Combined program with the Graduate School of Arts and Sciences leading to Doctor of Medicine and Doctor of Philosophy (M.D./Ph.D.). Master of Medical Science (M.M.Sc.) from the Physician Associate Program. 203 785-2643  [http://medicine.yale.edu/education/admissions](http://medicine.yale.edu/education/admissions)

**Divinity School** Est. 1822. Courses for college graduates. Master of Divinity (M.Div.), Master of Arts in Religion (M.A.R.). Individuals with an M.Div. degree may apply for the program leading to the degree of Master of Sacred Theology (S.T.M.). 203 432-5360  [http://divinity.yale.edu](http://divinity.yale.edu)

**Law School** Est. 1824. Courses for college graduates. Juris Doctor (J.D.). Graduate Programs: Master of Laws (LL.M.), Doctor of the Science of Law (J.S.D.), Master of Studies in Law (M.S.L.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences. 203 432-4995  [www.law.yale.edu](http://www.law.yale.edu)

**School of Engineering & Applied Science** Est. 1852. Courses for college graduates. Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences. 203 432-4250  [http://seas.yale.edu](http://seas.yale.edu)

**School of Art** Est. 1869. Professional courses for college and art school graduates. Master of Fine Arts (M.F.A.). 203 432-2600  [http://art.yale.edu](http://art.yale.edu)


**School of Forestry & Environmental Studies** Est. 1900. Courses for college graduates. Master of Forestry (M.F.), Master of Forest Science (M.F.S.), Master of Environmental Science (M.E.Sc.), Master of Environmental Management (M.E.M.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences. 800 825-0330  [http://environment.yale.edu](http://environment.yale.edu)
School of Public Health  Est. 1915. Courses for college graduates. Master of Public Health (M.P.H.). Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.  203 785-2844  http://publichealth.yale.edu

School of Architecture  Est. 1916. Courses for college graduates. Professional degree: Master of Architecture (M.Arch.); nonprofessional degree: Master of Environmental Design (M.E.D.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.  203 432-2296  www.architecture.yale.edu

School of Nursing  Est. 1923. Courses for college graduates. Master of Science in Nursing (M.S.N.), Post Master’s Certificate, Doctor of Nursing Practice (D.N.P.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.  203 785-2389  http://nursing.yale.edu


School of Management  Est. 1976. Courses for college graduates. Master of Business Administration (M.B.A.), Master of Advanced Management (M.A.M.). Doctor of Philosophy (Ph.D.) awarded by the Graduate School of Arts and Sciences.  http://mba.yale.edu
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