The Course Announcement is intended to provide only general information about Brown University; including courses offered, and it is not in any manner contractually binding.

The information contained herein is subject to revision and change at any time.

EQUAL OPPORTUNITY AND NONDISCRIMINATION

Brown University does not discriminate on the basis of sex, race, color, religion, age, handicap, status as a veteran, national or ethnic origin, or sexual orientation in the administration of its educational policies, admission policies, scholarship and loan programs, or other school-administered programs.
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### Academic Calendar

#### Summer 2020
- **March 30 - June 24, 2020**
  - **Mon. - Wed.** Registration for Summer courses for continuing Brown undergraduates opens at 9:00 a.m. on Monday March 30 and remains open until Wednesday June 24 at 5:00 p.m.
- **June 22, 2020**
  - **Mon.** Summer Session begins.
- **June 24, 2020**
  - **Wed.** Last day to change courses. (All students MUST be in their registered courses by Thursday, June 25.)
- **July 3, 2020**
  - **Fri.** Independence Day holiday. No University exercises.
- **July 6, 2020**
  - **Mon.** Last day to change grade options.
- **Aug 1 - 4, 2020**
  - **Sat. - Tues.** Reading period.
- **August 5 - Aug 7, 2020**
  - **Wed. - Fri.** Final examination period.
  - **Aug 7, 2020**
    - **Fri.** Summer Session ends.

#### Fall 2020
- **July 27, 2020**
  - **Mon.** Courses@Brown will be relaunched with Fall 2020 course offerings.
- **July 31, 2020**
  - **Fri.** Date by which advisors must approve sophomore submitted concentrations in ASK to avoid having a No Concentration hold placed against the student's Banner registration. (5:00 pm deadline).
- **August 10, 2020**
  - **Mon.** Pre-registration for Fall 2020 will begin. Students will receive an email communication with instructions on how to proceed with pre-registration in late July.
- **August 17, 2020**
  - **Mon.** Add/drop opens for Fall Term, 2020-21 for undergraduate students semester level 07 and above and all graduate students at noon EDT. Registration remains open until Tuesday September 22.
- **August 19, 2020**
  - **Wed.** Add/drop opens for Fall Term, 2020-21 for undergraduate students semester level 05-06 at noon EDT. (Students are unable to register for 5th semester unless approved concentration is filed). Registration remains open until Tuesday September 22.
- **August 21, 2020**
  - **Thurs.** Add/drop opens for Fall Term, 2020-21 for undergraduate students semester level 04 and below at noon EDT. Registration remains open until Tuesday September 22.
- **August 22, 2020**
  - **Fri.** Add/drop for Fall Term 2020-21 continues until Tuesday September 22 at 5:00 PM.
- **Sept. 2, 2020**
  - **Wed.** Beginning of Fall 2020 Quiet Period - All residential students must be on campus.
- **Sept. 8, 2020**
  - **Tues.** Opening Convocation at noon.
Dec. 4, 2020 Fri. Last day to drop a course (5:00 p.m. deadline) or to request an incomplete from an instructor.

Dec. 4, 2020 Fri. UG CONCENTRATIONS: Last day for advisors to approve second or third concentrations in ASK for students in their penultimate semester (typically the 7th semester) who are declaring a second/third concentration (5:00 p.m. deadline). *Any declarations not approved and recorded in Banner by the Office of the Registrar by the 5:00 p.m. deadline will not be honored. Last day to initiate a Course Performance Report via ASK.

Dec. 4, 2020 Fri. UG CERTIFICATES: Last day for students in their ante-penultimate (typically 6th) semester to declare an undergraduate certificate in ASK.

Dec. 5, 2020 Sat. Last day for approved 7th (or penultimate) semester undergraduates in eligible concentrations to submit writing completed in the concentration in ASK to complete part II of the writing requirement. Concentration advisors must approved submitted writing in ASK by the last day of the semester.

Dec. 7 - 11, 2020 Mon. - Fri. Remote Exam Period

Winter/Spring 2021


Jan. 18, 2021 Mon. Martin Luther King, Jr. holiday. No University exercises.


Feb. 2, 2021 Tues. Last day to add a course without a fee. (5:00 p.m. deadline) Banner web will be taken down for approximately one hour. Once relaunched, all course adds require Instructor override and will be charged a late fee of $15 per course.


Feb. 17, 2021 Wed. Classes resume. Last day to add a course (includes late fee), change from audit to credit, or change a grade option declaration (5:00 p.m. deadline).

March 5, 2021 Fri. Mid-semester deadline. Last day to change from credit to audit in a course (5:00 p.m. deadline).

March 19, 2021 Fri. Students on serious warning who wish to drop a course after this date must meet with an academic dean for advising and to obtain a drop code.

March 22, 2021 Mon. Date by which sophomores entering their 5th semester must file their concentration declaration forms via ASK to avoid having a No Concentration hold placed against their Banner registration. (5:00 p.m. deadline).

April 1, 2021 Thurs. Deadline for students currently on non-medical leave to apply for readmission for Semester I.

April 2, 2021 Fri. Deadline for submission of proposals for College Curriculum Council-approved undergraduate group study projects (GISPs), independent study projects, and internships for credit for Semester I.

April 9, 2021 Fri. Seniors: Honors recommendations from academic departments due (5:00 p.m. deadline). Please have your work in your committee’s hands well before this date.

April 9, 2021 Fri. University Holiday. No University exercises.

Apr. 12, 2021 Mon. Classes resume. Beginning of Remote Reading Period (optional and at discretion of instructor).

April 16, 2021 Fri. Last day to drop a course (5:00 p.m. deadline) or to request an incomplete from an instructor.

April 16, 2021 Fri. UG CONCENTRATIONS: Last day for advisors to approve second or third concentrations in ASK for students in their penultimate semester (typically the 7th semester) who are declaring a second/third concentration (5:00 p.m. deadline). *Any declarations not advisor approved and recorded in Banner by the Office of the Registrar by the 5:00 p.m. deadline will not be honored. Last day to initiate a Course Performance Report via ASK.

April 17, 2021 Sat. Last day for approved 7th (or penultimate) semester undergraduates in eligible concentrations to submit writing completed in the concentration in ASK to complete part II of the writing requirement. Concentration advisors must approved submitted writing in ASK by the last day of the semester.

April 19 - 23, 2021 Mon. - Fri. Remote Exam Period


May 12, 2021 Wed. Classes for the Summer term begin.

May 25, 2021 Tues. Last day to add a course without a fee. (5:00 p.m. deadline) Banner web will be taken down for approximately one hour. Once relaunched, all course adds require Instructor override and will be charged a late fee of $15 per course.


June 1, 2021 Tues. Classes resume.

June 9, 2021 Wed. Last day to add a course (includes late fee), change from audit to credit, or change a grade option declaration (5:00 p.m. deadline).
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General Regulations

General academic requirements

Undergraduate degrees:
Information regarding general academic degree requirements are listed under 'The College' section of the University Bulletin as well as on the respective websites of the Office of the Registrar (http://www.brown.edu/about/administration/registrar/degree-guidelines-0/college/) and the Dean of the College (http://brown.edu/Administration/Dean_of_the_College/degree)/

Advanced degrees:
Information regarding Advanced degree requirements for specific academic programs are listed on the Graduate School (http://www.brown.edu/academics/degree-granting/) website. Information regarding general and overall guidelines for advanced degrees are also listed on the Office of the Registrar (http://www.brown.edu/about/administration/registrar/degree-guidelines-0/graduate-school/) website.

Enrollment and course registration

Instructions about enrollment will be sent via e-mail prior to the opening of each semester to all students. To complete enrollment, all requirements of the pertinent administrative offices of the University must be met, including registration for courses, payment of accounts, and arrangements for housing as appropriate. Fees will be charged for failure to meet established deadlines. All students must complete enrollment in order to be eligible to remain at the University.

Students are urged to note carefully the instructions provided at registration in order to assure eligibility for enrollment, proper registration in courses, and to avoid unnecessary payment of late registration and Change of Course fees. All registration materials and/or processes are considered official university documents. Any falsification of signatures or other tampering with such forms/processes constitutes a violation of the Academic Code.

All registration-related deadlines for each semester are listed in the ‘Academic Calendar’ section of the Bulletin and also on the Office of the Registrar website as well as answers to common registration-related questions.

For the full text on the Academic Regulations and Instructions for Registration, see the Registrar’s Office website at:
http://www.brown.edu/about/administration/registrar/registration

For a tutorial on registration, see:
https://ithelp.brown.edu/kb/articles/746-students-search-and-register-for-courses-on-courses-brown

To access the most up-to-date course information including credit bearing summer session offerings ("The course information in the PDF versions of the University Bulletin and Course Announcement Bulletin is current as of February 2020), see:
http://selfservice.brown.edu/menu and select 'Courses@Brown (https://cab.brown.edu/"

Course Credit

The semester course is the unit of credit. This is defined as a course taken for the duration of one semester and, for purposes of evaluation, may be considered the approximate equivalent of four semester hours.

Brown follows the Federal standard that defines a credit hour as an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutional established equivalence that reasonably approximates not less than: (1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for each semester, or the equivalent amount of work over a different amount of time (i.e. Summer/Winter Sessions); or (2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours. Additionally, transfer credit must equate to the four semester hour standard except for three credit courses taken at the Rhode Island School of Design.

Course Numbering

Courses numbered 0001-0999 are strictly for Undergraduate credit (Graduate students may enroll in such courses with the permission of the instructor and the Graduate School.)

Courses numbered between 1000-1999 are for both Undergraduate and Graduate credit depending on the level of the student's degree program.

Courses numbered between 2000-2999 are for Graduate credit (Undergraduate students may in enroll in such courses and may be applied towards their Undergraduate degree requirements by permission of the instructor.)

Courses numbered above 3000 are strictly for credit in the Alpert Medical School. Certain MD level courses may be taken for credit for Undergraduate students enrolled in the PLME program, but such courses do not count towards quantity, concentration, or Latin honors requirements for the Baccalaureate degree.

Maximum Course Load and Auditing

No student enrolled in The College or the Graduate School may enroll for more than five Brown credits in a semester. A degree candidate paying full tuition (4 or more enrollment units per semester) and is enrolled in less than five academic credits may be permitted to audit (see below section on auditing) additional course(s). At no time may a student be registered for more than 5 credits/courses including audits.

Enrollment Without Academic Credit

Auditing. An auditor is a student who is registered in a course without earning academic credit upon successful completion under the following conditions: (1) the student must be properly registered for it; (2) the student must pay the usual course fee except as indicated in the next paragraph; (3) the student is entitled to all instruction in the course, including conferences, the criticism of papers, tests, and examinations.

Any student registered on a full-time basis may be permitted to audit additional courses in any semester without charge. The total number of course registrations, including audits, may not exceed five credits.

Non-degree or student paying less than four enrollment units of tuition may choose to audit if they so choose, but the student does so with the understanding that they will pay the equivalent rate as if registered for academic credit.

With the concurrence of the instructor, the fact that a course has been audited shall be entered on the permanent record of any student electing this privilege. The status of a course in which a student has registered may not be changed from audit to credit after the fourth week of classes or from credit to audit after midsemester.

Vagabonding. A “vagabond” is a student who, with the permission of the instructor involved, visits a given course occasionally or regularly without payment of fee. It is understood that such a student shall be entitled to participate in classes and activities, including discussions, conferences, and papers, only at the pleasure of the instructor.

Attendance, Grading, Examinations

Attendance

It is in the interest of every student to attend all sessions of the classes in which registered, and each student has an obligation to contribute to the academic performance of all by full participation in the work of each class; however, within such limits as are necessary for the general welfare, a student benefits also from exercising discretion and assuming responsibility for his or her educational progress.
Accordingly, unless the instructor imposes attendance requirements, students are not limited with respect to the number of absences from a course. When, in the instructor’s opinion, a student is abusing the privilege of voluntary attendance, the appropriate dean’s office should be notified so that appropriate action may be taken.

A student is always fully responsible for any course work missed because of absences and will be assigned failing grades in final examinations missed without excuse from the dean’s office.

No student organization shall make any appointment for undergraduates which conflicts with college exercises unless permission has been obtained from the dean.

Grading System

At the end of each semester final grades are given in semester courses. In all courses, except those designated by the instructor as Mandatory Satisfactory/No Credit, a student may, in consultation with the advisor, elect to be graded on a basis of either Satisfactory/No Credit or A, B, C/No Credit. A student must for every course taken indicate by the end of the fourth week of the semester which basis for grading is elected.

Any student regularly enrolled in a course, no matter whether for A, B, C/No Credit or instructor Satisfactory/No Credit, may request from the instructor a more detailed written evaluation of his or her work. (See Course Performance Report below.) Such supplemental evaluations are intended primarily for the information of the student and do not replace departmental evaluations.

No Credit. This grade is given when courses are not satisfactorily completed. The notation No Credit, and the description of the course in which it is given, are not entered on the official academic transcript.

1. Courses may be designated to be graded on a Mandatory Satisfactory/No Credit basis for all students enrolled on the initiative of the instructor. The designation of a course by an instructor to be graded S/NC only must be announced no later than the first day of classes and entails the responsibility for providing Course Performance Report forms to all students who request them. An asterisk shall accompany the listing on the transcript of any course that has been designated by the instructor to be graded on the basis of S/NC only, with an appropriate explanation of the symbol provided.

2. In exceptional circumstances, a course may be left incomplete (except for a regularly scheduled final examination—see paragraph 3 below), with the instructor’s consent. In such cases, a grade of INC will be assigned provided that the student has filed a request for extension of time to complete the work of the course and the instructor has consented to such a request. Unless an earlier date is specified by the instructor, grades of INC must be made as follows: for Semester I, by midsemester of Semester II; for Semester II or the for-credit 7 week Summer Session, by the first day of Fall semester. Extensions beyond semester in which the course left incomplete was taken may be granted by the instructor who will indicate this in writing to the registrar. A course not completed by the designated time will be assigned a grade of NC unless the instructor indicates that sufficient work has been completed to justify course credit by submitting, as appropriate, a grade change from INC to A, B, C, or S. A grade of NC assigned in accordance with these procedures may be changed subsequently, but no later than one calendar year after the end of the semester in which the course was taken.

3. If a student is absent from a regularly scheduled final examination for a course, the student should submit either an INC or an NC. If the absence from the examination is excused by the dean, the student will be permitted to take a Special Examination and the original grade will be made into an A&S temporarily. The Special Examination will be administered by the Office of the Registrar in accordance with the provisions in the Faculty Rules for such examinations, unless other arrangements are agreed to by the instructor and the student, and communicated to the registrar. If the absence from the final examination is not excused by the dean, the student will receive no credit for the course.

Year Courses: A year course is one in which both halves must be passed in order to get credit for the entire year. The grade at the end of the first semester is normally a temporary one. Neither semester may be elected independently without special permission. The final grade submitted at the end of the course covers the work of the entire year and is recorded as the final grade for both semesters. It is normally expected that the second half of a year course will be completed in the second semester of the same academic year in which the first half was taken. If the second half of the year course is not completed at the end of that academic year, the grade for the first semester will become a No Credit. If the student completes the second part of the year course during a later academic year, he or she may need to notify the Registrar’s Office, in order to reactivate the first part of the course.

In registering for the second half of a year course, students must register for credit if the first half was taken for credit. Similarly, if registered for audit in the first half, the second half of the course registration must also be as an audit. Exceptions must be approved by both the academic department and the Committee on Academic Standing.

Repeating Courses: Unless a course is explicitly approved by either the College Curriculum Council or Graduate Council as being able to be repeated for credit, once course credit has been earned with an initial passing grade A,B,C, or Satisfactory (S) or through Transfer Credit it cannot be officially registered for again for in an effort to improve one’s initial grade.

Grade Requirements for Advanced Degrees: A minimum grade of either Satisfactory or C in a 1000 or 2000 level course carries credit toward all advanced degrees. Individual departments may, subject to the approval of the Graduate Council, set higher grade requirements.

Advanced degree candidates may be required to register in courses primarily for undergraduates (numbered 1–999); these courses do not carry advanced degree credit. On occasion, however, and with approval of the student’s department and the dean, a student may register for such a course with extra work for advanced degree credit. This course then has the same standing as a 1000-level course and an EX is noted on the transcript. This provision for extra work does not apply to courses of the level of 1–999 taken for graduate credit by students in MD program.

Course Performance Reports: Any undergraduate student regularly enrolled in a course, no matter whether for A,B,C/No Credit or for Satisfactory/No Credit, may request from the instructor a more detailed written evaluation of the student’s work by way of a Course Performance Report (Note: This form is available online for currently enrolled undergraduates via Advising SideKick (ASK)). Course performance reports provide valuable information to students about their success in meeting course learning objectives, especially for courses graded S/NC. The instructor may decline to submit such a form if they feel they have inadequate information to do so. The deadline for requesting a Course Performance Report is the day before the final exam period begins in the semester of enrollment in the course (Refer to Academic Calendar for relevant deadlines). Late Course Performance Reports may be requested after the deadline and before a student graduates, but the instructor is not obligated to complete a late report. Students may not request a Course Performance Report after completing their degree requirements (although they may contact an instructor directly for a letter of recommendation or a reference at any time). Copies of Course Performance Reports are made available to: (1) the student, (2) the dean’s office, and (3) the student’s concentration advisor. While not part of the official record, Course Performance Reports may be sent out from the University at the student’s request as part of an official transcript request as long as the student provides such copies to the Office of the Registrar when making the initial transcript request.

Transcripts: Requests for transcripts must be made either in writing by completing a Transcript Order Form, or electronically. For further information please visit the Office of the Registrar’s website (http://www.brown.edu/about/administration/registrar/academic-transcript-requests/). Transcripts will be issued only if all financial obligations to the University have been met.

An official transcript consists of a copy of the permanent record listing courses passed and grades received. A statement is added to all transcripts explaining the grading system and indicating that the student may elect to include other material with the official transcript. The student should choose this material in consultation with his or her advisor. The
Examinations

A final, written examination (at the end of each semester) shall be given in each course numbered under 2000 unless the instructor of a particular course decides to use some other mode of final evaluation. If the written examination is not to be used, the mode of final examination which is to be used shall be made known to the students in the course no later than midterm and, in addition, the department and the registrar shall be informed.

Final Examination Schedule: A pre-defined period at the close of each semester is provided for final examinations for those courses for which such an examination is scheduled. Two examination periods are scheduled for each day. The examination group is determined by, in most cases, the offering time associated with the course (indicated by the figure scheduled for each day). The examination group is determined by, in most cases, the offering time associated with the course (indicated by the figure scheduled for each day). The examination group is determined by, in most cases, the offering time associated with the course (indicated by the figure scheduled for each day). The examination group is determined by, in most cases, the offering time associated with the course (indicated by the figure scheduled for each day).

Semester I, 2020-2021

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Semester II, 2020-2021

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Exam Excuses: The Office of the Dean of the College is solely responsible for determining whether a student’s absence from a final examination is excused. To ensure equitable treatment of all students, students are excused from exams only for family or medical emergencies. Please note that students’ travel plans are never an excuse for missing a final exam. Faculty wishing to grant a student an exam excuse may contact the appropriate academic deans authorized to grant exam excuses. In emergency situations, students who are unable to contact their professors must contact the Office of the Dean of the College, which will determine whether or not an exam excuse is warranted. Course instructors are notified of exam excuses granted by the Dean of the College Office.

Consistent with Brown’s policy on nondiscrimination, students who are unable to take a final examination due to religious observance may arrange to take their final at an alternate time. Students who cannot take a final exam on the scheduled date due to a religious observance must inform the instructors of any conflicts within the first four weeks of the term. In such cases, instructors are expected to offer a final exam on an alternate date within the same semester, noting the policy in the Faculty Rules that final examinations may be given only during the final examination period. For further information on exams and religious observance please visit https://www.brown.edu/academics/college/support/faculty/religiousobservance/.

Make-up exams for approved exam excuses for medical or family emergencies are administered by the Registrar in the second week of the subsequent fall or spring term. The Registrar’s Office informs students by email of the date, time, and location of make-up exams.

Placement and Achievement Tests in Foreign Languages. Placement tests in the foreign languages are given during Orientation Program in the fall and during the first week of classes in each semester.

All students, before taking college courses in a foreign language in which they have presented entrance credit, must take either a placement test at Brown University or, preferably, a College Board Language Achievement Test in secondary school. Students with outstanding performance on these tests, or on the Advanced Placement Tests of the College Entrance Examination Board, may be admitted to advanced courses without the usual course prerequisites.

Student Code of Conduct

Academic Code Violations

All cases of academic dishonesty among undergraduates, graduate, or medical students, as defined in the Academic Code at Brown University, shall be referred to the dean of the College, Graduate School, or Medical School, or his or her designated representative. A student accused of such an offense shall be notified in writing as soon as possible of the specific charge or charges against him or her before his or her case is considered. The student shall be given the opportunity of a hearing before the designated representative of the dean of the College, Graduate School, or Medical School, and two members of the faculty, at which all relevant facts may be presented. A student shall have the right to appeal any decision to the dean of the College, Graduate School, or Medical School within five business days after receipt of the official letter outlining the case and the decision reached.

Code of Student Conduct

Brown strives to sustain a learning environment that supports individual exploration. Central to this effort are the four primary Principles of the Brown University Community: individual integrity, respect for others, and the goals of deepening the understanding of course content and learning and scholarship. Our community believes that adherence to these principles supports the overall academic mission of the University. Violations of these principles will be handled through the procedures governing the Academic Code and the Code of Student Conduct. These procedures are designed to address behaviors that impede the educational activity of the University or that infringe upon the rights of others.

Student Conduct cases are administered by the Office of Student Conduct & Community Standards.

Specific hearing procedures can be found online at www.brown.edu/randr (http://www.brown.edu/randr).

Curricular Programs

Community-Based Learning and Research

Community-Based Learning and Research (CBLR) courses connect academic inquiry with real-world learning experiences, enabling students to integrate and transfer their learning to contexts beyond the classroom. CBLR-designated courses: (i) Involve collaboration with one or more community partners to investigate an important social challenge or problem; (ii) Incorporate in-depth community-based experiences (typically undertaken outside of the classroom) into the learning and/or research objectives of the course; (iii) Provide structured opportunities for reflecting on the relationship between classroom learning and real-world experience, with the goals of deepening the understanding of course content and exploring questions of identity, agency, and social responsibility; and (iv) Create products or outcomes that are shared with the community partner and/or broader public.

DIAP Courses: Race, Gender, and Inequality

In support of the University's broader Diversity and Inclusion Action Plan, DIAP Courses on Race, Gender, and Inequality examine issues of structural inequality, racial formations and/or disparities, and systems of power.

They may investigate:
(i) the ways different forms of power and privilege construct racial and identity formations in the U.S. and/or globally; the cultural, political, and intellectual responses to this racialization;
(ii) the production of categories of ethnicity, race, gender, sexual orientation, class, religion, ability, citizenship status, and geography (and their intersections);
(iii) the structures, institutions, practices, and attitudes that enable, maintain, or mitigate domestic and/or global disparities in health, income, education outcomes, media representations, etc.; and/or
(iv) the production of knowledge and difference in the context of discourses on race, power, and privilege

A complete list of each semester’s DIAP courses may be viewed in Courses@Brown by choosing “DIAP Courses: Race, Gender, Inequality” in the Curricular Programs field.

### First Year Seminars

First-year seminars ensure close contact between first-year students and faculty members while simultaneously offering a rigorous introduction to the concepts and methods of a particular subject area or department. Seminars have few if any prerequisites and are offered in all areas of the curriculum, from anthropology to physics to literary arts. Students receive regular feedback on the work they produce for the seminars, and seminar faculty often serve as informal mentors for their students long after the class has ended.

A complete list of each semester’s seminars may be viewed in Courses@Brown by choosing “First-Year Seminar” in the Curricular Programs field. Registration for first-year seminars takes place during the summer prior to students’ matriculation to Brown. Depending on availability, first-year students may also add seminars to their course schedules during pre-registration and shopping periods.

### Sophomore Seminars

Sophomore seminars bring together ideas, perspectives, and approaches that are not normally seen side by side in a given course or program. Embracing a range of intellectual perspectives, many of the seminars focus specifically on issues of social justice, identity, and difference. Limited to twenty students each, the seminars help students develop the skills, knowledge, and values they need to progress toward more advanced learning in a discipline or field.

A complete list of each semester’s SOPH seminars may be viewed in Courses@Brown by choosing “Sophomore Seminar” in the Curricular Programs field.

### Writing-Designated Courses

Brown students are expected to work on writing in their general studies and in the concentration. Students may begin to fulfill this expectation by taking at least one course that carries the WRIT designation. WRIT courses are offered across the curriculum and help students develop the ability to write well in styles appropriate to different academic disciplines.

A complete list of each semester’s WRIT courses may be viewed in Courses@Brown by choosing “Writing-Designated Courses” in the Curricular Programs field.

### Community-Based Learning and Research

#### Fall 2020

**Archaeology and Ancient World**

ARCH 1900 S01 17209 Archaeology of College Hill Anna Eleanor Soifer

**English**

ENGL 1140E S01 17990 Writing for Activists Kate J. Schapira

**Environmental Studies**

ENVS 0110 S01 16804 Humans, Nature and the Environ Dawn King

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### Winter/Spring 2021

**Anthropology**

ANTH 1301 S01 25758 Anthropology of Homelessness Irene Glasser

**English**

ENGL 1140E S01 24848 Writing for Activists Kate J. Schapira

**Environmental Studies**

ENVS 1555 S01 25257 Urban Agriculture Dawn King

**DIAP Courses: Race, Gender and Inequality**

#### Fall 2020

**Africana Studies**

AFRI 0900 S01 16996 An Intro to Africana Studies Francoise N. Hamlin

AFRI 0670 S01 16998 Global Black Radicalism Brian W E Meeks

AFRI 0690 S01 18177 Gospel Titans, Divas, Dynasty Charrise M Barron

AFRI 0850 S01 17670 Gendr Poltics in Caribbn Novel Dadland Maye

AFRI 0980 S01 17000 Fela Kuti African Freedom Dadland Ayobade

AFRI 1050A S01 18038 Advanced RPM Playwriting Elmo Terry-Morgan

AFRI 1050D S01 18039 Intermediate RPM Playwriting Elmo Terry-Morgan

AFRI 1110 S01 17002 Voices Beneath the Veil Elmo Terry-Morgan

AFRI 1210 S01 17003 Afro-Brazilians + Brazil Polity Anani Dzidzienyo

AFRI 1920 S01 17004 Health Inequality in Historica Lundy Braun

**American Studies**

AMST 1600C S01 15738 Anti-Trafficking Savior Complex Elena Shih

AMST 1700P S01 18502 Making Music American Kiri M. Miller

AMST 1910D S01 17544 Motherhood in Black and White Beverly Haviland

**Anthropology**

ANTH 1030 S01 17386 Pre-Columbian Art and Architeca Stephen D. Houston

ANTH 1223 S01 18487 Gender, Nature, the Body Matthew C. Gutmann

ANTH 1760 S01 17681 Disability and Culture Aviva Cormier

**Arabic**

ARAB 0450A S01 18443 Beginning Levantine Colloquial Elsa Belmont Flores

**Archaeology and Ancient World**

ARCH 1900 S01 17209 Archaeology of College Hill Anna Eleanor Soifer

**Comparative Literature**

COLT 1610W S01 17610 Whites, White Jews and Us: Rad Ariella Azoulay

**East Asian Studies**

EAST 1940A S01 15801 Crafting Early Modern China Kaijun Chen

**Economics**

ECON 1305 S01 17397 Economics of Education Justine Hastings

ECON 1310 S01 16280 Labor Economics Kenneth Chay

ECON 1510 S01 16184 Economic Development Aaron Mark Weisbrod

ECON 1530 S01 16279 Health, Hunger + the Household Andrew D. Foster

ECON 1570 S01 16971 The Econ of Latin Americans Pedro Dal Bo

**Education**

EDUC 0300 S01 16014 Introduction to Education Andrea Flores

EDUC 1215 S01 18304 Race Making and the US Univ Nicole D Truesdell

**English**

ENGL 0101A S01 16304 Independence and Modern Lit Tamar Katz

ENGL 0711X S01 16195 Black Poetics Kevin E Quashie

ENGL 0711A S01 18432 Americans in Paris Stuart Burrows

ENGL 1140E S01 17990 Writing for Activists Kate J. Schapira

ENGL 1710J S01 17213 Modern African Literature Okunke George

ENGL 1711D S01 16199 Reading New York Tamar Katz
ENGL 1760U S01 17517 Modernism and its Aftermaths Drayton Nabers
ENGL 1761E S01 16337 Blackness and Being Kevin E. Quashie
ENGL 1761F S01 16692 Toni Morrison Aliyah Abdur-Rahman

Ethnic Studies
ETHN 0190B S01 17527 Technologies of Asian America Mark Tseng Putterman
ETHN 1000 S01 15749 Intro to Amercon/Ethnic Studies Adrienne J. Keene
ETHN 1200B S01 15746 Cont Indigenous Education Adrienne J. Keene

French Studies
FREN 1410R S01 18272 Images d’une guerre sans nom Ourida Mostefai

Hispanic Studies
HISP 0730 S01 16889 Latin Am in Its Lit + Culture Gustavo Alberto Quintero Lozano

History of Art and Architecture
HIAA 0032 S01 17623 Art and Architecture Roman Emp Greetel Rodriguez
HIAA 1882 S01 17563 Indigenous Art, Issues, and Con TBD

History
HIST 0656A S01 17734 Hist Intercollegiate Athletics Howard P. Chudacoff
HIST 1202 S01 15876 Foundations Classical Heritage Kenneth S. Sacks
HIST 1989C S01 17735 Debates/Middle Eastern History Sreemati Mitter
HIST 1972J S01 18555 Racial/Class Capitalism US Liberal Emp Naoko Shibusawa
HIST 1978D S01 15766 Jewish Humor + Comm Ent Mary Gluck

International and Public Affairs
IAPA 1403 S01 18176 Punishment and School Discipli Mahasan Chaney
IAPA 1400S S01 17309 Dev’ts Visual Imaginaries Geri M. Augusto

Italian Studies
ITAL 1400S S01 17572 Italian Feminism Laura C F Odello

Judaic Studies
JUDS 0050A S01 15764 Believers, Agnostics, Atheists David C. Jacobson
JUDS 0902 S01 15763 History of the Holocaust Adam J Teller
JUDS 1614 S02 18555 I’m Feeling Myself/Black Fem Safiya Sinclair
JUDS 1726 S01 15766 Jewish Humor + Comm Ent Mary Gluck

Language Studies
LANG 0100 S01 18440 Beginning Nahualt Jane Sokolosky

Latin American & Caribbean Studies
LACA 0500 S01 17346 Latin American Hist/CultJourney Erica Durante
LACA 1503R S01 17523 Social Mvmts Latin America Maria Inclan
LACA 1504R S01 18125 Arts of the Environment Americ TBD

Literary Arts
LITR 1180V S01 17558 The Politics of the Harlem Ren TBD

Middle East Studies
MES 1170 S01 18120 Middle Eastern Art: Sites and Sights Samine Tabatabaei

Modern Culture and Media
MCM 0902O S01 17581 Neural Media Theo Lepage-Richer
MCM 1504R S01 16817 Iranian Cinema Joan K. Copjec
MCM 1505P S01 17225 Channelling Race:Tv&Race in USA Lynne Joorych

Music
MUSC 0642 S01 16913 World Music Ensemble Martin K. Obeng

Political Science
POLS 1821V S01 15619 Democracy and Inequality in Am Richard O. Snyder
POLS 1825I S01 17558 The Politics of the Harlem Ren TBD

Portuguese and Brazilian Studies
POBS 0105 S01 18512 Accelerated Portuguese Patricia I. Sobral
POBS 0620 S01 17377 Map Portugues-Speak Ctr:Portugl Leonor Simas-Almeida

Public Health
PHP 1070 S01 16749 Brdn of Disease in Devel Cntry Stephen T. McCarvey
PHP 1100 S01 16765 Comparative Health Care Sysyms Omar Galarraga
PHP 1680I S01 16751 Disability/Health and Community Sarah E. Skeels
PHP 1920 S01 16769 Social Determinants of Health Diana Grigasy

Religious Studies
RELS 1440A S01 16355 Themes in Japanese Buddhism Janine T Anderson Sawada

Russian
RUSS 1220 S01 16728 Nationalism and Nationalities Fabrizio Fenghi

Sociology
SOC 1270 S01 17055 Race,Class,Ethnicity Mdm Wrld Jose Itzigsohn

Theatre Arts and Performance Studies
TAPS 1280W S01 18469 Native Amer Indigenous Theatre Sarah dAngelo

University Courses
UNIV 1005 S01 15762 Narratives of Racism David C. Jacobson

Urban Studies
URBN 1870M S01 15668 Urban Regimes in Amer Republic Marion E. Orr

Winter/Spring 2021

Africana Studies
AFRI 0990 S01 25507 Black Lavender Elmo Terry-Morgan
AFRI 1020C S01 25733 Afro-Luso-Brazilian Triangle Anani Dzidzienyo
AFRI 1020D S01 25509 Race, Rights and Rebellion Keisha-Khan Y. Perry
AFRI 1050A S01 25731 Advanced RPM Playwriting Elmo Terry-Morgan
AFRI 1050D S01 25732 Intermediate RPM Playwriting Elmo Terry-Morgan
AFRI 1050E S01 25510 RPM Playwriting Elmo Terry-Morgan
AFRI 1060E S01 25512 W African Writrs/Poltcl Kingdm Anani Dzidzienyo
AFRI 1090 S01 25513 Bick Freedm Strggle Since 1945 Francois N. Hamlin
AFRI 1100X S01 25514 Black Speculative Fiction Matthew Guteri
AFRI 1150 S01 25516 Afro-Caribbean Philosophy Paget Henry
AFRI 1360 S01 25517 Knowledge, Texts + Methodology Brian W E Meeks

American Studies
AMST 0170D S01 24502 Musical Youths Cultures Kiri M. Miller
AMST 1700N S01 24500 Public Memory Beverly Haviland

Anthropology
ANTH 1000 S01 25742 Intro to Cultural Anthropology Myles Lennon
ANTH 1250 S01 25771 Film/Anthro:Ident/Imag Ind Soc Lisa M. Fruzzetti
ANTH 1505 S01 25809 Vertical Civ: SouthAm Arch Parker VanValkenburgh
ANTH 1624 S01 25769 NE Indians,Colonists,Africans Patricia E. Rubertone

Arabic
ARAB 0990 S01 26038 Adv Arabic Language + Culture Elsa Belmont Flores

Economics
ECON 1310 S01 24942 Labor Economics Kenneth Chay
ECON 1590 S01 25994 The Economy of China snc 1949 Louis Putterman

Education
EDUC 1380 S01 24703 Language and Education Policy Pierre De Galbert

English
ENGL 0150X S01 24908 The Claims of Fiction Olakunle George
ENGL 0710Q S01 24826 Literature and Segregation Rolland D. Murray
ENGL 1140E S01 24848 Writing for Activists Kate J. Schapira
ENGL 1180V S01 24851 Asian American Narrative TBD
ENGL 1711N S01 24911 PlantationandWoodsinLit Dixa Ramirez D’Oleo

Environmental Studies
ENVS 0705 S01 25256 Equity and the Environment Myles Lennon

Brown University
Ethnic Studies
ETHN 1200I S01 24505 Representations of Native ppls Adrienne J. Keene
ETHN 1200K S02 25470 Intro to Amer Indian Studies Elizabeth M. Hoover
ETHN 1750B S01 24507 Eating Local in Indian Country Elizabeth M. Hoover
ETHN 1750S S01 25427 Extravagant Texts Daniel Kim

French Studies
FREN 1410R S01 24708 Images d’une guerre sans nom Ourida Mostefai

Hispanic Studies
HISP 0750B S01 25382 Latin American Diaspora in US Felipe I. Martinez-Pinzon

History
HIST 0234 S01 24609 Modern Latin America Daniel A. Rodriguez
HIST 0656A S01 24605 Hist Intercolligate Athletics Howard P. Chudacoff
HIST 1121 S01 24611 The Modern Chinese Nation Rebecca A. Nedostup
HIST 1272D S01 24607 The French Revolution Joel W. Revill
HIST 1964L S01 25916 Slavery in Early Modern Wo Adam J Teller
HIST 1969C S01 25427 Debates/Middle Eastern History Sreemati Mitter
HIST 1977I S01 25421 Gen, Race, Med in Americas Daniel A. Rodriguez

Middle East Studies
MES 1170 S01 25532 Iranian Art: Sites and Sights Samine Tabatabaei
MES 1270 S01 25533 Hist of Watching & Surveying Samine Tabatabaei

Modern Culture and Media
MCM 15010 S01 24651 Television, Gender + Sexuality Lynne Joyrich

Music
MUSC 0642 S01 25407 World Music Ensemble Martin K. Obeng

Political Science
POLS 1350 S01 24405 Asian American Politics Tyler Jost
POLS 1465 S01 25819 Introduction to Political Econ David B Skarbek

Public Health
PHP 1600 S01 25285 Obesity in the 21st Century Akilah Dulin

Religious Studies
RELS 0085B S01 24991 Blues People:Topics in African Andre C. Willis

Sociology
SOC 0010 S01 25622 Introductory to Sociology Andrew M. Schrank
SOC 1330 S01 25736 Remaking the City John Logan

Theatre Arts and Performance Studies
TAPS 1281G S01 25246 Queer Dance J Dellecave
TAPS 1281O S01 25504 Acting Outside the Box Kym Moore
TAPS 1425 S01 25249 Queer Performance Leon J A Hilton

First Year Seminars
Fall 2020
Africana Studies
AFRI 0690 S01 18177 Gospel Titans, Divas, Dynasty Charrise M Barron

Biology
BiOL 0100 S01 15571 Living Bio at Brown and Beyond Katherine F. Smith
BiOL 0190P S01 15635 Pride/Prej Dev of Sci Theories Stephen L. Helfand
BiOL 0190U S01 15636 The Lives of Plants Peter Heywood

Chemistry
CHEM 0080G S01 17876 Chemistry in Movies Eunsuk Kim

Comparative Literature
COLT 0510C S01 15994 The World of Lyric Poetry Dore J. Levy

COLT 0610D S01 16162 Rites of Passage Arnold Louis Weinstein

English
ENGL 0150C S01 16207 The Medieval King Arthur Elizabeth Johnson Bryan
ENGL 0150F S01 16208 Hawthorne and James Stuart Burrows

Environmental Studies
ENVS 0070C S01 18800 Transcending Transpnt Impacts Kurt Teichert

Ethnic Studies
ETHN 0090A S01 17671 The Border/La Frontera Evelyn Hu-Dehart

Humanities
HMAN 0800B S01 17412 Art of International Relations Damien Mahiet

Judaic Studies
JUDS 0050A S01 15764 Believers, Agnostics, Atheists David C. Jacobson

Philosophy
PHIL 0200H S01 17593 Contemporary Ethical Issues Anna S. Bjurman Pautz

Political Science
POLS 0820U S01 17282 Drug War Politics Peter R. Andreas

Portuguese and Brazilian Studies
POBS 0910 S01 16732 On the Dawn of Modernity Onesimo T. Almeida

Religious Studies
RELS 0090A S01 18249 Women and Gender in Anc. Rel. Susan Ashbrook Harvey
RELS 0090M S01 18250 Islam, Violence and Media Nancy Khalek

Winter/Spring 2021

American Studies
AMST 0150P S01 25925 The Teen Age: In Cold War Amer Richard Alan Meckel

Biology
BiOL 0190S S01 24334 Phage Hunters, Part II Sarah E. Taylor

Education
EDUC 0410A S01 24768 New Faces, New Challenges Andrea Flores

Engineering
ENGN 0120A S01 24881 Crssng Consumr Chasm by Desgn Richard D. Fleeter
ENGN 0120B S01 24882 Crssng Spce Chsm Thr Engn Dsgn Richard D. Fleeter

English
ENGL 0150U S01 24825 The Terrible Century Timothy R T Bewes
ENGL 0150X S01 24908 The Claims of Fiction Olakunle George

Hispanic Studies
HISP 0750G S01 25383 Wildeyed Stories Mercedes Vaquero

Literary Arts
LITR 0100A S01 24574 Introduction to Fiction TBD
LITR 0100B S01 24575 Introduction to Poetry TBD
LITR 0710 S01 24585 Writers on Writing Seminar Colin C D Channer

Political Science
POLS 0820I S01 24433 Crime, Mafias and Prison David B Skarbek

Sociology
SOC 0300K S01 25737 Inequalities and Health Susan Short
Sophomore Seminars

Fall 2020

Africana Studies
AFRI 0670 S01 16998 Global Black Radicalism Brian W E Meeks
AFRI 0670 S01 16998 Global Black Radicalism Brian W E Meeks

Biology
Biol 0940A S01 15648 Viral Epidemics Walter J. Atwood

History
HIST 0656A S01 17734 Hist Intercollegiate Athletics Howard P. Chudacoff

Political Science
POL 0920A S01 17247 Bleeding Heart Libertarianism John O. Tomasi

Winter/Spring 2021

American Studies
AMST 0170D S01 24502 Musical Youth Cultures Kiri M. Miller

Biology
Biol 0940G S01 24968 Antibiotic Drug Discovery Toni-Marie Achilli

History
HIST 0656A S01 24605 Hist Intercollegiate Athletics Howard P. Chudacoff

Writing-Designated Courses

Fall 2020

Africana Studies
AFRI 0090 S01 16996 An Intro to Africana Studies Françoise N. Hamlin
AFRI 0690 S01 18177 Gospel Titans, Divas, Dynasty Charisse M Barron
AFRI 1110 S01 17002 Voices Beneath the Veil Elmo Terry-Morgan
AFRI 1210 S01 17003 Afro-Brazilians + Brazilian Polity Anani Dzidzienyo
AFRI 1920 S01 17004 Health Inequality in Historica Lundy Braun

American Studies
AMST 0192G S01 17233 Japanese American Incarceration Design David A. Borton
AMST 1930A S01 16541 Social Impact of Emerging Tech Arto V. Nurmikko
AMST 1930N S01 16063 Analysis of One Brain Area Indrek Kulaots
AMST 1930P S01 16547 Energy and the Environment Indrek Kulaots
AMST 1931J S01 16541 Social Impact of Emerging Tech Arto V. Nurmikko
AMST 1931P S01 16297 Energy and the Environment Indrek Kulaots

Anthropology
ANTH 1030 S01 17386 Pre-Columbian Art and Architecture Stephen D. Houston
ANTH 1223 S01 18487 Gender, Nature, the Body Matthew C. Gutmann

Archaeology and Ancient World
ARCH 1900 S01 17209 Archaeology of College Hill Anna Eleanor Soifer

BioMed-Neuroscience
NEUR 1930N S01 16063 Analysis of one Brain Area Monica Linden

Biology
BIOL 0100 S01 15571 Living Bio at Brown and Beyond Katherine F. Smith
BIOL 0190U S01 15636 The Lives of Plants Peter Heywood
BIOL 0940A S01 15648 Viral Epidemics Walter J. Atwood
BIOL 1300 S01 15720 Biomolecular Interactions Nicolas Lux-Fazwi

Business, Entrepreneurship and Organizations
BEO 1930A S01 16936 BEO Capstone I Carrie E. Spearin
BEO 1930B S01 16937 BEO Capstone I TBD
BEO 1930C S01 16938 BEO Capstone I Brendan C. McNally

Chemistry
CHEM 1560N S01 17495 Organometallic Chemistry Jerome R Robinson

Classics
CLAS 1130 S01 17127 Life in Ancient Greece Graham J. Oliver
CLAS 1320 S01 16949 Roman Hist II: Empire's Impact John P. Bodel

Cognitive, Linguistic and Psychological Sciences
CLPS 0700 S01 16857 Social Psychology Oriel Feldman-Hall
CLPS 1195 S01 16884 Life Under Water Ruth Melanie Colewill
CLPS 1960 S01 16869 Senior Seminar in BDS Joachim Israel Krueger

Comparative Literature
COLT 1610W S01 17610 Whites, White Jews and Us: Rad Aniella Azoulay

Computer Science
CSCI 1805 S01 16846 Computers, Freedom and Privacy Timothy H. Edgar

Contemplative Studies
COST 0140 S01 16343 Food, Religion and Politics in Finnian M. Moore-Gerety
COST 0526 S01 16346 This Whole World is OM: Mantra Finnian M. Moore-Gerety
COST 1705A S01 18258 Principles/Pract Contemp Stdy Harold D. Roth

Czech
CZCH 1000 S01 17951 Dimensions of Czech Animation Masako Ueda Fidler

Earth, Environmental, and Planetary Science
EPS 1130 S01 16820 Ocean Biogeochemical Cycles Timothy D. Herbert
EPS 1240 S01 16821 Stratigraphy and Sedimentation Timothy D. Herbert

Economics
ECON 1200 S01 16879 History of Economic Thought Emily C Skarbek
ECON 1255 S01 17678 Unemployment: Models and Policy Pascal Michaillet

Education
EDUC 1650 S01 17504 Policy Implementation in Educutn Jonathan E Collins
EDUC 1900 S01 16019 Senior Seminar Jin Li

Engineering
ENGN 1010 S01 16543 Entrepreneurial Process Daniel E. Warshay
ENGN 1010 S02 16544 Entrepreneurial Process Jon E. Cohen
ENGN 1010 S03 16545 Entrepreneurial Process Fran Z Slutsky
ENGN 1230 S01 16300 Instrumentation Design David A. Borton
ENGN 1931P S01 16297 Energy and the Environment Indrek Kulaots

English
ENGL 0150 C S01 16207 The Medieval King Arthur Elizabeth Johnson Bryan
ENGL 0150 F S01 16208 Hawthorne and James Stuart Burrows
ENGL 0310A S01 16210 Shakespeare Stephen Merriam Foley
ENGL 1761 F S01 16992 Toni Morrison Aliyyah Abdur-Rahman

Environmental Studies
ENVS 0070C S01 16800 Transcending Transp Impacts Kurt Teichert
ENVS 0110 S01 16804 Humans, Nature and the Environment John P. Bodel
ENVS 1605 S01 18028 Glaciers and Climate Change Samiah M Moustafa
ENVS 1910 S01 16807 The Anthropocene Bethsheba R Demuth
ENVS 1920 S01 16806 Methods Interdisciplinary Rachel Wett
ENVS 1926 S01 18033 Rethinking Chemical Env. Scott A. Frickel

Ethnic Studies
ETHN 0090A S01 17671 The Border/La Frontera Evelyn Hu-Dehart
ETHN 0190B S01 17527 Technologies of Asian America Mark Tseng Putterman

French Studies
FREN 0600 S01 16197 Writing and Speaking French I Stephanie A Ravillon
FREN 0600 S02 16202 Writing and Speaking French II Stephanie A Ravillon
FREN 0950C S01 18222 Paris hors les murs Sylvie Toux
FREN 1210F S01 16115 L'œuvre romanesque David Wills
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**Gender and Sexuality Studies**

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**History**

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**History of Art and Architecture**

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**International and Public Affairs**

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**Italian Studies**

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<td>Believers, Agnostics, Atheists David C. Jacobson</td>
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**Korean**

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**Latin American & Caribbean Studies**

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**Literary Arts**

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**Modern Culture and Media**

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<td>Music &amp; Culture 3rd Rep France Mark Seto</td>
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**Portuguese and Brazilian Studies**

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<td>Brdn of Disease in Devel Cntry Stephen T. Mcgarvey</td>
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**Religious Studies**

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**Visual Arts**

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<td>Stephen S. Bush</td>
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<td>Nationalism and Nationalities</td>
<td>Fabrizio Fenghi</td>
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<td>Jeffrey S. Poland</td>
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<td>Classical Sociological Theory</td>
<td>Patrick G. Heller</td>
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<td>Problem Solving Fellow Christina Smith</td>
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<td>Leslie A. Bostrom</td>
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<td>Race, Rights and Rebellion Keisha-Khan Y. Perry</td>
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<td>Adv Topics Corporate Finance Bradford Martin Gibbs</td>
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Curricular Programs

**Historical Studies**

- HIST 1969F S01 25182 Mod Middle East Hist thru Lit Sreemati Mitter
- HIST 1972A S01 24623 American Legal Hist, 1760-1920 Michael Vorenberg
- HIST 1977I S01 25421 Gen, Race, Med in Americas Daniel A. Rodriguez

**Italian Studies**

- ITAL 0600 S01 24735 Advanced Italian II Cristina Abbona-Sneider
- ITAL 1020 S01 24736 Boccaccio's Decameron Ronald L. Martinez

**Literary Arts**

- LITR 0100A S01 24574 Introduction to Fiction TBD
- LITR 0100B S01 24575 Introduction to Poetry TBD
- LITR 0110A S01 24576 Fiction I TBD
- LITR 0110B S01 24577 Fiction I TBD
- LITR 0110A S04 25540 Fiction I TBD
- LITR 0100B S02 24580 Poetry I TBD
- LITR 0110B S03 24581 Poetry I TBD
- LITR 0110B S04 25501 Poetry I TBD
- LITR 0100A S04 25501 Poetry I TBD
- LITR 0210A S01 24582 Fiction Writing II Andrew E. Colarusso
- LITR 0210A S02 24583 Fiction Writing II TBD
- LITR 0100A S01 24584 Poetry Writing II TBD
- LITR 0210A S01 24585 Writers on Writing Seminar Colin C D Chan
- LITR 0999 S01 24586 Graphic Novels and Comic Maste Hiram F Moody
- LITR 1010A S01 25955 Advanced Fiction Hiram F Moody
- LITR 1010B S01 25956 Advanced Poetry Peter Gale Nelson
- LITR 1150B S01 25880 Foreign Home: Interdisc Arts Thalia L. Field
- LITR 1152B S01 25880 Ekphrasis in Action Cole Swensen

**Middle East Studies**

- MES 1270 S01 25533 Hist of Watching & Surveying Samine Tabatabaei

**Modern Culture and Media**

- MCM 1501O S01 24651 Television, Gender + Sexuality Lynne Joyrich

**Philosophy**

- PHIL 0010 S01 25968 The Place of Persons Anna S. Bjurman Pautz
- PHIL 0360 S01 25960 Early Modern Philosophy Justin Broackes
- PHIL 0880 S01 25956 Ethical Themes Amer Short Story Felicia Nimue Ackerman
- PHIL 1400 S01 25957 Ethics in the Novel Felicia Nimue Ackerman
- PHIL 1600 S01 25957 Philosophy of Law David Estlund

**Physics**

- PHYS 0560 S01 25124 Experiments in Modern Physics Jia Leo Li
- PHYS 1560 S01 25132 Modern Physics Laboratory Vesna F Mitrovic
- PHYS 1600 S01 25145 Computational Physics Kemp W Plumb

**Political Science**

- POLS 1820H S01 25909 Contraband Capitalism Peter R. Andreas
- POLS 1821O S01 24396 Issues in Democratic Theory Corey L. Brettschneider
- POLS 1821O S01 24443 Pol of Ecol Devl in Asia Ashutosh Varshney
- POLS 1822I S01 24399 Geopolitics of Oil and Energy Jeffrey D. Colgan
- POLS 1823J S01 24402 Freedom, Work, Leisure Alexander A. Gourevitch
- POLS 1824C S01 24450 Political Communication Richard A. Arenberg
- POLS 1824Q S01 24428 Int'l Politics Climate Change TBD
- POLS 1920 S01 24398 Senior Honors Thesis Preparation Ross E. Cheit

**Portuguese and Brazilian Studies**

- POBS 0400 S01 25208 Writing + Speaking Portuguese Naomi Parker
- POBS 1030 S01 25950 Adv Lang Study/Creernt Writing Leonor Simas-Almeida

**Religious Studies**

- RELS 0014 S01 24987 Jesus Jae Hee Han
- RELS 0037 S01 24993 Sensing the Sacred Finnian M. Moore-Gerety
- RELS 0045 S01 24990 Buddhism and Death Jason A Protass
- RELS 0525 S01 24995 The History and Practice of Yo Finnian M. Moore-Gerety
- RELS 1610 S01 25010 Sacred Sites: Law, Politics, Nathaniel A. Berman

**Science, Technology, and Society**

- STS 1000 S01 25150 Theories and Controversies Debbie Weinstein

Sociology

- SOC 0020 S01 25618 Perspectives on Socl Interactn Gregory C. Elliott
- SOC 0300K S01 25737 Inequalities and Health Susan Short
- SOC 1870E S01 25626 Alternatives to Violence Gregory C. Elliott
- SOC 1870K S01 25625 Demographics and Development Michael White

South Asian Studies

- SAST 0037 S01 25795 Culture in South Asian Rel Finnian M. Moore-Gerety
- SAST 0525 S01 25793 The History & Practice of Yoga Finnian M. Moore-Gerety

Theatre Arts and Performance Studies

- TAPS 0100 S01 25233 Playwriting I TBD
- TAPS 0200 S01 25232 Playwriting II TBD
- TAPS 1240 S01 25505 Perform Hist/Graph/Threatr Hst Leon J A Hilton
- TAPS 1250 S01 25506 Late Modern & Contemp Theatre J Dellecave
- TAPS 1500H S01 25522 Advanced Playwriting TBD

University Courses

- UNIV 1520 S01 25215 The Shaping of World Views Onesimo T. Almeida

Urban Studies

- URBN 1870A S01 24416 American Culture and the City James A. Morone
- URBN 1870T S01 24417 Transportation: Planning Persp Robert E. Azar

Visual Art

- VISA 1800P S01 25770 Art/Work: Professionl Practice Heather Darcy Bhandari
Course Descriptions

Africana Studies

AFRI 0990. An Introduction to Africana Studies. This course introduces students to the vibrant and contested field of Africana Studies by critically exploring and analyzing the links and disjunctures in the cultural, political, and intellectual practices and experiences of people of African descent throughout the African diaspora. Beginning with a critical overview of the history, theoretical orientations, and multiple methodological strategies of the discipline, the course is divided into three thematic units that examine intellectuals, politics, and movements; identity construction and formation; and literary, cultural, and aesthetic theories and practices in the African diaspora.

Fall AFRI0990 S01 16996 TTh 1:00-2:20(08) (F. Hamlin)

AFRI 0670. Global Black Radicalism. The decade from the mid-Sixties until the mid-Seventies witnessed the rise of Black Radicalism as a global phenomenon. The emergence of Black Power in the US, Brazil and the Caribbean, the consolidation of liberation struggles in Portuguese Africa and the rise of a Black Consciousness trend in Apartheid South Africa all represent key moments. What led young activists to embrace “Black Power?” What led to the emergence of Marxist movements in Portuguese Africa? What events in the Caribbean gave ascendancy to radical tendencies? And what forces contributed to the decline of these movements? This course seeks to answer these questions.

Fall AFRI0670 S01 16998 Th 4:00-6:30 (B. Meeks)

AFRI 0690. Gospel Titans, Divas, and Dynasties. The course will explore some of contemporary black gospel music’s most celebrated artists, as a lens into gospel music history and the challenges of commodifying religious folk music. This course will explore gospel music performance and commerce as defined by artists such as The Clark Sisters, who were recently celebrated in the biopic The Clark Sisters: First Ladies of Gospel, which first aired on the Lifetime network Sunday, April 12, 2020. The course will also explore other gospel music-making families, such as The Winans, The Staples Singers, Mary Mary, and The Crouchers.

Fall AFRI0690 S01 18177 M 3:00-5:30 (G. Barron)

AFRI 0840. Monuments, History, and Memory in the United States. This course explores public monuments in the United States and the ways in which artists and communities have negotiated history and the politics of memory and remembrance. We consider the role that public monuments play in the struggle over the experience of the past and the organization of it. We examine war memorials, civic statuary, counter-monuments, and abstract public works, including Frédéric Auguste Bartholdi’s The Statue of Liberty (1886), Augustus Saint-Gaudens’s Memorial to Robert Gould Shaw and Massachusetts Fifty-fourth Regiment (1897), Richmond, Virginia’s Monument Avenue (1890-1929), David Chester French’s The Lincoln Memorial (1914-1922), Maya Lin’s Vietnam Veterans Memorial (1982), Alison Saar’s Swing Low: Harriet Tubman Memorial (2007), Lei Yixin’s Martin Luther King Jr. National Monument (2011), Michael Ahdad’s National September 11 Memorial & Museum (2011), and the Equal Justice Initiative’s National Memorial to Peace and Justice (2018).

Fall AFRI0840 S01 18227 F 3:00-5:30 (R. Ater)

AFRI 0850. The Politics of Gender in the Caribbean Novel. This course will examine 20th Century Caribbean Literature as a genre, which poses challenges to colonialism and raises profound questions of sovereignty. It will examine how Contemporary Caribbean Literature contributes to the world of literature in general.

Fall AFRI0850 S01 17670 TTh 9:00-10:20(02) (D. Maye)

AFRI 0980. Fela Kuti: African Freedom from Afrobeat to Afrobeat. Miles Davis famously described Fela Kuti (1938-1997) as “the future of music.” Beyoncé’s attempt “to do something that sounds like Fela” saw her compose an unpublished 20-track album. Arguably Africa’s most prolific and controversial artist of the twentieth century. Fela continues to be invoked as musical genius and as icon of popular struggle. This course invites students to explore the complexities of Fela’s art and activism. We mobilize his life/work as a springboard for examining emergent debates about African identity—from postcolonial masculinity to the creative logics of African cities, from contemporary African youth culture to the gendered politics of cultural memory.

Fall AFRI0980 S01 17000 TTh 2:30-3:50(12) (D. Ayobade)


AFRI 1020C. The Afro-Luso-Brazilian Triangle. Examines three historical components of the South Atlantic in terms of history, culture, and contemporary political and economic consequences. European colonialism in Africa and Brazil constitutes the baseline for this exploration, but the long and tardy nature of Portuguese colonialism in Africa in comparison with other European colonial powers, especially in its post-World War II manifestations, is our starting point. Enrollment limited to 40.

AFRI 1020D. Race, Rights and Rebellion. Provides an in-depth examination of different kinds of social movements. Emphasis will be placed on the theoretical and methodological distinctions among various kinds of social movements and social movement actors. From anti-slavery revolts to struggles for independence to anti-apartheid movements, key concepts will include power, resistance, subaltern, hegemony, identity politics and consciousness.

AFRI 1050A. Advanced RPM Playwriting. Third level of RPM Playwriting; for students that have successfully completed RPM Playwriting and Intermediate RPM Playwriting (workshop). Instructor permission.

Fall AFRI1050A S01 18038 W 10:00-12:30(16) (E. Terry-Morgan)

AFRI 1050D. Intermediate RPM Playwriting. Second level of RPM Playwriting; for students that want to continue developing their RPM plays or want to begin a new project (workshop).

Fall AFRI1050D S01 18039 W 10:00-12:30(16) (E. Terry-Morgan)

AFRI 1050E. RPM Playwriting. Research-to-Performance Method (RPM) Playwriting guides students through the process of developing new plays that are informed by scholarly research (workshop).

Fall AFRI1050E S01 18040 W 10:00-12:30(16) (E. Terry-Morgan)

AFRI 1060E. West African Writers and Political Kingdom. Do West African writers have a role to play in the changing political landscape of their countries? An examination of the ways and means through which a select group of West African writers have dealt with issues that relate to the role of the state in the management of individual and group relations, the politics of gender, civil and military relations, and the construction of new forms of civil society. Enrollment limited to 20.

AFRI 1060U. An Introduction to Africa. Africa invokes myriad images in the global imagination. It figures in debates on the evolution of humans; in the formation of capitalism, and even as a counterpoint to discourses on human progress. This course interrogates how “Africa” gets mobilized in popular discourse in the US and beyond. How might we reconcile the idea of Africa with contemporary conditions of the African continent? We will not only examine Africa through a broad range of disciplinary perspectives; but also become familiar with social, cultural, political and economic diversity of the African continent. We will engage the disciplines of history, economics, politics, cultural studies and gender studies among others.

Fall AFRI1060U S01 17001 M 3:00-5:30 (D. Ayobade)

AFRI 1090. Black Freedom Struggle Since 1945. Lecture course that examines the extended history of the mass civil rights movement in the U.S. Starting at World War II, we consider the roles of the courts, the federal and state governments, organizations, local communities, individuals and various activist strategies in the ongoing struggle for African American equality, focusing on African American agency, particularly in the South, but also in Boston, Mass. Sources include photographs, documentaries, movies, letters, speeches,
autobiographies, and secondary readings. Requirements: Weekly readings, documentary viewings, 4 short papers, 2 exams.

This class surveys the genre, including the work of George Schuyler, Nalo Hopkinson, Samuel R. Delany, N.K. Jemison, Octavia Butler, Coslon Whitehead, and Tananarive Due, along with everything related, from comic books to album covers to filmic re-writings of canonical science fiction and fantasy works. The goal is to understand the history of the genre, its relationship to histories of anti-blackness and ideologies of black liberation, and its contributions to speculative fiction more broadly.

AFRI 1110. Voices Beneath the Veil.
VBV is an interdisciplinary exploration of African-American history and cultures through the analyses of Black authored plays from 1858 to the present. The course focuses on the development of a thesis paper, which includes an incremental re-writing process.
Fall AFRI1110 S01 17002 TTh 10:30-11:50(13) (E. Terry-Morgan)

AFRI 1150. Afro-Caribbean Philosophy.
An introduction to the field of Afro-Caribbean philosophy. The first half focuses on the history of the field, identifying its African background and surveying some of its major schools, such as the Afro-Christians, the poeticians, the historicists, and existentialists. The second half consists of a more intensive comparative focus on the ontologies and epistemologies of two of these schools.

AFRI 1210. Afro-Brazilians and the Brazilian Polity.
Explores the history and present-day conditions of Afro-Brazilians, looking specifically at the uses of Africana in contemporary Brazil, political and cultural movements among Afro-Brazilians, domestic politics and its external dimensions, and Brazilian race relations within a global comparative framework. Texts from a variety of disciplines. A reading knowledge of Portuguese is not required but students so advantaged should inform the instructor.
Fall AFRI1210 S01 17003 W 3:00-5:30 (A. Dzidzienyo)

AFRI 1360. Africana Studies: Knowledge, Texts and Methodology.
This course will explore the issues of Africana Studies as a discipline by engaging in a series of critical readings of the central texts, which laid the protocols of the discipline. The course will also raise issues of knowledge production and methodologies. This course is a senior capstone seminar. Open to all senior Africana Studies concentrators; others by instructor permission only. Enrollment limited to 25.

AFRI 1460. Tell the Story: The Afro-Diasporic Experience Through Documentary Film.
Documentary films have grown into an influential art form that has influenced politics, culture, social movements and how we see the world. They are relied on to sort out fact from fiction in an increasingly complex world where the lines continue to blur. Through film screenings, lectures, readings, critical analysis and group discussions, the course examines the changing nature of the documentary as it relates to how films documenting the Black Experience are conceived, told and distributed in different mediums. We will also look at how these films have been influenced as much by technology and ethical, social, cultural and political movements, as it has by the individual choices of the filmmakers.
Fall AFRI1460 S01 18438 Th 4:00-6:30 (Y. Richen)

AFRI 1920. Health Inequality in Historical Perspective.
Seminar takes a historical perspective to explore causes of health inequality. Draws on studies from the 19th century-present. Examines socio-political and economic context of health/disease, focusing on how race, class, and gender shape the experience of health, disease causality, and public health responses with emphasis on the COVID-19 pandemic. Includes health consequences of immigration and pandemics, incarceration, race-based medicine. Enrollment restricted to 20, second and third-year students.
Fall AFRI1920 S01 17004 W 3:00-5:30 (L. Braun)

AFRI 1970. Independent Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

This course will be a close reading of the various ideas, theories and practices of the thinkers, writers, artists and activists whose work and practices have constituted an Africana intellectual tradition. In conducting this review we will examine questions around the formation and the history of thought and intellectual traditions in general. We will also think about the various fields of knowledge which have shaped Africana thought. The course therefore will spend some time working through the different meanings of intellectual work and critical thought and theory. Enrollment limited to 12 graduate students.
Fall AFRI2001 S01 17005 T 4:00-6:30 (P. Henry)

A preoccupation of Africana Studies involves the central, highly contested role of the notion of what constitutes black culture in the modern world. To what degree can we claim aesthetic and other distinctions between black cultures in the Diaspora and other western cultural practices and expressive forms? What role did enslavement, forced migration and segregation play in shaping Africana culture in the modern west? These cultural debates play a central role in literary, musical, philosophical, aesthetic, historical and sociological analyses of the culture of people of African descent frame this graduate course.

This graduate seminar brings together various methodological and theoretical approaches to interpreting Africana life, culture, thought, and politics. Placing special emphasis on emerging scholarship that shapes and reshapes the discipline of Africana Studies, we examine a selection of humanistic and social scientific studies of various local, national, and international contexts. Texts demonstrate the ways in which innovative interdisciplinary methods are crucial for understanding the complexity of the Africana world. We will give attention to the strategies scholars utilize to formulate their research questions, design their methodologies, and create new ideas that contribute to the advancement of Africana Studies scholarship.

AFRI 2104. Theorizing the Black Diaspora.
This seminar will focus on the theorization of the black diaspora as a way to explore the various articulations of colonialism, gendered racism and resistance against that racism throughout African-descendant communities. Course readings will highlight the scholarship of black women who have contributed to the internationalization of radical black vis-a-vis theories of diaspora, transnationalism, transformative politics, identity formation, and community. This course is open to upper level concentrators in Africana Studies by permission of instructor. Enrollment limited to 20.

This class is about re-figuring black residual thought as a field of interdisciplinary critical theory. Working with the corpus of writers like Sylvia Wynter, WEB Du Bois and Frantz Fanon the course will seek to grapple with the practices, questions and ideas of Black thinkers around questions of the human, the figure of the black fugitive, the signification of enslaved labor to the capitalism, Black internationalism, black feminism and the ways in which questions of history have been reconfigured in Black thought. The course is an reading intensive one and is open to all graduate students.

AFRI 2450. Exchange Scholar Program.
Fall AFRI2450 S01 15438 Arranged 'To Be Arranged'

AFRI 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall AFRI2970 S01 15439 Arranged 'To Be Arranged'
AFRI 2980. Graduate Level Independent Reading and Research.
A program of intensive reading and research. Section numbers may vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

AFRI 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall AFR2990 S01 15440 Arranged "To Be Arranged"

AFRI XLIST. Courses of Interest to Concentrators in Africana Studies.
Fall 2020
The following courses may be taken for concentration credit. Please see the sponsoring department for the time and location of each course.

English
ENGL 1710J - Modern African Literature
ENGL 1761F - Toni Morrison

American Studies
American Studies
AMST 0070. An Introduction to Africana Studies (AFRI 0090).
Interested students must register for AFRI 0090.
Fall AMST0070 S01 17428 Arranged "To Be Arranged"

AMST 0150P. The Teen Age: Youth, Society and Culture in Early Cold War America.
An interdisciplinary and multimedia exploration of the experiences, culture, and representation of youth in the United States from the end of World War II through the beginning of the Vietnam War. Enrollment limited to 19.

AMST 0170D. Musical Youth Cultures.
This sophomore seminar explores how and why young people form communities around popular music. We will discuss readings and documentary films about musical subcultures, media circulation, and how young people make music meaningful in their lives. The course requires critical engagement with a variety of popular music genres and cultures, as well as reflection on our own musical production and consumption practices. Major topics include punk, hip-hop, metal, rock, and club music; popular music and intersectional identity (including race, gender, sexuality, ethnicity, and disability); fan communities; activist musical collectives; music-sharing technologies; the politics of style; and ethnographic theory and method.

How do we situate the history of World War II Japanese American incarceration not as an exceptional moment of wartime hysteria, but as one example of an American tradition of racialized exclusion and incarceration in the service of white supremacy? How does public memory surrounding Japanese American incarceration shape our understanding of the relationships between immigration, race, exclusion, and incarceration today? Drawing from interdisciplinary sources from photographs to literature, academic texts, films, exhibits, and poetry, this course traces the history of incarceration in the United States as a mechanism of racialized social control by focusing on Japanese American history.
Fall AMST0192G S01 17233 TTh 9:00-10:20(02) (E. Aoyama)

AMST 0192H. Blurred and Faded: Disrupting the Color-Line Through Photography.
Blurred and Faded: Disrupting the Color-Line Through Photography explores visual and literary representations of racial mixture. Focusing on Harlem Renaissance photography, this course considers the impact that depictions of racial-mixture have had on systems of racial classification. Over the semester, we will trace the visual resonance of these historical images in our contemporary moment. Readings include Nella Larsen’s Passing And Jessie Redman Fauset’s Plum Bun: A Novel Without a Moral.
Fall AMST0192H S01 17528 TTh 10:30-11:50(13) (J. Jones)

Interested students must register for AFRI 1090.

AMST 1600C. The Anti-Trafficking Savior Complex: Saints, Sinners, and Modern-Day Slavery.
How can we understand the global movement to combat human trafficking within critical frameworks on “industrial complexes”? Drawing from scholarship on the prison industrial, non-profit industrial, and white savior complexes this course examines human trafficking through the lens of race, class, gender, and national forms of power and subjectivity. Readings will problematize the so-called saints and sinners of the movement, investigating various global helping projects that exist to stop "modern day slavery."
Fall AMST1600C S01 15738 MWF 11:00-11:50(16) (E. Shi)

AMST 1600K. Memory and Forgetting in Popular Culture.
Is it always good to remember? Does forgetting always imply failure? While it is easier than ever to document and access information, the rise of ephemeral media such as Snapchat indicates a growing desire for the past to remain past, and not become a burden on the present. This course explores the tension between remembering and forgetting as it is portrayed in film, literature, and technology, to examine what they reveal about our belief in—and anxieties towards—human memory.
Fall AMST1600K S01 18251 TTh 1:00-2:20(08) (A. Anderson)

AMST 1605P. Channeling Race: Television and Race in America (MCM 1505P).
Interested students must register for MCM 1505P.
Fall AMST1605P S01 17430 Arranged "To Be Arranged"

AMST 1611D. Reading New York (ENGL 1711D).
Interested students must register for ENGL 1711D.
Fall AMST1611D S01 17429 Arranged "To Be Arranged"

AMST 1611M. Trauma and the Shame of the Unspeakable: The Holocaust, American Slavery, and Childhood Sexual Abuse.
The problem of representing traumatic experience has been raised by witnesses and survivors, psychoanalysts, psychologists, sociologists, philosophers, and artists. This course compares three historical situations—The Holocaust, American slavery, and childhood sexual abuse—by reading histories, memoirs, and fictions, and analyzing material cultural artifacts such as memorials. Questions about the relation of individual trauma to collective and cultural trauma will be pursued through readings that will include Freud, Jeffrey Alexander, Judith Herman, Dominique La Capra, Primo Levi, Jill Christman, Harriet Jacobs, Toni Morrison, Gayle Jones and Art Spiegelman.

AMST 1700N. Public Memory: Testimony, Memorial, Ritual.
This seminar explores theories and practices of public memory by studying three related topics and media. Questions about the relation of history and memory are pursued by reading verbal testimony. Questions about commemoration are developed by looking at material objects and public spaces. Questions about embodied memory are explored by witnessing trauma, performance, and ritual. Readings will include Freud, Nora Derrida, Halbwachs, Laub, Savage, Connerton, Taylor and Young. Rhode Island will provide our field for understanding how public memory works in verbal, material, and embodied signs of the past and present.

This seminar offers a critical and comparative exploration of American music genres that operate as "heritage music" or "ethnic music" in the context of American multiculturalism. We will collectively investigate how musical practice and related discourse can construct, express, perpetuate, and sometimes challenge various cultural identities, community affiliations, and political ideologies. We will particularly attend to public performance contexts, including music festivals, club dancefloors, and live-streaming/archived online performances. Case studies focus on rural Southern "folk" genres, Chicago blues and house, Asian American taiko ensembles, and norteño/tejano dance musics (from huapangos to Selena). Readings draw on historical and ethnographic scholarship grounded in critical heritage studies and critical race theory. Limited to junior-year American Studies and Ethnic Studies concentrators.
Fall AMST1700P S01 18502 TTh 2:30-3:50(12) (K. Miller)

AMST 1901D. Motherhood in Black and White.
This seminar focuses on the experience and ideology of American motherhood with respect to the different experiences of Black and white mothers from the slave era to the present.. Texts include fiction, film, history, feminist and psychoanalytic theory, e.g. "Uncle Tom's Cabin," "Incidents in the Life of a Slave Girl," "Imitation of Life," and "The Reproduction of Mothering." This seminar will be conducted online in the Fall of 2020 with both synchronous and asynchronous elements. The
current syllabus is available for reference and many of the readings will remain the same, but the work will be re-organized before the semester begins and an updated syllabus posted then. Enrollment limited to 20.

**AMST 1906U. Culture as History: Making the 20th Century United States.**

This interdisciplinary course explores selected currents in U.S. cultural history from the late nineteenth century to the end of the twentieth century. Thematic explorations trace the historical development of American cultural forms and practices, showing how transformations in communications, media, and consumption shaped Americans' experience of capitalism and market expansion, ideas of self and society, social conflict around questions of race, class, gender, nationalism and empire, as well as immigration, migration, and social movements of both the left and right. Our broad goal will be to understand how culture came to shape how historical change unfolded in this period.

**AMST 1970. Independent Reading and Research.**

Required of all honors candidates in the senior year. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. S/NC

**AMST 1971. Digital Media and Virtual Performance (MUSC 1971).**

Interested students must register for MUSC 1971.

**AMST 2010. Introduction to Interdisciplinary Methods.**

Introduction to interdisciplinary studies required of all first-year graduate students in American Studies. Graduate students from other departments may enroll with permission of the instructor.

**AMST 2020E. Introduction to Interdisciplinary American Studies.**

This graduate-level course offers an introduction to the discipline of American Studies through a close reading of four important texts representing different methodologies and theories within the discipline. We will also read a series of seminal articles focused on transnationalism, highlighting the significance of border-crossings to the American experience throughout the semester. The goal of the course is to familiarize students with pedagogical approaches within American Studies, through active seminar discussions, fieldtrips within the community, and work with material and visual media as well as secondary texts.

**AMST 2220B. Culture, Politics and the Metropolitan Built Environment.**

This interdisciplinary readings seminar will provide graduate students with an introduction to recent scholarly work on 20th century and contemporary cities and suburbs. Readings are drawn from cultural, political, social, and intellectual history, American Studies, political science, sociology, and ethnography. They will investigate the interconnections between urban and suburban development and the role of ideology, class, gender, race, and globalization in shaping planning, architecture, culture, policy, politics, and social movements. This class is open to students in American Studies, History, Sociology, Political Science, Anthropology, and other disciplines who find themselves interested in multi-disciplinary approaches to the study of cities and suburbs.

**AMST 2220U. The Fugitivity of Slowness, Stillness, and Stasis (HMAN 2401D).**

Interested students must register for HMAN 2401D.

**AMST 2450. Exchange Scholar Program.**

Registration is limited to 20. Instructor permission required.

**AMST 2520. American Studies: Professional Issues in American Studies.**

This course explores the mechanics of a doctorate degree in American Studies. We will explore the constitution of our field through the elaboration of field exam lists and narratives, query its pedagogical application in the design of undergraduate syllabi, and begin to outline and enact our participation in the profession both within and beyond the academy. At the end of this class, students will have constructed a portfolio that will assist their progress towards a degree and provide the tools with which to chart pathways once a degree is in hand. S/NC

**AMST 2525. American Studies MA Capstone.**

This course is required for all Masters students in American Studies who are in their final semester. Enrolled students will work with American Studies faculty to complete an interdisciplinary research paper or project of their choice.

**AMST 2540. Methods in Public Humanities.**

This course surveys public humanities work, including cultural heritage preservation and interpretation, museum collecting and exhibition, informal education, and cultural development. It also provides an overview of the contexts of that work in nonprofit organizations, including governance, management, and development.

**AMST 2630. Public Amnesias and Their Discontents: Theories and Practices of Remembering and Forgetting.**

This course considers the consequences of forgetting as one of the challenges and provocations to the work of public humanities. By extending the histories of memory into discourses of “amnesia,” we will identify origins, effects, and the possibility of a return for material that has become forgotten or, more significant for us, made forgettable. This class is not about memory loss as an individual neurological condition, but as cultural and civic phenomena: specifically, how material objects in the public sphere become lost from view.

**AMST 2650. Introduction to Public Humanities.**

This class, a foundational course for the MA in Public Humanities with preference given to American Studies graduate students, will address the theoretical bases of the public humanities, including topics of history and memory, museums and memorials, the roles of expertise and experience, community cultural development, and material culture. Enrollment limited to 20 graduate students.

**AMST 2660. Projects in Public Humanities.**

Devoted to one or more advanced projects in Public Humanities not covered in detail by the regular courses. Projects in public humanities provide practical, hands-on project and group project management experience that is essential for careers in museums, historic preservation, and cultural agencies. Students will work with faculty advisor to project completion. Written permission and topic description required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. This course is repeatable for credit. Prerequisite: AMCV 2650 or demonstrated ability of equivalent experience. Instructor permission required.

**AMST 2680. Semester Practicum in Public Humanities.**

Practicums in public humanities provide practical, hands-on training that is essential for careers in museums, historic preservation, and cultural agencies. Students will work with faculty to find appropriate placements and negotiate a semester’s or summer work, in general a specific project. Available only to students in the Public Humanities M.A. program.

**AMST 2685. Critical Approaches to Preservation and Cultural Heritage.**

This course examines the modern fields of preservation and cultural heritage from a historical and critical point of view to better understand their formation, evolution, current condition and the issues integral to their future. We explore such thorny topics as the “invention” of tradition and the relationship between heritage programs and nationalism, the evolution of the global cultural heritage industry, the story of preservation institutions in the United States and abroad, the rise of cultural heritage crimes in conflict zones, public history and memorials at “sites of conscience,” and the emergence of digital preservation and “experimental preservation.”

**AMST 2920. Independent Reading and Research.**

Section numbers vary by instructor. Search Banner by instructor name to find the correct section number and CRN to use when registering for this course. You will need instructor permission to register and the course may be repeated with different instructors. Open to American Studies graduate students only. S/NC
AMST 2921. Independent Reading and Research. 
Section numbers vary by instructor. Search Banner by instructor name to find the correct section number and CRN to use when registering for this course. You will need instructor permission to register and the course may be repeated with different instructors. Open to American Studies graduate students only. S/NC

AMST 2922. Independent Reading and Research. 
Section numbers vary by instructor. Search Banner by instructor name to find the correct section number and CRN to use when registering for this course. You will need instructor permission to register and the course may be repeated with different instructors. Open to American Studies graduate students only. S/NC

AMST 2923. Independent Reading and Research. 
Section numbers vary by instructor. Search Banner by instructor name to find the correct section number and CRN to use when registering for this course. You will need instructor permission to register and the course may be repeated with different instructors. Open to American Studies graduate students only. S/NC

AMST 2950. Independent Reading and Research in Public Humanities. 
For MA in Public Humanities Students who wish to do independent reading and research. 

AMST 2970C. Rethinking the Civil Rights Movement (HIST 2970C). 
Interested students must register for HIST 2970C.

AMST 2990. Thesis Preparation. 
For graduate students who have met the residency requirement and are continuing research on a full time basis. Fall AMST2990 S01 15442 Arranged ‘To Be Arranged’

Ethnic Studies

ETHN 0070. An Introduction to Africana Studies (AFRI 0090). 
Interested students must register for AFRI 0090. Fall ETHN0070 S01 17431 Arranged ‘To Be Arranged’

ETHN 0090A. The Border/La Frontera. 
We will examine the historical formation, contemporary reality and popular representation of the U.S.-Mexico border from a bilingual (English-Spanish), multicultural (U.S., Mexican, and Latino), and transnational perspective within the framework of globalization. We will explore the construction of border communities, lives and identities on both sides of the international divide, and pay particular attention to the movement of peoples in both directions. We will read materials, watch films, and conduct class discussions in English and Spanish. Comfort and reasonable proficiency in Spanish is required, but native command is not necessary. Enrollment limited to 19 first year students. Fall ETHN0090A S01 17671 M 3:00-5:30 (E. Hu-Dehart)

ETHN 0190B. Bad Capital: Race, Technology, and Asian/America. 
How do representations of Asians and Asian Americans reinforce systems of Orientalism, capitalism, and colonialism in the U.S. and beyond? Through film, literature, and theory, this course aims to examine representations of Asian/American labor, capital, and consumption against the historical backdrop of the evolving U.S. political economy. Tracing historical representations of post-Empiricism Asian “cooie” laborers to contemporary anxieties surrounding Chinese surveillance, Indian tech outsourcing, and Japanese manufacturing, this course aims to unpack cultural representations of Asian/Americans at the intersections of Orientalism, capitalism, and technology. This course is designated under the DIAP and WRIT curricular programs. Fall ETHN0190BS01 17527 TTh 1:00-2:20(08) (M. Tseng Putterman)

ETHN 1000. Introduction to American/Ethnic Studies. 
Considers the U.S. as a society whose unifying identity is rooted in ethnic and racial diversity. Explores the historical and contemporary experiences of racial and ethnic groups in this country and analyzes different forms of representation of those experiences, as well as representations of the racial and ethnic stratification in the U.S. imagination. Fall ETHN1000 S01 15749 MWF 11:00-11:50(16) (A. Keene)

ETHN 1200B. Contemporary Indigenous Education in North America. 
In the past, formalized schooling in Indigenous communities was a tool of colonization and cultural genocide, forcing Native peoples to assimilate to western norms, values, and knowledge. However, contemporary Indigenous communities have managed to reclaim and reshape education for Native youth, utilizing innovative methods and technologies, as well as drawing upon generations of traditional and indigenous knowledge to create environments that promote academic achievement alongside culture. In this course we will focus on the ways Native communities are asserting their educational sovereignty, through culturally-relevant/ responsive curriculums, language immersion schools, indigenous charter schools, traditional ecological and scientific knowledges, and more. Fall ETHN1200BS01 15746 W 3:00-5:30 (A. Keene)

ETHN 1200I. History and Resistance in Representations of Native Peoples. 
Throughout history, Native peoples have been portrayed through a stock set of stereotypes such as savage warriors, Indian princesses, or mystical shamans. These images surround us in advertising, news media, Hollywood, sports mascots, and Halloween costumes. This course will examine the foundations of these representations and their connections to colonization, with a focus on contemporary and ongoing examples, from Johnny Depp’s Tonto, Urban Outfitters’ “Navajo” products, to JK Rowling’s “History of Magic in North America,” with a focus on the ways Native peoples are taking back and reshaping Native representations through activism, social media, art, design, film, and more.

ETHN 1200K. Introduction to American Indian Studies. 
This class examines the politics, cultures, histories, representations, and study of the Native peoples of North America, with a primary focus on the United States. Although broad in cultural and geographic scope, the course does not attempt to summarize the diverse cultures of the several hundred Native groups of the continent. Instead, we will focus on several key issues in the lives of, and scholarship about, American Indian/Native American/First Nations/Indigenous peoples in the US. The course will consist of lecture on Monday and Wednesday, and once a week section meetings for discussion.

ETHN 1650G. Reading Closely. 
We experience the world in and through language, or, as Jacques Derrida famously noted, there is nothing outside of the text. This is a course designed to introduce you to and/or sharpen your close reading skills. The phrase “close reading” has its origins in literary studies, but it is a methodological tool that can help you unlock any number of written texts and oral speech acts. In an era of “fake news” and near constant assertion with little substantiation of arguments, we more than ever need to be close readers of complex and seemingly simple speech acts.

In many Native American communities the push to “eat local” is often based on reviving a traditional food culture as well as a way of promoting better health. This class explores the disparate health conditions faced by Native communities, and the efforts by many groups to address these health problems through increasing community access to traditional foods, whether by gardening projects or a revival of hunting and fishing traditions. We will examine the ways in which Native food movements have converged and diverged from general American local food movements, and the struggles they often face in reviving treaty-guaranteed food ways.

ETHN 1750S. Extravagant Texts: Reading the World Through Asian American Literature. 
In this course we study a body of writings that self-consciously move beyond the topics and genres with which Asian American literature has traditionally been associated—that are, in Maxine Hong’s Kingston’s formulation, “extravagant.” We explore works that adopt a transnational or diasporic perspective and that are written in such genres as magical realism, speculative fiction, and poetry. In addition to more conventional concerns like racism or immigration, these works also address such issues as empire, war, mixed-race identity, environmentalism, adoption, and sexuality.

ETHN 1800. Honors Seminar (AMST 1800). 
Interested students must register for AMST 1800.
ETHN 1900E. Senior Seminar in Ethnic Studies.
No description available.

ETHN 1910. Independent Study.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**Anthropology**

**ANTH 0100. Introduction to Cultural Anthropology.**
This course provides an introduction to cultural anthropology, surveying its defining questions, methods, and findings. We will examine the history and utility of anthropology's hallmark method, ethnography, the long-term immersion of the researcher in the culture under study. We will compare cultural anthropology's findings and comportment in other cultures to its conclusions and conduct in our own. No prerequisites.

**ANTH 0500. Past Forward: Discovering Anthropological Archaeology.**
This course offers a broad journey through the human past, from material culture crafted by our evolutionary ancestors to the remnants of the recent historic past. To facilitate this journey, the class explores the methods, concepts, and theories that anthropologists employ in the study of past peoples, places, and things. Case studies stretch across the globe. As a hands-on endeavor, archaeology focuses on tangible evidence. In this course, small-group discussion, laboratory, and field exercises will complement lectures, leading to an understanding of how anthropologists study the past and how that knowledge affects the present.

**ANTH 1030. Pre-Columbian Art and Architecture: A World That Matters.**
Survey of ancient art and building in ancient America, with a focus on Mexico, Central America, and the Andes. Underlying concepts include: meaning and method, cosmos and kingship, narrative and symbol, personality and authorship, empire and royal court. Rich collections of the Haffenreffer museum will form the focus of work in the class.

**ANTH 1150. Middle East in Anthropological Perspective.**
A seminar focusing on anthropological methods of analyzing and interpreting Middle Eastern cultures and societies. Emphasizes the study of kinship, tribal structure, social organization and gender relations, ethnic groups relations, and urban-rural distinctions. Draws upon insights from these topics as a basis for understanding contemporary social, economic, and political dynamics in the region.

**ANTH 1201. Introduction to Geographic Information Systems and Spatial Analysis.**
This course offers an introduction to the concepts and techniques of Geographic Information Systems (GIS). Through weekly lab assignments and work on independent projects, students develop skills in cartography and coordinate systems, spatial database design, image processing, basic spatial analysis, hydrological modeling, and three-dimensional modeling. Discussions and case material draw primarily from the application of GIS in archaeology, anthropology, and cultural geography, including the study of archival materials and the ethics of geographic representation. Provides foundation for upper division coursework in spatial analysis. Software focuses on ESRI products (ArcMap, ArcScene, ArcCatalog, ArcGIS Pro).

**ANTH 1223. Gender, Nature, the Body.**
This course is an interrogation of the ways in which gender difference comes to be conceived of as "natural" in modern science and different cultures. What is the connection between the science of gender difference and the colonial encounter? What are some different ways of imagining gender difference? How are gender inequalities structured and perpetuated by science and political economy? Through careful reading of historical and anthropological texts, we will learn about various ways in which gender systems are constructed and resisted, how science is used to construct gender, and how gender politics influence scientific outcomes and practices.

**ANTH 1236. Urban Life: Anthropology in and of the City.**
This course examines how anthropologists have worked in the city -- to understand dwelling and lived experience from the center to the margins of the city -- as well as how anthropologists have contributed to the study of the city -- conceptualizing the city itself in relation to its inhabitants, and working to understand how cities develop, decline, or are sustained. Anchored in key theory, classic texts, and contemporary ethnography, the course traces also the history, present, and possible futures of the discipline. Students learn the methods of urban ethnography, and gain hands-on experience through local field exercises and related writing assignments.

**ANTH 1250. Film and Anthropology: Identity and Images of Indian Societies.**
The course examines representation of Indian society in film and anthropological literature. We compare how gender, national identity, religious practices, and historical events are portrayed in films and anthropological literature. We will explore the relationship between visual and textual, showing how film reflect and make comprehensible anthropological concepts of Indian culture, and creates different images of the society.

**ANTH 1301. Anthropology of Homelessness.**
Homelessness emerged as a public concern in the United States and in other industrialized countries in the late 1970s as people began encountering people living on the streets, a way of life formerly confined to the skid rows of large cities. In this course, through readings, discussions, and hands on experiences with individuals and families experiencing homelessness, we will uncover the causes, conditions, and responses to homelessness. Each student will spend at least two hours per week in a local homeless-serving community partners in order to gain face to face experiences. The field placements will be facilitated by the professor.

**ANTH 1350. Anthropology of Epidemics.**
This upper-level undergraduate medical anthropology seminar will explore the lived experience of contemporary epidemic outbreaks through an anthropological lens. As COVID-19 has made abundantly clear, both the causes and effects of epidemics are heavily shaped by social, cultural, economic, and political circumstances. Through close readings of ethnographic and historical literature on epidemics, along with multimedia material from current events, we will investigate how and why major infectious and non-infectious epidemics play out in the ways that they do, and how people in different times, places, and contexts understand and experience these events.

**ANTH 1505. Vertical Civilization: South American Archaeology from Monte Verde to the Inkas.**
This course offers an introduction to the archaeology of indigenous south American Civilizations, from the peopling of the continent around 13,000 years ago, to the Spanish Invasion of the 16th Century C.E. Throughout, we seek to understand the often unique solutions that South America indigenous peoples developed to deal with risk and to make sense of the world around them. Course lectures and discussions focus on recent research and major debates. Weekly sections draw on viewings of artifacts and manuscripts from the Haffenreffer Museum and the John Carter Brown Library.

**ANTH 1601. Reimagining Climate Change.**
We know what causes climate change and we know what to do about it—yet it seems we only keep making it worse. Our climate stalemate suggests we need to look critically at the dominant responses to climate change so as to identify: why they have become commonsensical yet ineffectual or unrealizable; and why other responses remain silenced or unexplored. Such a lens impels us to reconsider silver-bullet “solutions” while creating space for views marginalized by exploitative, racist, patriarchal, and anthropocentric systems. Toward these ends, this course will prepare students to reconceptualize climate change and reimagine our responses to it.

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<th>Course Code</th>
<th>Section</th>
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<td>17679</td>
<td>TTh</td>
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ANTH 1624. Indians, Colonists, and Africans in New England.
The course explores the colonial and capitalist transformation of New England's social and cultural landscapes following European contact. Using archaeology as critical evidence, we will examine claims about conquest, Indian Extinction, and class, gender and race relations by studying the daily lives and interactions of the area's diverse Native American, African American, and European peoples.

ANTH 1631. The Just City (URBN 1934).
Interested students must register for URBN 1934.

ANTH 1650. Ancient Maya Writing.
Nature and content of Mayan hieroglyphic writing, from 100 to 1600 CE. Methods of decipherment, introduction to textual study, and application to interpretations of Mayan language, imagery, world view, and society. Literacy and Mesoamerican background of script.

ANTH 1720. The Human Skeleton.
More than simply a tissue within our bodies, the human skeleton is a gateway into narratives of the past--from the evolution of our species to the biography of individual past lives. Through lecture and hands-on laboratory, students will learn the complete anatomy of the human skeleton, with an emphasis on the human skeleton in functional and evolutionary perspective. We'll also explore forensic and bioarchaeological approaches to the skeleton. By the course conclusion, students will be able to conduct basic skeletal analysis and will be prepared for more advanced studies of the skeleton from medical, forensic, archaeological, and evolutionary perspectives.

ANTH 1760. Disability and Culture in the Past and Present.
Like gender and race, disability is a cultural and social formation that identifies particular bodies and minds as different, regularly as undesirable, and rarely as extraordinary. This course introduces the theoretical, cultural, and political models of disability and explores the lived experiences of persons with disabilities across time and within different social contexts. Through a discussion of scholarly readings, literature, film, photography, art, and archaeology, this seminar considers disability in relation to: identity; impairment; stigma; monstrosity; marginalization; discrimination; beauty; power; media representations; activism; intersectionality; and gender and sexuality.

ANTH 1901. Anthropology in/of the Museum.
This course provides an introduction to museums from an anthropological perspective. Topics include politics of representation and the construction of the "Other": objects, identity, and meaning; collecting and cultural property; and collaboration, community engagement, and indigenous self-representation. Assignments involve work with the Haffenreffer Museum of Anthropology's exhibitions and collections. The course focuses on museums dedicated to natural and cultural history, but establishes theoretical and practical grounding for thinking about and working in other disciplines and other kinds of display institutions. It is suitable for both undergraduate and graduate students. There are no prerequisites; but familiarity with anthropology is presumed.

ANTH 1910. Anthropology of Place.
The anthropology of place serves as a unifying theme for the seminar by bridging anthropology’s subdisciplines and articulating with other fields of knowledge. Through readings and discussion, students will explore how place permeates people’s everyday lives and their engagement with the world, and is implicit in the meanings they attach to specific locales, their struggles over them, and the longings they express for them in rapidly changing and reconfigured landscapes. Enrollment limited to 20.

ANTH 1940. Ethnographic Research Methods.
To understand the different theoretical assumptions that shape research efforts; to examine how hypotheses and research questions are formulated; and to appreciate the ethical and scientific dimensions of research by hands-on experience in fieldwork projects. Prerequisite: One Anthropology course.

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

This Senior Seminar capstone course is a critical look at the past, present, future of anthropology. The class proceeds from the premise that we must know the history of our field in order to build a stronger discipline. It examines the contributions and missteps of past anthropologists. Among the key questions to address: What are the discipline’s aims and contributions in the 21st century? Has the field successfully integrated diverse voices and perspectives? Are their central theories and methods that have (and continue to) define the field? What does it mean to be an anthropologist?

A seminar exploring fundamental theoretical and ethnographic currents in 20th- and 21st-century cultural anthropology.

ANTH 2045. Proposal Writing Workshop for Anthropological Fieldwork.
This course is designed for third-year graduate students in any subfield of anthropology or closely related fields who are writing grant proposals for dissertation research. Student grant proposals will be pre-circulated and workshopped. Students will gain familiarity with the format for writing successful proposals, with the strategies needed to operationalize them, and with the everyday academic labor of both offering and responding to substantive feedback.

ANTH 2230. Medical Anthropology.
This graduate seminar provides a theoretical, methodological, and ethnographic foundation in medical anthropology. The focus will be on sociocultural approaches to the study of the suffering, illness and the body, though the course will also engage with key issues in biocultural approaches to understanding disease processes. Topics will include: social suffering, religion and medicine, local biologies, gender and the body, biotechnology, bioethics, caregiving and doctoring, and the global burden of disease.

ANTH 2253. Transnational Feminist Politics and Knowledge Production.
This interdisciplinary graduate seminar aims to de-center and decolonize discussions about feminism(s) by focusing on transnational feminist politics and knowledge production. Course readings and discussions will engage theoretical and methodological tools associated with transnational feminist politics and decolonizing knowledge. At the same time, the course will provide concrete empirical examples of struggles, strategies and forms of feminist resistances emanating from the Middle East, Latin America, Africa and South Asia. The course will encourage students to ask questions about transnational feminist solidarity and knowledge productions as well as power imbalances, tensions and conflicts within and between feminist groups and initiatives.

ANTH 2300. Anthropological Demography.
A seminar devoted to the investigation of the interface of anthropology (especially sociocultural anthropology) and demography. A wide variety of demographic topics—fertility, mortality, marriage, migration—are considered, and the links between anthropological and demographic writings on and approaches to these areas are examined.

ANTH 2450. Exchange Scholar Program.
Fall ANTH2450 S01 16483 M 12:00-2:30(15) (R. Carter)

ANTH 2501. Principles of Archaeology.
Examines theoretical and methodological issues in anthropological archaeology. Attention is given to past concerns, current debates, and future directions of archaeology in the social sciences.

ANTH 2530. Fieldwork.
This course is designed for third-year graduate students in any subfield of anthropology or closely related fields who are writing grant proposals for dissertation research. Student grant proposals will be pre-circulated and workshopped. Students will gain familiarity with the format for writing successful proposals, with the strategies needed to operationalize them, and with the everyday academic labor of both offering and responding to substantive feedback.

Fall ANTH2530 S01 17883 W 11:00-1:30(15) (N. Al-Ali)

ANTH 2570. Individual Research Project.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.
ANTH 2800. Linguistic Theory and Practice.
An introduction to theoretical and methodological issues in the study of language and social life. We begin by examining semiotic approaches to language. We turn to classical research on language as a structured system - covering such topics as phonology and grammatical categories - but we focus on the implications of such work for broader social scientific and humanistic research. We then consider areas of active contemporary research, including cognition and linguistic relativity, meaning and semantics, pronouns and deixis, deference and register, speech acts and performativity, interaction, verbal art and poetics, reported speech, performance, and linguistic ideology.

ANTH 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

ANTH 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ANTH 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Applied Mathematics

For students in any discipline that may involve numerical computations. Includes instruction for programming in MATLAB. Applications discussed include solution of linear equations (with vectors and matrices) and nonlinear equations (by bisection, iteration, and Newton’s method), interpolation, and curve-fitting, difference equations, iterated maps, numerical differentiation and integration, and differential equations. Prerequisite: MATH 1010 or its equivalent.

APMA 0330. Methods of Applied Mathematics I, II.
This course will cover mathematical techniques involving ordinary differential equations used in the analysis of physical, biological, and economic phenomena. The course emphasizes established methods and their applications rather than rigorous foundation. Topics include: first and second order differential equations, an introduction to numerical methods, series solutions, and Laplace transformations.

APMA 0340. Methods of Applied Mathematics I, II.
Mathematical techniques involving differential equations used in the analysis of physical, biological and economic phenomena. Emphasis on the use of established methods, rather than rigorous foundations. I: First and second order differential equations. II: Applications of linear algebra to systems of equations; numerical methods; nonlinear problems and stability; introduction to partial differential equations; introduction to statistics. Prerequisite: MATH 1010, 10170, 10180, 10190, 20200, or 0350, or advanced placement.

This course provides a comprehensive introduction to ordinary differential equations and their applications. During the course, we will see how applied mathematicians use ordinary differential equations to solve practical applications, from understanding the underlying problem, creating a differential-equations model, solving the model using analytical, numerical, or qualitative methods, and interpreting the findings in terms of the original problem. We will also learn about the underlying rigorous theoretical foundations of differential equations. Format: lectures and problem-solving workshops. Prerequisites: MATH 1000, MATH 10170, MATH 10180, MATH 10190, MATH 20200, MATH 0350 or advanced placement. MATH 0520 (can be taken concurrently).

This course builds on APMA 0350 which covers ordinary differential equations and systems involving a single independent variable. We will look at processes with two or more independent variables formulated as partial differential equations (PDE) using concepts from multivariable calculus. We will see how problems are described quantitatively as PDEs, how seemingly unrelated contexts can result in similar equations; and develop methods for solution using analytical, numerical or qualitative methods. Contexts include first order equations; the second order wave equation and problems involving diffusion processes; steady state balances for systems in two or three dimensions; together with insights from theory.

APMA 0650. Essential Statistics.
A first course in probability and statistics emphasizing statistical reasoning and basic concepts. Topics include visual and numerical summaries of data, representative and non-representative samples, elementary discrete probability theory, the normal distribution, sampling variability, elementary statistical inference, measures of association. Examples and applications from the popular press and the life, social and physical sciences. No prerequisites.

APMA 1070. Quantitative Models of Biological Systems.
Quantitative dynamic models help understand problems in biology and there has been rapid progress in recent years. The course provides an introduction to the concepts and techniques, with applications to population dynamics, infectious diseases, enzyme kinetics, aspects of cellular biology. Additional topics covered will vary. Mathematical techniques will be discussed as they arise in the context of biological problems. Prerequisites: APMA 0330, 0340 or 0350, 0360, or written permission.

APMA 1080. Inference in Genomics and Molecular Biology.
Massive quantities of fundamental biological and geological sequence data have emerged. Goal of APMA1080 is to enable students to construct and apply probabilistic models to draw inferences from sequence data on problems novel to them. Statistical topics: Bayesian inferences; estimation; hypothesis testing and false discovery rates; statistical decision theory; change point algorithm; hidden Markov models; Kalman filters; and significances in high dimensions. Prerequisites: One of following APMA0160, APMA1655, MATH1610, CSCI1450; and one of the following AMPA0160, CSCI0040, CSCI0150, CSCI0170, CSCI0190, CLPS0950, waver for students with substantial computing experience and their acceptance of responsibility for their own computing.

APMA 1160. An Introduction to Numerical Optimization.
This course provides a thorough introduction to numerical methods and algorithms for solving non-linear continuous optimization problems. A particular attention will be given to the mathematical underpinnings to understand the theoretical properties of the optimization problems and the algorithms designed to solve them. Topics will include: line search methods, trust-region methods, nonlinear conjugate gradient methods, an introduction to constrained optimization (Karush-Kuhn-Tucker conditions, mini-maximization, saddle-points of Lagrangians). Some applications in signal and image processing will be explored. Basic programming skills at the level of APMA 16 or CSCI 40 are assumed.

APMA 1170. Introduction to Computational Linear Algebra.
Focuses on fundamental algorithms in computational linear algebra with relevance to all science concentrators. Basic linear algebra and matrix decompositions (Cholesky, LU, QR, etc.), round-off errors and numerical analysis of errors and convergence. Iterative methods and conjugate gradient techniques. Computation of eigenvalues and eigenvectors, and an introduction to least squares methods.

Basic probabilistic problems and methods in operations research and management science. Methods of problem formulation and solution. Markov chains, birth-death processes, stochastic service and queueing systems, the theory of sequential decisions under uncertainty, dynamic programming. Applications. Prerequisite: APMA 1650, 1655 or MATH 1610, or equivalent.

An introduction to the basic mathematical ideas and computational methods of optimizing allocation of effort or resources, with or without...

Fall APMA1330 S01 16983 MWF 1:00-1:50(06) (H. Dong)

APMA 1360. Applied Dynamical Systems. This course gives an overview of the theory and applications of dynamical systems modeled by differential equations and maps. We will discuss changes of the dynamics when parameters are varied, investigate periodic and homoclinic solutions that arise in applications, and study the impact of additional structures such as time reversibility and conserved quantities on the dynamics. We will also study systems with complicated "chaotic" dynamics that possess attracting sets which do not have an integer dimension. Applications to chemical reactions, climate, epidemiology, and phase transitions will be discussed.

APMA 1500. Statistical Inference I. APMA 1500 is an integrated first course in mathematical statistics. The first half of APMA 1500 covers probability and the last half is statistics, integrated with its probabilistic foundation. Specific topics include probability spaces, discrete and continuous random variables, methods for parameter estimation, confidence intervals, and hypothesis testing. Prerequisite: One year of university-level calculus. At Brown, this corresponds to MATH 0100, MATH 0170, MATH 0180, MATH 0190, MATH 0200, or MATH 0350. A score of 4 or 5 on the AP Calculus BC exam is also sufficient.

Fall APMA1560 S01 17022 TTh 1:00-2:20(08) (N. Kalinska)

APMA 1565. Statistical Inference II. Students may opt to enroll in 1565 for more in depth coverage of APMA 1560. Enrollment in 1565 will include an optional recitation section and required additional individual work. Applied Math concentrators are encouraged to take 1565.

Prerequisite (for either version): MATH 0100, 0170, 0180, 0190, 0200, or 0350.

Fall APMA1660 S01 16984 MWF 11:00-11:50(16) (Y. Shin)

APMA 1600. Statistical Inference II. APMA 1600 is designed as a sequel to APMA 1500 to form one of the alternative tracks for an integrated year's course in mathematical statistics. The main topic is linear models in statistics. Specific topics include likelihood-ratio tests, nonparametric tests, introduction to statistical computing, matrix approach to simple-linear and multiple regression, analysis of variance, and design of experiments. Prerequisite: APMA 1560, 1565 or equivalent, basic linear algebra.

APMA 1690. Computational Probability and Statistics. Examination of probability theory and mathematical statistics from the perspective of computing. Topics selected from random number generation, Monte Carlo methods, limit theorems, stochastic dependence, Bayesian networks, dimensionality reduction. Prerequisites: A calculus-based course in probability or statistics (e.g. APMA1650 or MATH1610) is required, and some programming experience is strongly recommended. Prerequisite: MATH 0100, 0170, 0180, 0190, 0200, or 0350, or equivalent placement.

Fall APMA1690 S01 16994 MWF 2:00-2:50(10) (S. Geman)

APMA 1710. Information Theory. Information theory is the study of the fundamental limits of information transmission and storage. This course, intended primarily for advanced undergraduates and beginning graduate students, offers a broad introduction to information theory and its applications: Entropy and information, lossless data compression, communication in the presence of noise, channel capacity, channel coding, source-channel separation, lossy data compression. Prerequisite: one course in probability.

APMA 1720. Monte Carlo Simulation with Applications to Finance. The course will cover the basics of Monte Carlo and its applications to financial engineering: generating random variables and simulating stochastic processes; analysis of simulated data; variance reduction techniques; binomial trees and option pricing; Black-Scholes formula; portfolio optimization; interest rate models. The course will use MATLAB as the standard simulation tool. Prerequisites: APMA 1650 or MATH 1610

APMA 1740. Recent Applications of Probability and Statistics. This course develops the mathematical foundations of modern applications of statistics to the computational, cognitive, engineering, and neural sciences. The course is rigorous, but the emphasis is on application. Topics include: Gibbs ensembles and their relation to maximum entropy, large deviations, exponential models, and information theory; statistical estimation and the generative, discriminative and algorithmic approaches to classification; graphical models, dynamic programming, MCMC computing, parameter estimation, and the EM algorithm. For 2,000-level credit enroll in 2610; for 1,000-level credit enroll in 1740. Rigorous calculus-based statistics, programming experience, and strong mathematical background are essential. For 2610, some graduate level analysis is strongly suggested.

APMA 1930U. Introduction to Stochastic Differential Equations. This seminar course serves as an introduction to stochastic differential equations at the senior undergraduate level. Topics covered include Brownian motion and white noise, stochastic integrals, the Ito calculus, existence and uniqueness of solutions to Ito stochastic differential equations, and the Feynman-Kac formula. More advanced topics, such as fractional Brownian motion, Lévy processes, and stochastic control theory, may be addressed depending on the interests of the class and time restrictions.

Fall APMA1930UL S01 17622 TTh 2:30-3:50(12) (A. Matzavinos)

APMA 1941B. Graphs and Networks. Title: Graphs and Networks Summary: Selected topics about the mathematics of graphs and networks with an emphasis on random graph models and the dynamics of processes operating on these graphs. Topics may include: empirical properties of biological, social, and technological networks (small-world effects, scale-free properties, transitivity, community structure); mathematical and statistical models of random graphs and their properties (Bernoulli random graphs, preferential attachment models, stochastic block models, phase transitions); dynamical processes on graphs and networks (percolation, cascades, epidemics, queuing, synchronization).

APMA 1941C. Wavelets & Applications. Introduce you to: the relatively new and interdisciplinary area of wavelets; the efficient and elegant algorithms to which they give rise including the wavelet transform; and mathematical tools that can be used to gain a rigorous understanding of wavelets. We will also cover some of the applications of these tools including the compression of video streams, approximation of solution of PDE's, and signal analysis. Students will select one topic related to wavelets to pursue in more depth based on applying the ideas covered in the course. There will be final presentations for these projects and students will submit an extended summary.

APMA 1970. Independent Study. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

APMA 1971. Independent Study - WRIT. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. This course should be taken in place of APMA 1970 if it is to be used to satisfy the WRIT requirement.

APMA 2080. Inference in Genomics and Molecular Biology. Sequencing of genomes has generated a massive quantity of fundamental biological data. We focus on drawing traditional and Bayesian statistical inferences from these data, including: motif finding; hidden Markov models; other probabilistic models, significances in high dimensions; and functional genomics. Emphasis is on the application of probability theory to inferences on data sequence with the goal of enabling students to independently construct probabilistic models in setting novel to them. Statistical topics: Bayesian inference, estimation, hypothesis testing and
false discovery rates, statistical decision theory. For 2,000-level credit enroll in 2080; for 1,000-level credit enroll in 1080.
Fall APMA2080 S01 17037 TTh 10:30-11:50(13) (C. Lawrence)

APMA 2110. Real Analysis.
Provides the basis of real analysis which is fundamental to many of the other courses in the program: metric spaces, measure theory, and the theory of integration and differentiation.
Fall APMA2110 S01 16987 MWF 10:00-10:50(14) (H. Dong)

APMA 2120. Hilbert Spaces and Their Applications.
A continuation of APMA 2110: metric spaces, Banach spaces, Hilbert spaces, the spectrum of bounded operators on Banach and Hilbert spaces, compact operators, applications to integral and differential equations.

Fall APMA2190 S01 16989 TTh 9:00-10:20(02) (G. Menon)


APMA 2450. Exchange Scholar Program.
Fall APMA2450 S01 15446 Arranged ‘To Be Arranged’

Finite difference methods for solving time-dependent initial value problems of partial differential equations. Fundamental concepts of consistency, accuracy, stability and convergence of finite difference methods will be covered. Associated well-posedness theory for linear time-dependent PDEs will also be covered. Some knowledge of computer programming expected.
Fall APMA2550 S01 17129 MW 3:00-4:20(10) (J. Guzman)

APMA 2560. Numerical Solution of Partial Differential Equations II.
An introduction to weighted residual methods, specifically spectral, finite element and spectral element methods. Topics include a review of variational calculus, the Rayleigh-Ritz method, approximation properties of spectral end finite element methods, and solution techniques. Homework will include both theoretical and computational problems.
Fall APMA2570A S01 17130 M 3:00-5:30 (M. Ainsworth)

APMA 2580B. Computational Fluid Dynamics for Compressible Flows.
An introduction to computational fluid dynamics with emphasis on compressible flows. We will cover finite difference, finite volume and finite element methods for compressible Euler and Navier-Stokes equations and for general hyperbolic conservation laws. Background material in hyperbolic partial differential equations will also be covered. Algorithm development, analysis, implementation and application issues will be addressed. Prerequisite: APMA 2550 or equivalent knowledge in numerical methods.
Fall APMA2812C S01 17235 W 3:00-5:30 (K. Ramanan)

APMA 2610. Recent Applications of Probability and Statistics.
This course develops the mathematical foundations of modern applications of statistics to the computational, cognitive, engineering, and neural sciences. The course is rigorous, but the emphasis is on application. Topics include: Gibbs ensembles and their relation to maximum entropy, large deviations, exponential models, and information theory; statistical estimation and the generative, discriminative and algorithmic approaches to classification; graphical models, dynamic programming, MCMC computing, parameter estimation, and the EM algorithm. For 2,000-level credit enroll in 2610; for 1,000-level credit enroll in 1740. Rigorous calculus-based statistics, programming experience, and strong mathematical background are essential. For 2610, some graduate level analysis is strongly suggested.

Part one of a two semester course that provides an introduction to probability theory based on measure theory. The first semester (APMA 2630) covers the following topics: countable state Markov chains, review of real analysis and metric spaces, probability spaces, random variables and measurable functions, Borel-Cantelli lemmas, weak and strong laws of large numbers, conditional expectation and beginning of discrete time martingale theory. Prerequisites—graduate real analysis, co-requisite—graduate real analysis.
Fall APMA2630 S01 16989 TTh 1:00-2:20(08) (H. Wang)

APMA 2640. Theory of Probability II.
Part two of a two semester course that provides an introduction to probability theory based on measure theory. Standard topics covered in the second-semester (APMA 2640) include the following: discrete time martingale theory, weak convergence (also called convergence in distribution) and the central limit theorem, and a study of Brownian motion. Optional topics include the ergodic theorem and large deviation theory. Prerequisites—undergraduate probability and analysis, co-requisite—graduate real analysis.

APMA 2670. Mathematical Statistics I.
This course presents advanced statistical inference methods. Topics include: foundations of statistical inference and comparison of classical, Bayesian, and minimax approaches, point and set estimation, hypothesis testing, linear regression, linear classification and principal component analysis, MRF, consistency and asymptotic normality of Maximum Likelihood and estimators, statistical inference from noisy or degraded data, and computational methods (E-M Algorithm, Markov Chain Monte Carlo, Bootstrap). Prerequisite: APMA 2630 or equivalent.
Fall APMA2670 S01 17014 Th 4:00-6:30 (B. Gidas)

APMA 2680. Mathematical Statistics II.
The course covers modern nonparametric statistical methods. Topics include: density estimation, multiple regression, adaptive smoothing, cross-validation, bootstrap, classification and regression trees, nonlinear discriminant analysis, projection pursuit, the ACE algorithm for time series prediction, support vector machines, and neural networks. The course will provide the mathematical underpinnings, but it will also touch upon some applications in computer vision/speech recognition, and biological, neural, and cognitive sciences. Prerequisite: APMA 2670.

APMA 2812C. Interacting Particle Systems.
The course will provide an introduction to both static and dynamic interacting particle systems. Topics covered will include basic constructions of interacting particle systems and their limits, including mean-field approximations, analysis of their ergodic properties, including Gibbs measures, Markov random fields and phase transitions. A broad range of applications, ranging from queueing networks to biology and statistical physics, will be used to illustrate the theory. Prerequisite: A good knowledge of measure-theoretic probability theory (at the level of APMA 2630 and 2640)
Fall APMA2812C S01 17235 W 3:00-5:30 (K. Ramanan)

APMA 2980. Research in Applied Mathematics.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

APMA 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall APMA2990 S01 15447 Arranged ‘To Be Arranged’
Archaeology and Ancient World

This course explores the archaeological remains of domestic life across the Roman world from Pompeii to Britain to Syria and attempts to reconstruct the private lives of Romans, particularly the women, children, servants, and slaves who were less visible in more public spheres. We will consider the methodological complexities of interpreting artifact assemblages and reflect on our own houses and notions of private lives both as sources of inspiration and stumbling blocks for understanding Roman domestic life as we open doors and re-people Roman houses.
Fall ARCH0526 S01 18376 MWF 1:00-1:50(06) (C. Rice)

ARCH 0763. The Private Life of the Privy: A Secret History of Toilets.
It's usually unspoken, but we all know the truth: everybody poops. This class starts with some basic questions: what is poop; what are toilets, cesspits, and latrines; and how have these changed over time. But where we go, what "equipment" we use, what goes into the loo, and the morals and ideals imbued in that act vary vastly between cultures – touching on complex questions of gender, religion, disease, technology, and science. Combining advanced scientific approaches with material and cultural analyses, this course will demonstrate that even a seemingly simple biological act can reveal a culture's most fundamental secrets.
ARCH 1765. Pandemics, Pathogens, and Plagues in the Greek and Roman Worlds.
Terro of mass illness is nothing new; as long as there have been humans, there has been disease. These pandemics and plagues have had moral impacts on past societies, much as contemporary plagues affect today's economies, social and political structures, and populations. This class considers disease and society in the ancient Greek and Roman worlds, beginning with the Plague of Athens in 430 BC and continuing to the outbreak of the 'first pandemic' of bubonic plague in AD 541. We will examine these case studies through archaeological material, written accounts, DNA analysis, palaeoclimate reconstruction, and palaeopathology.
Fall ARCH1765 S01 17531 TTh 2:30-3:50(12) (T. Franconi)

ARCH 1774. Microarchaeology.
Sediment – informally called 'dirt' or 'soils' – is a rich source of untapped information on ancient natural, animal, and human activity; the foundations of microarchaeology. This course will introduce students to key microarchaeological concepts including site-formation processes, human-environmental interactions, and chemical and microremain assemblages. Case studies will include the geochronological fingerprints of destruction; lifeways in cave shelters, pastoral encampments, and urban households; origins of agriculture and use of fire; and – everyone's favorite topic – what can be learned from human and animal excrement. Hands-on archaeological experiments, field collection, and laboratory methods will be introduced.
Fall ARCH1774 S01 17601 T 4:00-6:30 (Z. Dunseth)

ARCH 1900. The Archaeology of College Hill.
A hands-on training class in archaeological field and laboratory techniques. Topics include the nature of field archaeology, excavation and survey methodologies, archaeological ethics, computer technologies (such as GIS), and site and artifact analysis and conservation. Students will act as practicing archaeologists (i.e., actually dig and analyze the results!) through the investigation of local historical and archaeological sites in the College Hill area (e.g. the First Baptist Church of America and Brown University's Quiet Green).
Fall ARCH1900 S01 17209 W 3:00-5:30 (A. Soifer)

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Honors students in Archaeology and the Ancient World who are completing their theses should enroll in this course in their final semester. The subject of the thesis and program of study will be determined by the needs of the individual student. Section numbers vary by instructor.

Please check Banner for the correct section number and CRN to use when registering for this course.

ARCH 2245. Rural Landscapes and Peasant Communities in the Mediterranean.
The aim of this course is to explore rural settlement and agrarian production in the Mediterranean, both in the ancient and the recent past. The archaeological starting-point is provided by the numerous scatter of surface remains that archaeological surveys across the Mediterranean have collected and that are usually interpreted as 'farmsteads' broadly datable to Classical Antiquity. We will look beyond these scatter to examine the social and economic significance of rural settlement through comparison with ethnographic and historical rural studies from across the Mediterranean and to explore household and community organisation and agrarian production in Classical Antiquity. Enrollment limited to 15.
Fall ARCH2245 S01 17546 Th 4:00-6:30 (P. Van Dommelen)

ARCH 2710. The Archaeology of Nubia and Egypt.
Egypt and Nubia share the distinction of ancient civilizations along the Nile river, but Nubia remains much more poorly known than Egypt. This seminar will examine the archaeology of Nubia, including its relationship to Egypt, from the introduction of ceramics and agriculture to the medieval period. This long-term perspective will allow comparative study of issues such as state formation, imperialism and religious change. Enrollment limited to 15 graduate students.
Fall ARCH2710 S01 18027 W 3:00-5:30 (L. Bestock)

ARCH 2950. Intensive Readings in Ancient Language for Archaeologists.
In this course, students with some previous training in an ancient language will have an opportunity to hone their linguistic skills while reading ancient texts that are specially relevant to archaeologists. The primary purpose of the course is to prepare students to take doctoral ancient language exams and to identify weak spots in individuals' knowledge of the ancient language. Emphasis will be placed on identification and justification of morphology and syntax, as well as on reading comprehension and idiomatic translation.

ARCH 2980. Individual Reading.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ARCH 2981. Thesis Research.
Individual reading for the Master’s degree. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ARCH 2982. Individual Reading for Dissertation.
Reading leading to selection of the dissertation subject. Single credit. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ARCH 2983. Dissertation Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ARCH 2990. Thesis Preparation.
For graduate students who are preparing a thesis and who have met the tuition requirement and are paying a registration fee to continue active enrollment.

Biology and Medicine

Biology

Introduces the basic principles of human nutrition, and the application of these principles to the specific needs of humans, and the role of nutrition in chronic diseases. Provides an overview of the nutrients and their use by the human body. Also examines the role of nutrients in specific functions and disease states of the body. Not for biology concentration credit. Enrollment limited to 100.
Fall BIOL0030 S01 15557 Arranged (M. Flynn)

BIOL 0080. Biotechnology Management.
An examination of the pharmaceutical, biotechnology, and medical product industries: what they are, how they function, whence they originate, and
various perspectives on why some succeed and others fail. Pathways from lab-bench to marketplace are described as are the pervasive influences of the FDA, patent office, and courts. Extensive reading; emphasis on oral presentation. Primarily intended for students planning a career in biomedical industry. Not for biology concentration credit. Students MUST register for the lecture section and the conference. Enrollment limited to 20.

BIOL 0100. Living Biology at Brown and Beyond. BIOL 0100 is a unique first year seminar tailored to students from historically underrepresented groups who aim to study in the biological sciences. By successfully completing this course, students will be able to: 1) Apply a deeper understanding of opportunities in Biology at Brown to the development of personal academic goals. 2) Articulate goals for personal and professional growth during college and apply specific skills to achieve them. 3) Apply specific techniques to effectively engage with STEM primary literature, lectures, and research talks. 4) Draw on science from various sub-disciplines of biology to articulate how human-animal interactions in the 21st century can cause infectious disease emergence events that lead to global pandemics such as COVID-19.

Fall BIOL0100 S01 15571 Arranged (K. Smith)

BIOL 0140T. Communicating Science Through Visual Media. This class, offered jointly by professors at RISD and Brown, will explore the pedagogy and practice of using visual media to convey scientific concepts. The goal of this course will be to assess examples of existing material and create new animations/video that fill an educational need and make science engaging and accessible. Class time will be comprised of lectures, labs, screenings, discussions, critiques and exercises. After an introduction to teaching pedagogy and the basics of animation and visual design, small student teams will be paired with science faculty mentors to create videos and animations that explain scientific concepts.

Fall BIOL0140T S01 18021 W 1:10-6:10(06) (J. Stein)

BIOL 0160. Plants, Food, and People. Examines the selection, breeding, cultivation and uses of food plants. Discusses the effects on agriculture of pathogens, climate change, and loss of biodiversity. Considers whether enough food can be produced for a world population of potentially 10 billion, while sustaining biodiversity and environmental quality. Course will include two papers and assistance from Writing Fellows; feedback from first paper will be available when writing second paper. Enrollment limited to 50.

BIOL 0170. Biotechnology in Medicine. Introduces undergraduates to the main technological advances currently dominating the practice of medicine. Provides an overview of the objectives, techniques, and problems related to the application of biomedical technology to the diagnosis and treatment of disease and the contemporary health care industry. Topics include: pharmaceutical development and formulation; organ replacement by prosthesis and transplantation; medical imaging; tissue engineering, therapeutic cloning, regenerative medicine; stem cells; societal, economic, and ethical issues. This course does carry Biology concentration credit.

Fall BIOL0170 S01 15680 MWF 1:00-1:50(06) (T. Achilli)

BIOL 0180. The Biology of AIDS. AIDS represents an example of the vulnerability of humans to new infectious agents. We will review some human infectious diseases including small pox yellow fever and influenza, and then explore AIDS/ HIV. First characterized in 1981, AIDS became the leading cause of death in U.S. males aged 25-44 within a decade. We will examine what factors make HIV such a potent pathogen. The course is intended for students beginning in biology. Expected: BIOL 0200, or equivalent placement. This course does carry Biology concentration credit.

BIOL 0190P. Pride and Prejudice in the Development of Scientific Theories. We will examine how the pace and shape of scientific progress is affected by the social/cultural context and the “personality” of the individual. We will look into how the interplay between society and the individual affects how scientific theories arise, are presented, are debated and are accepted. The course will initially focus on Charles Darwin and his theory of Natural Selection using the biography of Adrian Desmond and James Moore, "Darwin: The Life of a Tormented Evolutionist." Enrollment limited to 19 first-year students.

Fall BIOL0190P S01 15635 TTh 2:30-3:50(12) (S. Helfand)

BIOL 0190S. Phage Hunters, Part II. A research-based laboratory/class for freshmen; both semesters are required. Students will isolate and characterize a bacteriophage viruses from the soil. Lab work includes isolation and purification of your own phage, DNA isolation and restriction mapping, and EM characterization of your phage. Several phages will be selected for genome sequencing over Winter Recess, and annotated in the spring. One hour of lecture/discussion, and 3 hours lab per week. Expected: AP Biology or equivalent, HS chemistry, and permission of the instructor. Students are expected to take fall and spring courses in the sequence. Enrollment limited to 19 first-year students. Instructor permission.

BIOL 0190U. The Lives of Plants. This course examines the lives of plants through their development, structure, function, reproduction, and responses to environmental conditions. Enrollment limited to 19 first-year students.

Fall BIOL0190U S01 15636 MW 3:00-4:20(10) (P. Heywood)

BIOL 0200. The Foundation of Living Systems. A broad overview of biological systems, emphasizing patterns and processes that form the basis of life. Explores essentials of biochemistry, molecular, and cellular biology and their relationship to the larger issues of ecology, evolution, and development. Examines current research trends in biology and their influence on culture. Appropriate for all students interested in biology. Serves as a gateway course to much of the intermediate and advanced curriculum. Placement tests are offered (contact Jody_Hall@brown.edu); AP scores of 4 or 5 are equivalent to BIOL 0200, and place a student out of this course. Students will be assigned to a lab time during the second week of class.

BIOL 0210. Diversity of Life. This course will explore biological diversity – the number of taxa, and the functions, and processes that support life – from the perspectives of ecology and evolutionary biology. It will draw on examples and case studies from the geological record, functional morphology, the evolution of organ systems in vertebrates, genomics, behavior and sexual selection in birds and invertebrates. Overarching themes will emphasize that taxonomic diversity is an emergent property of complex life on Earth, and the importance of diversity of biological functions and processes in generating and maintaining taxonomic diversity. The course is open to all students.

Fall BIOL0210 S01 15575 Arranged (J. Kellner)

BIOL 0260. Biochemistry. Lectures and recitation sections explore the mechanisms involved in the principles of macromolecular structure and function, the organization and regulation of pathways for intermediary metabolism, and the transfer of information from genes to proteins. It is expected that students have taken CHEM 0350 or are taking it concurrently.

BIOL 0285. Inquiry in Biochemistry: From Gene to Protein Function. In this inquiry-based research course, students work in teams to formulate and test a hypothesis about how a change in genetic sequence affects enzyme function. Students will cultivate skills in scientific visualization, experimental design, data analysis, and laboratory techniques in molecular biology and biochemistry. In discussion, students will learn scientific writing through peer editing and iterative revisions to write a full scientific paper. This course is WRIT designated and will prepare students for writing an honors thesis. Expected: Students have previously taken or be concurrently enrolled in BIOL 0280. Enrollment in one lab section and one discussion section is required.

BIOL 0380. The Ecology and Evolution of Infectious Disease. Infectious diseases remain among the leading causes of death worldwide, and this burden is disproportionately borne by children living in low- and middle-income countries. Thus management of infectious disease remains a critical intellectual challenge in the 21st century. This course will develop and apply ecological and evolutionary theory to infectious microbes (and their hosts) via the detailed examination of a number of case studies. This will be accomplished by a combination of lectures, discussions, and readings drawn mainly from the primary literature. Assessment will be based on biweekly problem sets, two midterms and one final exam. Expected: BIOL 0200 or equivalent.
Many questions about the workings of living creatures can be answered by joining math, physics, and biology. We will identify basic physical science concepts that help biologists understand the structure and function of animals, plants, and microorganisms, and use these to study how the physical world constrains and facilitates the evolution of the extraordinary design and diversity of organisms. For first and second year students; others by permission. Recommended background: BIOL 0200, or equivalent. Enrollment limited to 40. Instructor permission required.

BIOL 0410. Invertebrate Zoology.
A survey of invertebrate animals emphasizing evolutionary patterns and ecological relationships. Functional morphology, physiology, reproduction, development, and behavior of invertebrates will be examined. Laboratory exercises and two separate day-long field trips provide firsthand experience with the animals. Expected: BIOL 0200 or equivalent. Enrollment limited to 44. Students MUST register for the lecture section and a lab.

The principles, concepts, and controversies involved in the study of the distribution and abundance of plant and animal populations and their integration into natural communities. Examines interactions among organisms and the hierarchical nature of ecological processes affecting individuals, populations, and communities. Expected: BIOL 0200 (or equivalent) and MATH 0090. Lectures and weekly discussion.

BIOL 0430. The Evolution of Plant Diversity.
Examines the evolutionary history of plants from a phylogenetic perspective. Introduces the science of phylogenetics - how to infer phylogenies and how to use them to understand organismal evolution. Highlights major trends in plant evolution over the past 400 million years. Lectures survey major plant lineages, with special focus on flowering plants. Weekly labs, field trips, and assignments stress basic plant anatomy and morphology, identification, and learning the local flora. Expected: BIOL 0200 (or equivalent placement).

BIOL 0470. Genetics.
Genetic phenomena at the molecular, cellular, organismal, and population levels. Topics include transmission of genes and chromosomes, mutation, structure and regulation of the expression of the genetic material, elements of genetic engineering, and evolutionary genetics. One laboratory session and one discussion session per week. (Students should not plan to take BIOL 0470 after 1540.) Expected: BIOL 0200 (or equivalent placement). Students will be assigned to Lab sections the first week of class.

BIOL 0480. Evolutionary Biology.
A broad introduction to the patterns and processes of evolution at diverse levels of biological organization. Topics covered include natural selection, adaptation, speciation, systematics, macroevolution, mass extinction events, and human evolution. Students will be given the opportunity to do their 23andMe ancestry analyses as a means of integrating the topics that span genomics to human variation. Weekly discussion sections involve active learning simulations and discussions of papers from the primary literature. Occasional problem sets involve computer exercises with population genetics and phylogeny reconstruction. Expected: BIOL 0200 (or equivalent placement).

BIOL 0495. Statistical Analysis of Biological Data.
A first course in probability distributions and the use of statistical methods for biological data. Topics covered will include describing data, statistical inference (hypothesis tests and confidence intervals), analyzing associations, and methods for categorical data (contingency tables and odds ratios). Methods will be applied to data drawn from areas of biological inquiry. For statistics or related science credit in Biology programs. Expected background: BIOL 0200 or equivalent, math equivalent to MATH 0100. This course is for related science credit only in Biological Sciences concentration programs. Enrollment limited: 40 undergraduates-20 juniors and 20 sophomores. Registration for seniors requires permission from the instructor.

BIOL 0500. Cell and Molecular Biology.
This course examines the structure and function of the basic unit of an organism, the cell. An experimental approach is used to examine cellular functions, ranging from gene transcription, cell division and protein secretion, to cell motility, and signal transduction. Relevance to health and disease will be considered. Expected: BIOL 0200 (or equivalent placement).

BIOL 0510. Introductory Microbiology.
Introduces role of microbes in our understanding of biology at the cellular and molecular level. Focuses on microbial significance for infectious disease, public health, genetics, biotechnology, and biogeochemical cycles. Laboratory involves basic microbiological techniques and selection and manipulation of microbes. Expected: BIOL 0200 (or equivalent placement). Students MUST register for the lecture section, conference, and the lab. For spring 2021 only, this course will be limited to sophomores, juniors, and seniors. In spring 2022 and beyond, enrollment will once again be open to first-year students.

BIOL 0530. Principles of Immunology.
Introduction to experimental and theoretical foundations of immunology. Focuses on concepts, landmarks, experiments and recent advances. Topics include innate and adaptive immunity; structure/function of antibody molecules and T cell receptors; regulation of immune responses through cellular interactions. Applications of concepts to medically significant issues (vaccines, transplantation, inflammation, autoimmunity, cancer, HIV/AIDS) are discussed. Interpretative analysis of experimental data is emphasized. Expected background: BIOL 0200 or equivalent placement credit.

BIOL 0560. Genetic Screening in Model Organisms.
Using gene silencing (RNAi) in the nematode C. elegans, students will identify genetic modifiers of proteins with roles in aging by reverse genetics. Analyzing the effect of knocking down genes on the level of aging-related proteins tagged with fluorophores (GFP, RFP, etc.). Students will use function-specific RNAi libraries (transcription factors, kinases, etc), established in our lab. Students will evaluate the effect of genetic modifiers on proteostasis and lifespan, also familiarize C. elegans work and appreciating the use of model organisms, the students will master microscopy, genetic crosses, gene silencing, and molecular and biochemical readout assays such as qPCR and immunoblotting.

BIOL 0600. Principles of Physiology.
Introduction to the function and integration of organ systems with an emphasis on human physiology. Includes basic concepts in cell and organ system physiology as well as fundamentals of modern trends in physiological science. Emphasizes the application of physical and chemical principles to organ function at both the cellular and systemic levels. Expected: BIOL 0200 or equivalent.

BIOL 0680. Diet and Chronic Disease.
This course addresses the relationship of food to the development and treatment of chronic diseases. Chronic diseases discussed are obesity, dyslipidemia/heart disease, diabetes mellitus, cancers and osteoporosis. Dietary recommendations for these diseases are critically assessed. Geared toward students interested in nutrition, medicine, and public health. Prerequisites: BIOL 0030, plus permission of the instructor. Enrollment limited to 20.

BIOL 0940A. Viral Epidemics.
This sophomore seminar will examine epidemics (outbreaks) of viral infections from a historical perspective. We will also cover current literature and up to the minute news accounts of infectious disease related outbreaks occurring around the globe. The major focus will be on virus related diseases but any microbial outbreak in the news will be explored. The seminar will cover basic aspects of microbial pathogenesis so students can gain an appreciation of microbial host interactions. Essential writing skills will also be developed. Enrollment limited to 20 sophomore students.
This is a Course-based Undergraduate Research Experience (CURE) class that will provide students with the chance to propose, design and conduct their own research projects. Antibiotic resistance is a major global health threat. Pharmaceutical companies are less likely to fund research and development of new antibiotics due to their relative low profitability. As bacteria become more resistant to antibiotics, it is critical that we have a robust pipeline ready to combat these pathogens. The main focus of the course will be for students to discover new antibiotics in soil bacteria that can be used to treat infectious disease.

BIOL 0960. Independent Study in Science Writing.
BIOL 0960 (fall/spring) is a half credit Independent Study in Science Writing course incorporating a nontechnical science journalism component into the Biology curriculum. Assignments may include investigative or analytical reviews, or feature articles on ethical or social impacts of new discoveries in the biological sciences. BIOL 0960 requires the submission of a formal project proposal completed collaboratively by the student and faculty mentor (see the Biology Undergraduate Education Research page for details). BIOL 0960 is not for concentration credit in the biological sciences programs.

BIOL 1040. Ultrastructure/Bioimaging.
This course examines microscopy and image analysis in the life sciences. Theoretical and practical aspects of microscopy will be discussed. Students will obtain hands-on experience with electron microscopy, light microscopy, fluorescence microscopy, and confocal microscopy. Students will learn to display images in 3D. Advanced undergraduates. Instructor permission required.

BIOL 1050. Biology of the Eukaryotic Cell.
Examines organelles and macromolecular complexes of eukaryotic cells with respect to structural and functional roles in major cellular activities. Emphasizes experimental basis for knowledge in modern cell biology using original literature, and discusses validity of current concepts. For advanced undergraduates and beginning graduate students. Complementary to BIOL 1270 and 1540. Prerequisites: BIOL 0280 or 0470 or 0500, or instructor permission. Graduate students register for BIOL 2050.

This course examines contemporary biotechnologies used to combat the predominant, worldwide problems in human health. Global health will be addressed from the scientific and engineering perspectives while integrating public health policy, health systems and economics, medical and research ethics, and technology regulation and management. This course is intended for graduate and advanced undergraduate students in biology, engineering, or related fields who have an interest in global health initiatives. Expected background: BIOL 0200 and BIOL 0800, or equivalents. Preference will be granted to graduate students in the Biotechnology and Biomedical Engineering programs. For advanced undergraduates. Instructor permission required.

BIOL 1090. Polymer Science for Biomaterials.
Basic principles of polymer science and its application in medicine. Topics include basic polymerization chemistry, kinetics of polymerization and depolymerization with emphasis on bioerodible polymers, characterization of polymers by physical methods, bulk and surface properties, behavior of polymers in solutions, crystallization, gelation, and liquid crystals. Hands-on experience with polymer characterizing. Expected: CHEM 0350. Enrollment limited to 25.

BIOL 1100. Cell Physiology and Biophysics.
Current topics in cell physiology, with an emphasis on membrane-mediated interactions between cells and their environment. Topics may include: ion channel structure, function and regulation; intracellular regulatory molecules; mechanisms of sensory transduction; membrane receptors and second messenger systems; vesicle secretion; and cytoskeletal regulation of cell function. Lectures, discussion, and student presentations of the current literature. Expected: BIOL 0800 or NEUR 0010. Instructor permission required. Registration overrides will not be given out until after the first one or two classes. Enrollment limited to 30, and admission is based on seniority -- graduate students, seniors, then juniors. (Not for first and second-year undergraduates.)

BIOL 1110. Topics in Signal Transduction.
Signal transduction is one of the most rapidly developing fields in biomedical sciences. Defects in signaling pathways can be responsible for diseases such as cancer, diabetes, cardiovascular disorders and psychoses. This course offers students an overview of the molecular pathways that allow cells to receive and process signals from their external environment, with an emphasis on the emerging state-of-the-art techniques used in their study. Expected background: BIOL 0200, 0280, 0470, or 0500. Enrollment limited to 20 juniors and seniors.

BIOL 1120. Biomaterials.
A biomaterial is defined as a material suitable for use in medical implants that come in direct contact with patients’ tissues. These include polymers, metals, and ceramics, and materials obtained from biological sources or through recombinant biotechnology. Goal: to provide comprehensive coverage of biomaterial science and technology. Emphasizes the transition from replacement to repair strategies. For advanced undergraduates and graduate students. Prerequisite: BIOL 0800 or instructor permission.

BIOL 1140. Tissue Engineering.
Tissue engineering is an interdisciplinary field that incorporates progress in cellular and molecular biology, materials science, and engineering, to advance the goal of replacing or regenerating compromised tissue function. Using an integrative approach, we will examine tissue design and development, manipulation of the tissue microenvironment, and current strategies for functional reconstruction of injured tissues. Expected: CHEM 0330, plus BIOL 0500 or 0800. Enrollment limited to 20. Instructor permission required.

BIOL 1150. Stem Cell Engineering.
Stem cell engineering focuses on using adult, embryonic, and induced pluripotent stem cells to repair damaged or diseased tissues. This course will examine the role of stem cells in development, tissue homeostasis, and wound healing, as well as how they can be used for tissue engineering and cell-based regenerative therapies. We will also discuss the ethical, legal, and regulatory issues that accompany current and emerging stem cell engineering endeavors. The course will use an inverted lecture and classroom discussion format to effectively deliver relevant information. Emphasis is placed on oral and written communication skills applied to assignments, tests, and individual projects. As an additional part of this course, students will receive hands-on training in how to culture cells and assess samples for stemness characteristics in a group laboratory setting.

BIOL 1160. Principles of Exercise Physiology.
Application of the basic principles of physiology to the study of the response mechanisms of the human body during exercise. Topics include muscle and neural control, energy metabolism, cardiovascular and respiratory effects, endocrinology, principles of training, and special topics (e.g., diving, high altitude, and microgravity). Student presentations based on scientific articles are included. Expected: BIOL 0800 or written permission of the instructor.

BIOL 122A. Current Topics in Functional Genomics.
A technological revolution in genomics has exponentially increased our ability to gather biological data. A host of new methods and types of analysis has arisen to accommodate this dramatic shift in data collection. The broad scope of inquiry has ushered in an era of “system-wide” approaches and brute-force strategies where rare signals can be detected and studied. In this seminar we will cover papers that embody this new approach. Students typically have taken an advanced undergraduate-level course in biology.
BIOL 1250. Host-microbiome Interactions in Health and Disease. Will focus on current understanding of how various microbiomes communicate and interact with the host and the factors that influence these interactions. We will discuss how the new technologies such as metagenomics and metabolomics have enhanced our understanding of host-microbiome interactions in health and disease. Students will have the opportunity to participate in discussions on how to apply recent discoveries to disease processes, health restoration and maintenance. The course will help students develop skills in critical thinking and in reading and evaluating original scientific literature. Expected: students with a background in basic microbiology (BIOL 0530 or its equivalent), 20 enrollment.

BIOL 1260. Physiological Pharmacology. Covers the physiology of human disease (e.g., Heart failure and arrhythmia; cancer signaling pathways with a focus on breast cancer; neurological disorders such as schizophrenia and Parkinson’s disease) and discusses the pharmacology of the drugs used to treat disease. A group of the most commonly prescribed drugs is discussed in terms of their fundamental modes of action and clinical importance. Expected: BIOL 0800.

BIOL 1270. Advanced Biochemistry. An advanced course in biochemistry, biochemical methods, and reading of the primary literature, featuring systematic coverage of the biochemistry of the central dogma, including DNA (replication, repair, recombination), RNA (regulation and mechanism of transcription, processing, turnover), and proteins structure, synthesis, modification, degradation, mechanisms of action, function. Expected: BIOL 0280, CHEM 0350, 0360. Graduate students register for BIOL 2270.

BIOL 1290. Cancer Biology. Provides a conceptual understanding of molecular events underlying development of human cancer. Focused on genetic changes leading to malignant transformation of cells. Covers cell cycle control, DNA damage, mutagenesis, cancer predisposition syndromes, oncogenic viruses, tumor immunology, metastasis, cancer chemotherapy and drug resistance. Lecture plus discussion of primary literature. Prerequisites: BIOL 0280 OR BIOL 0470 OR BIOL 0500.

BIOL 1300. Biomolecular Interactions: Health, Disease and Drug Design. Interactions between the molecules of life-proteins, RNA, DNA, membrane components-underlie all functions necessary for life. This course focuses on how nature controls these interactions, how these interactions can go awry in disease, and how we can learn the rules of these interactions to design drugs to treat disease. Students will review the physical basis of molecular interactions, learn classic and state-of-the-art high-resolution and high-throughput tools used to measure interaction, and survey the experimental and computational strategies to harness these interactions using a case study in rational drug design. Prerequisite: Introductory Biochemistry (BIOL 0280). Enrollment limited to 20; instructor permission.

BIOL 1310. Developmental Biology. Covers the molecular and cellular events of development from fertilized egg to adult. Genetic basis of body form, cell fate specification and differentiation, processes controlling morphogenesis, growth, stem cells and regeneration will be examined. Differential gene regulation, intercellular signaling and their evolutionary conservation will be central to discussion of mechanisms governing developmental processes. Additional topics: developmental plasticity, impact of epigenetic and environmental factors, and basis of disease gleaned from developmental biology research. Live embryos will complement and reinforce concepts covered in class. Enrollment limited to 36. Expected: BIOL 0200 (or equivalent), and one course in genetics, cell biology or embryology.

BIOL 1330. Biology of Reproduction. This course is an advanced, seminar-based course. Primary literature is emphasized to complement the format of extensive student seminar presentations. It is essential that students have a strong background in biology in order to gain the most from this course. The emphasis of the course is student seminar presentation and extensive discussion on the material. This is often the first opportunity for students to present/discuss science in a seminar format. Expected background: a course in Cell Biology (e.g. BIOL 0500 or 1050), and two additional Biology courses above the introductory (BIOL 0200) level. Enrollment limited to 20.

BIOL 1470. Conservation Biology. Conservation Biology is the scientific study of the phenomena that affect the maintenance, loss, and restoration of biological diversity. Topics covered include: 1) the impacts of global warming, species invasions, and habitat destruction on biodiversity, 2) strategies developed to combat these threats, and 3) a consideration of key economic and ethical tradeoffs. Special attention will be paid to current debate and controversy within this rapidly emerging field of study. Readings will include the primary literature. Prerequisite: BIOL 0420 or instructor permission. Enrollment limited to 30.

BIOL 1515. Conservation in the Genomics Age. The course will introduce students to the rapidly developing field of molecular ecology, emphasizing its importance for conservation biology. Students will explore key principles in evolutionary ecology based on readings, lectures, and discussions. Participants will also gain practical experience with ecological, genomic, and computational methods in the lab. This course is intended for advanced undergraduate and graduate students. Suggested prerequisites include Principles of Ecology (0420); Evolutionary Biology (0480) or Genetics (0470); the Lab Techniques Workshop for Biology Students provided by MBL; or similar with permission. Students will obtain permission from the professor to enroll.

BIOL 1520. Innate Immunity. Innate immunity is the initial response to microbes that prevents infection of the host. It acts within minutes to hours, allowing the development of the adaptive response in vertebrates. It is the sole mechanism of defense in invertebrates such as insects. The components and mechanisms dictating this response are explored. Prerequisite: BIOL 0350. Enrollment limited to 30. Graduate students must obtain instructor permission.

BIOL 1540. Molecular Genetics. Even in this era when whole genome DNA sequencing has become routine, there are still thousands of eukaryotic genes with unknown functions. Genetic screens for mutations that alter pathways of interest remain the premier approach to understanding gene function in the context of the organism. In Molecular Genetics students will learn the key concepts involved in designing and interpreting genetic screens using the powerful tools available in model animal, plant, and fungal organisms. Students will also learn how to understand and analyze results presented in the primary scientific literature. Furthermore, students will gain an appreciation of how the field of genetics has changed through discoveries and technological advances made over the past 50 years. Graduate students should register for BIOL 2540.

BIOL 1550. Biology of Emerging Microbial Diseases. Emerging diseases influence the health of human populations in less developed countries and are expected to have similar effects worldwide. Rising incidence of "new" diseases underscores the need for knowledge of infection mechanisms and their outcomes. Focuses on biochemical, genetic, cellular and immunological events of emerging pathogens and host responses. Expected: BIOL 0470 or BIOL 0530.

BIOL 1555. Methods in Informatics and Data Science for Health. The goal of this course is for students to develop a solution that uses data science and informatics approaches to address a biomedical or health challenge. This course will teach informatics and data science skills needed for public health and biomedicine research. Emphasis will be given to algorithms used within the context of biomedical research and health care, including those used in biomolecular sequence analysis, electronic health records, clinical decision support, and public health surveillance. This course has been developed as a Course-based Undergraduate
Course Descriptions

Research Experience (CURE), where students will gain experience with the scientific method, its application, and presentation.

**BIOL 1560. Virology.**
Emphasizes the understanding of molecular mechanisms of viral pathogenesis. Begins with a general introduction to the field of virology and then focuses on the molecular biology of specific viruses that are associated with human disease. Lectures based on current literature. Prerequisite: BIOL 0280, 0470, or 0530, or instructor permission. Fall
BIOL1560 S01 15562 MWF 9:00-9:50(01) (A. Jamieson)

**BIOL 1565. Survey of Biomedical Informatics.**
Survey course provides overview of field of biomedical informatics. Topics include computer science, healthcare, biology, social science. This course is designed to be complementary to BIOL 1555. Emphasis given to understanding the organization of biomedical information, effective management of information using computer technology, impact of such technology on biomedical research, education, patient care. Major aim explores the process of developing and applying computational and information science techniques for assessing current information practices, determining information needs of health care providers and patients, developing interventions or supporting clinical practice using informatics, and evaluating the impact of informatics solutions from a biomed perspective. Fall
BIOL1565 S01 15566 Arranged (N. Sarkar)

**BIOL 1575. Evaluation of Health Information Systems.**
This course covers the field of evaluation of health information systems (HIS) in a range of roles and environments, in the US and worldwide. It includes topics in health information system (HIS) design and deployment, healthcare workflow, quantitative and qualitative evaluation methods and socio-technical environment for HIS. Emphasis is given to understanding the range of evaluation questions that can be asked, identifying the key stakeholders, understanding available evaluation techniques, and designing rigorous but achievable studies. Examples will include Open Source systems, medical Apps, and economic evaluation, the role of evaluation frameworks and theories, and notable HIS successes and failures. Recommended: past or concurrent enrollment BIOL 1565 or a public health course covering clinical biostatistics. Fall
BIOL1575 S01 15567 T 10:30-11:50(13) (H. Fraser)

**BIOL 1595. Artificial Intelligence in Biomedicine.**
This course will teach the fundamental theory and methods of artificial intelligence (AI) alongside their application to the biomedial domain. It will give a representative overview of traditional methods as well as modern developments in the areas of (deep) machine learning, natural language processing and information retrieval. The course is designed to be accessible to non-computer science audiences and will not require extensive prior programming experience. The course will be accompanied by practical assignments applying the discussed techniques in a biomedical context. Understanding of formal theoretical knowledge will be assessed in a final exam. The course is designed for students concentrating in domains such as Computational Biology and Applied Mathematics-Biology; or Neuroscience concentrators who have completed a course in introductory statistics (e.g., BIOL 0495).

**BIOL 1600. Development of Vaccines to Infectious Diseases.**
Provides background steps involved in vaccine development, from conceptualization to production to deployment. Considers infectious diseases and associated vaccines in context of community health. Appropriate for students wanting to gain an understanding of vaccine science. Provides a foundation for advanced courses in immunology and infectious disease, biomedical research, or medical/graduate studies. Activities include a weekly section meeting for discussion of relevant primary literature, and a final project of the student’s choice in the form of an in-class presentation, a research paper or an approved alternative format. Expected: BIOL 0200 or equivalent placement; BIOL 0530, and at least one additional biology course.

**BIOL 1810. 21st Century Applications in Cell and Molecular Biology.**
Twenty-first century applications in cell and molecular biology focuses on the structure and function of macromolecules and cells and how they are altered in disease and therapy. This course will explore physical principles underlying cell function, along with biophysical approaches for solving problems of cell and molecular biology. Cutting-edge molecular and cellular-based therapeutics will be discussed throughout this course; this includes viral gene delivery constructs, novel platforms for tissue engineering, CRISPR genome editing, and immune checkpoint therapy. This course is particularly suitable for undergraduate students interested in basic medical research, graduate school, or research-based careers in biotechnology or pharmaceutical industry.

**BIOL 1820. Environmental Health and Disease.**
Humans live, work, and play in complex chemical environments. BIOL1820 examines how environmental exposures impact human health and contribute to disease. The course covers basic concepts in toxicology, epidemiology, and safety assessment, and is divided into 4 sections: radiation, lead, perfluorinated chemicals, and endocrine disruptors. For each section, students will examine the molecular mechanisms that mediate toxicity, learn how toxicant exposure impacts physiology, evaluate exposure risk, and discuss issues of environmental justice. Prerequisites: introductory level biology and chemistry. BIOL 1820 is designed for junior and senior undergraduates, and is open to others with permission.

**BIOL 1870. Techniques and Clinical Applications in Pathobiology.**
A methodology course featuring laboratory and lecture instruction in established and leading-edge technologies. Examples: flow cytometry (multi-parameter analysis, cell sorting); molecular biology (PCR, real time PCR, in situ hybridization, microarrays, DNA sequencing, bioinformatics); digital imaging (image acquisition, processing and analysis); confocal microscopy; histology and immunohistochemistry (confocal, immunohistochemistry).

**BIOL 1880. Comparative Biology of the Vertebrates.**
The biology, structure, and evolutionary history of the vertebrates considered phylogenetically, emphasizing evolution of the major body systems. Stresses an evolutionary approach to the correlation of structure and function with environment and mode of life. Labs include dissection of several different vertebrates and comparative osteological material. Emphasis of course is on critical thinking rather than memorization of material. Recommended: BIOL 0320 or 0800. First year students must obtain instructor permission to register. Enrollment limited to 32. Students MUST register for the lecture section and the lab.

**BIOL 1890. Human Histology.**
This course will provide an in-depth treatment of the “stuff we are made of” and the wonderful logic of its organization. This course focuses fi rst on the biology of the four basic tissues (epithelium, connective tissue, muscle and nerve) and second, how they contribute to the functional anatomy of all organs and systems. For Pfizer students only.

**BIOL 1950. Directed Research/Independent Study.**
Directed research/independent study in biological sciences: basic science, social studies of biomedical science, and clinically-oriented projects, mentored by individual faculty members in the Division of Biology and Medicine. Sites include campus and hospital based facilities. Projects can serve as the basis for Honors theses, or to fulfill research requirements in a Bio-Med concentration program. Students planning to use 1950/1960 to fulfill a concentration requirement must receive approval from the concentration advisor. No more than two (2) semesters of BIOL 1950/1960 may be used toward a concentration program in the biological sciences. Faculty from outside the Division may supervise projects for bio-med program concentrators, but should do so using their Department's own Independent Study course number.

**BIOL 1960. Directed Research/Independent Study.**
Directed research/independent study in biological sciences: basic science, social studies of biomedical science, and clinically-oriented projects, mentored by individual faculty members in the Division of Biology and Medicine. Sites include campus and hospital based facilities. Projects can serve as the basis for Honors theses, or to fulfill research requirements in a Bio-Med concentration program. Students planning to use 1950/1960 to fulfill a concentration requirement must receive approval from the concentration advisor. No more than two (2) semesters of BIOL 1950/1960 may be used toward a concentration program in the biological sciences. Faculty from outside the Division may supervise projects for bio-med program concentrators, but should do so using their Department's own Independent Study course number.
BIOL 2000A. Current Topics in MCDB - RNA Regulation: Beyond the Central Dogma.
The central dogma of molecular biology has long held that the primary role of RNA is to serve as an intermediary to convert the information stored in DNA into functioning proteins. However, it is now clear that RNA does not merely play a passive role in the information transfer process from DNA to protein. This course will focus on the many roles played by RNA molecules in both normal cellular processes and disease states. Papers from the primary literature will be chosen to explore this topic, primarily through student-led discussions. Course is limited to graduate students or advanced undergraduates with permission of the instructors.

BIOL 2000C. Molecular Recognition and Signaling in Self and Non-self Interactions.
This course will cover cell signaling mechanisms that allow discrimination between self and non-self interactions in various biological contexts. Self/non-self signaling pathways from several model systems will be examined and their relevance to development and defense will be considered. Topics will include signaling in intra- and inter-species reproductive interactions, signaling in the establishment of symbioses, signaling upon predator attack, signaling in pathogen interactions, and co-evolution of pathogenic and resistance effectors. After one introductory lecture/discussion session led by the instructors, the remaining meetings will be student led and will focus on current primary literature. Open to advanced undergraduates with appropriate coursework.

BIOL 2010A. Introduction to Molecular Research in the Life Sciences.
In this practical skill-building course, entering PhD students in the Molecular Biology, Cell Biology, and Biochemistry Graduate Program (MCBGP) will participate in an immersive laboratory experience. Students will practice foundational molecular methods for analysis of nucleic acids and proteins. Students will also develop key professional skills including workflow and time management, record keeping, experimental rigor and reproducibility, working in a team, and communication of experimental results. In addition, students will learn about experimental technologies and model organisms used in the molecular life sciences through interactive modules led by MCBGP trainer laboratories. Enrollment is restricted to first-year MCBGP PhD students.

The course will introduce students to the rapidly developing field of molecular ecology, emphasizing its importance for conservation biology. Students will explore key principles in evolutionary ecology based on readings, lectures, and discussions. Participants will also gain practical experience with ecological, genomic, and computational methods in the lab. This course is intended for advanced undergraduate and graduate students. Suggested prerequisites include Principles of Ecology (0420); Evolutionary Biology (0480) or Genetics (0470); the Lab Techniques Workshop for Biology Students provided by MOL; or similar with permission. Students will obtain permission from the professor to enroll.

This course, taken the second semester, goes in depth into the numerous strategies in biotechnology. Significant differences in the strategies of small companies versus large companies, and device companies versus drug companies will be discussed with ample use of biotechnology case studies. At the end of this course, the successful student will: Understand the process of managerial decision making in the pharma/biotech industry; Understand the basic principles of Decision Science, the application of quantitative analysis (modeling) to inform managerial decision making; Gain exposure to basic frameworks and tools used by management consultants to define strategic options.

This course provides a comprehensive overview of the primary functional roles and steps involved in developing and commercializing a novel technology/scientific breakthrough within the biotechnology industry. This course is particularly suitable for students interested in pursuing a career within a biotechnology company, or for those interested in developing an in-depth knowledge of how the science of biotechnology becomes real world products. Pre Requisites: Foundations of Living Systems (BIOL0020), Principles of Physiology (BIOL080), and Principles of Economics (ECON0110)/equivalent, or instructor's permission is required.

BIOL 2030. Foundations for Advanced Study in the Life Sciences. BIOL2030 is a graduate-level course focused on multidisciplinary approaches to biological questions. The mechanisms and regulation of basic cellular processes involving nucleic acids (synthesis, structure, maintenance and transmission) and proteins (synthesis, maturation, function) and integration of those processes into more complex circuits (signaling, cell cycle control, development) will be presented through examples from the primary scientific literature. There are no prerequisites for this course. Enrollment is limited to graduate students. BIOL2030 is required for Ph.D. students in the MCB Graduate Program. All other students must obtain instructor permission.

BIOL 2040. Ultrastructure/Bioimaging.
This course examines microscopy and image analysis in the life sciences. Theoretical and practical aspects of microscopy will be discussed. Students will obtain hands-on experience with electron microscopy, light microscopy, fluorescence microscopy, and confocal microscopy. Students will learn to display images in 3D. For graduate students and advanced undergraduates. Instructor permission required.

BIOL 2050. Biology of the Eukaryotic Cell.
(Graduate students should register for BIOL 1050.)

BIOL 2075. Evaluation of Health Information Systems.
This course covers the field of evaluation of health information systems (HIS) in a range of roles and environments, in the US and worldwide. It includes topics in health information system (HIS) design and deployment, healthcare workflow, quantitative and qualitative evaluation methods and socio-technical environment for HIS. Emphasis is given to understanding the range of evaluation questions that can be asked, identifying the key stakeholders, understanding available evaluation techniques, and designing rigorous but achievable studies. Examples will include Open Source systems, medical Apps, and economic evaluation, the role of evaluation frameworks and theories, and notable HIS successes and failures.

BIOL 2089. The Importance of Intellectual Property in Biotechnology.
This course delves into the various roles of intellectual property in biotechnology. In addition to providing a solid foundation in the fundamentals of intellectual property, the course will use case studies in biotechnology to explore in depth the interplay between specific scientific breakthroughs and intellectual property. An understanding of the science of biotechnology is critical for advanced understanding of the value and possibilities of biotechnology intellectual property.

BIOL 2110. Drug and Gene Delivery.
Topics in drug delivery systems including history of the field, advantages of controlled release technology, stabilization and release of proteins, fabrication methods, regulatory considerations, economic aspects, patents and intellectual property rights, and more. Prepares students for research in industry and academia, and offers information for consultants in the field. Expected: BIOL 1090, 1120; CHEM 0350, 0360.

BIOL 2145. Molecular Targets of Drug Discovery.
This course emphasizes the role of cell physiology in the identification of drug targets and the development of novel drugs. Specific protein drug targets such as G-protein coupled receptors will be examined in detail from identifying a target to development of drugs for that target and the physiological consequences. Prerequisite: BIOL 0800. Enrollment limited to 20. Preference is given to graduate students in Biotechnology and BME, especially Masters students. Graduate students from other programs may enroll if permission of the instructor is granted.

Focused on the effective dissemination of scientific information in biological and biomedical research disciplines. Students will develop the
skills necessary to effectively communicate scientific ideas, experiments, and results to a broad audience. This seminar will cover papers that embody this new approach. Students typically have taken an advanced undergraduate-level course in biology.

**BIOL 2230. Biomedical Engineering and Biotechnology Seminar.** Biomedical engineering and biotechnology are interdisciplinary fields that incorporate progress in biomedical sciences, the physical sciences, engineering, and computer science. To achieve success in these fields requires facility with interdisciplinary oral communication – this is the specific and practical focus of this course. Each week, doctoral students in the Biomedical Engineering and Biotechnology Graduate Programs will give research presentations and receive feedback from the audience to help improve their public speaking skills.

**BIOL 2240. Biomedical Engineering and Biotechnology Seminar.** See Biomedical Engineering and Biotechnology Seminar (BIOL 2230) for course description.

**BIOL 2260. Physiological Pharmacology.** The objective of this course is to present drugs in the context of the diseases they are used to treat. A list of the Common medically prescribed drugs will be discussed in terms of their fundamental modes of action and clinical importance. Pertinent background biochemistry, physiology, and pathology is provided, e.g., the electrophysiology of the heart is discussed as a backdrop to anti-arrhythmic drugs. Course is relevant for students interested in medicine journalism, law, government, precollege teaching, biomedical research, and pharmacy. Expected: background in physiology. For graduate students ONLY register for BIOL 2260 (enrollment limit 15); all others BIOL 1260.

**BIOL 2270. Advanced Biochemistry.** (Undergraduate students should register for BIOL 1270.)

**BIOL 2300. Biomolecular Interactions: Health, Disease, and Drug Design.** Interactions between the molecules of life-proteins, RNA, DNA, membrane components-underlie all functions necessary for life. This course focuses on how nature controls these interactions, how these interactions can go awry in disease, and how we can learn the rules of these interactions to design drugs to treat disease. Students will review the physical basis of molecular interactions, learn classic and state-of-the-art high-resolution and high-throughput tools used to measure interaction, and survey the experimental and computational strategies to harness these interactions using a case study in rational drug design. Prerequisite: Introductory Biochemistry. Enrollment limited to 20; instructor permission.

**BIOL 2310. Developmental Biology.** Covers the molecular and cellular events of development from fertilized egg to adult. Genetic basis of body form, cell fate specification and differentiation, processes controlling morphogenesis, growth, stem cells and regeneration are examined. Differential gene regulation, intercellular signaling and evolutionary conversation are central to discussion of mechanisms governing developmental processes. Additional topics: developmental plasticity, impact of epigenetic and environmental factors, and basis of disease gleaned from developmental biology research. Live embryos complement and reinforce concepts covered in class. Expected: BIOL 0200 (or equivalent), and one course in genetics, embryology, cell biology or molecular biology. Enrollment limited to 36. (Undergraduate students register for BIOL 1310.)

**BIOL 2340. Neurogenetics and Disease.** Genetic mutations provide a powerful approach to dissect complex biologic problems. We will focus on fascinating discoveries from "forward genetic" studies – moving from nervous system phenotype to genetic mutation discovery. There will be an emphasis on neurologic disease phenotypes and the use of novel genomic methods to elucidate the central molecular and cellular causes for these conditions. The course will emphasize the use of "reverse genetics" – engineered mutations in model systems – to dissect nervous system function and disease mechanisms. Disorders to be covered include autism, intellectual
disability, schizophrenia, epilepsy. Enrollment limited to 20. Instructor permission required.

Fall 2023

BIOL 2350. The Biology of Aging.
Aging is a fundamental biological process. It is the major risk factor for age-related diseases such as cancer, cardiovascular disease, stroke, osteoporosis, arthritis and Alzheimer's, just to name a few. As life expectancy has increased in the 20th century, these diseases have become the leading causes of death. Recent research has identified universal mechanisms that regulate organismal aging and impact all organ systems. Several gene networks that can regulate the rate of aging and multiple age-related diseases have already been discovered. These mechanisms are conserved throughout evolution and many key insights have been garnered from simple model organisms. Manipulation of these networks has been achieved by diet, genetic engineering, and most recently, with drugs. The goal of modern medicine is to increase healthy survival, as opposed to simply longevity. It is now generally acknowledged that increasing health span – the fraction of our life spans free of frailty and debilitating chronic disease – has become a realistic goal. This course will examine the new concept of "geroscience" – the molecular, cellular, and genetic foundations of the biology of aging, and how this knowledge can be applied to therapies for age-associated diseases. Course material will be based on the primary research literature. Prerequisites are a background in cell biology, molecular biology and genetics - such as BIOL0470, BIOL0280, BIOL0200, and BIOL0800.

BIOL 2440. Topics in Ecology and Evolutionary Biology.
See Topics In Ecology And Evolutionary Biology (BIOL 2430) for course description.

BIOL 2450. Exchange Scholar Program.
Fall 2023

BIOL 2450 S01 15450 Arranged ‘To Be Arranged’
BIOL 2450 S02 15451 Arranged ‘To Be Arranged’

BIOL 2528. Innovation and Commercialization in Medical Devices, Diagnostics, and Wearables.
This course provides a comprehensive overview of concepts and steps involved in developing and commercializing novel technology/scientific breakthroughs for medical devices, diagnostics and wearables. This course is particularly suitable for students interested in pursuing a career within a medical device segment, or creating innovation-based companies, as well as for those interested in developing an in-depth knowledge of evolution of medical devices from research concepts to products in the market.

BIOL 2540. Molecular Genetics.
Even in this era when whole genome DNA sequencing has become routine, there are still thousands of eukaryotic genes with unknown functions. Genetic screens for mutations that alter pathways of interest remain the premier approach to understanding gene function in the context of the organism. In Molecular Genetics students will learn the key concepts involved in designing and interpreting genetic screens using the powerful tools available in model animal, plant, and fungal organisms. Students will also learn how to understand and analyze results presented in the primary scientific literature. Furthermore, students will gain an appreciation of how the field of genetics has changed through discoveries and technological advances made over the past 50 years. Undergraduate students should register for BIOL 1540.

BIOL 2560. Advanced Virology.
The emphasis of this course will be on understanding the molecular mechanisms of viral pathogenesis. It will begin with a general introduction to the field of virology, a basic review of the immune response to viruses, and then focus primarily on the molecular biology of specific viruses that are associated with clinical human disease. Lectures will be based on the current literature and provide historical context. Students will become familiar with primary literature and produce their own original research proposal by the end of the semester.

BIOL 2595. Artificial Intelligence in Biomedicine.
This course will teach the fundamental theory and methods of artificial intelligence (AI) alongside their application to the biomedical domain. It will give a representative overview of traditional methods as well as modern developments in the areas of (deep) machine learning, natural language processing and information retrieval. The course is designed to be accessible to non-computer science audiences and will not require extensive prior programming experience. The course will be accompanied by practical assignments applying the discussed techniques in a biomedical context. Understanding of formal theoretical knowledge will be assessed in a final exam.

BIOL 2640A. Viral Immunology.
Viral Immunology is an advanced topics course in Microbiology and Immunology which will be focused on viral immunology. Weekly meetings will cover different issues concerning defense against viral infections and pathology related to viral infection, with focus on viral-host interactions. Topics will be selected to present either important basic concepts in the context of immune responses and/or major challenges in controlling viral infections. Recent advances in understanding virus-host interactions, host responses to viruses, cytokine regulation of immune responses or cytokine-mediated pathology during viral infections will be emphasized. The 2020 organizational meeting is set for Wednesday, Jan. 22 at 3:00PM (BMC 6th Floor Conference Room - Room 603). There is also a requirement for a previous immunology course.

BIOL 2680. Molecular Mechanisms of Disease.
BIOL 2680 is designed for graduate students and focuses on the underlying causes of human disease. The course will explore the mechanistic basis of phenylketonuria, thalidomide toxicity, and cystic fibrosis. Students should have a solid background in the life sciences with an understanding of the fundamental principles of molecular biology, genetics, biochemistry, and cell biology. Emphasis will be placed on the development of presentation skills and research design. Readings will be assigned from Robbins Basic Pathology 10th Edition (2018), Junqueira’s Basic Histology Text & Atlas 14th Edition (2016), primary literature, and reviews. Both textbooks are available online through the library website.

BIOL 2870. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

Fall 2023

BIOL 2950. Thesis.
Section numbers vary by instructor. Please see the registration staff for the correct section number to use when registering for this course.

BIOL 2950. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Fall 2023

BIOL 2970. Graduate Independent Study.
Independent study projects at the graduate level. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

BIOL 2980. Graduate Independent Study.
Independent study projects at the graduate level. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

BIOL 2985. Graduate Seminar.
Section numbers vary by instructor. Please see the registration staff for the correct section number to use when registering for this course.

BIOL 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Fall 2023

BIOL 2995. Thesis.
Section numbers vary by instructor. Please see the registration staff for the correct section number to use when registering for this course.
BIOL 1XLIST. Courses of Interest to Biology Concentrators.

BioMed-Neuroscience

NEUR 0010. The Brain: An Introduction to Neuroscience.
Introduction to the mammalian nervous system with emphasis on the structure and function of the brain. Topics include the function of nerve cells, sensory systems, control of movement and speech, learning and memory, emotion, and diseases of the brain. No prerequisites, but knowledge of biology and chemistry at the high school level is assumed. Fall NEUR0010 S01 16043 Arranged (M. Paradiso)

Examines the sensory and perceptual system for hearing: the external, middle, and inner ears; the active processes of the cochlea; sound transduction and neural coding; neural information processing by the auditory system; and the nature of auditory perception and its biological substrate. Prerequisite: an introductory course in Neuroscience, Cognitive Science, Physics, Engineering or Psychology.

NEUR 1020. Principles of Neurobiology.
A lecture course covering fundamental concepts of cellular and molecular neurobiology. Topics include structure of ion channels, synaptic transmission, synaptic development, molecular mechanisms of synaptic plasticity, learning and memory and neurological diseases. Prerequisite: NEUR 0010. Strongly recommended: BIOL 0200 or equivalent.

NEUR 1030. Neural Systems.
This lecture course examines key principles that underlie the function of neural systems ranging in complexity from peripheral receptors to central mechanisms of behavioral control. Prerequisite: NEUR 0010 or the equivalent. First year and Graduate students require instructor approval. Fall NEUR1030 S01 16046 Arranged(13) (M. Linden)

NEUR 1040. Introduction to Neurogenetics.
Recent advances in molecular biology and molecular genetics have allowed researchers to test specific hypotheses concerning the genetic control of behavior and neurological disease. This course will familiarize you with the latest techniques and recent research in the field of neurogenetics. We will cover basic topics, new ideas, and unsolved problems in neurogenetics primarily through the two assigned texts. However, neurogenetics is essentially a "frontier" area in neuroscience, and the best way to approach this topic is by scientific literature, which will be covered in some lectures.

NEUR 1440. Mechanisms and Meaning of Neural Dynamics.
We humans can shift our attention, perceive new objects, make complex motions, and adjust each of these behaviors within fractions of a second. Neurons and systems of neurons vary in their activity patterns on millisecond to second time scales, commonly referred to as "neural dynamics." This course addresses mechanisms underlying this flexibility and its potential meaning for information processing in the brain. The course integrates biophysical, computational, single neuron and human studies. In addition to lectures and readings, students will learn how to build computational models to simulate neural dynamics at various scales from single neurons to networks, using Matlab and the Human Neocortical Neurosloer. Computational modeling will be taught hands-on in an interactive lab session each week. Please request override through Courses@Brown.
Fall NEUR1440 S01 16055 TThF 1:00-1:50 (C. Moore)

NEUR 1530. Communication In The Brain: What We Know and How We Know It.
Neurons communicate through the thousands of synapses they form. In this seminar-style course, we will explore the cellular and molecular underpinnings of synaptic transmission. We will then examine how synapse number and function can be modulated to shape circuit function during development, learning & memory formation, and in response to perturbations. We will develop scientific thinking skills and an understanding of experimental approaches in modern neuroscience by focusing on how the field investigates synaptic transmission and plasticity. All readings are from primary literature. Please request override through C@B.
Fall NEUR1530 S02 18473 MW 3:00-4:20(10) (K. O'Connor-Giles)

NEUR 1540. Neurobiology of Learning and Memory.
Exploration of learning and memory from the molecular to the behavioral level. Topics will include declarative and procedural memory formation and storage, associative and non-associative learning, cellular and molecular mechanisms for learning, and disorders affecting learning and memory. Examples will be drawn from numerous brain areas and a variety of model systems, including humans. Students will gain experience interpreting experiments from primary literature. Prerequisite: NEUR 1020.

NEUR 1560. Developmental Neurobiology.
The course will explore core concepts of developmental biology in the context of the developing nervous system. Topics will include: neuronal specification, cell migration, axon guidance, synapse formation, and neural plasticity. Students will gain experience with the primary literature and learn about cellular and molecular mechanisms of brain development and the tools and model organisms used to study them. Request override through C@B. The decision will be made based on a variety of factors including: seniority, concentration requirement, etc.

NEUR 1600. Experimental Neurobiology.
Intensive laboratory experience in neuroscience appropriate for students with basic background in Neurobiology. Learn and employ the classical neurophysiological techniques of extracellular recording, intracellular recording and receptive field mapping using a variety of animal species. Experiments will include recording of sensory signals in the cockroach leg; frog sciatic nerve and sciatic nerve/muscle preparation and intracellular recording of neurons in Aplysia. Instruction on and practice of effective science writing is another component to this course. Labs are supplemented by informal lectures. Enrollment limited to 18. Please request override through C@B.Overrides will not be given until after the first course meeting.

NEUR 1630. Big Data Neuroscience Lab.
Recent technological developments have transformed neuroscience research, enabling us to generate comprehensive 'big data' sets that are often shared freely amongst the neuroscience community. This lab course will explore strategies to effectively use such open-sourced neuroscience data sets. Students will identify fundamental open questions in brain science and develop strategies to mine open-source sequencing, imaging and connectivity data to address their research questions.
Fall NEUR1630 S01 16057 TTh 9:00-10:20(02) (A. Fleischmann)

NEUR 1650. Structure of the Nervous System.
Combined lecture and laboratory course on the anatomy of the central nervous system. Lectures survey the circuitry of the major neural systems for sensation, movement, cognition, and emotion. Laboratory exercises (Mon. 10:30-12:30) include brain dissections, microscopy of neural tissue, and discussion of clinical cases. Prerequisites: NEUR 0010, NEUR 1020, and NEUR 1030. Please request an override through C@B. Please keep in mind that decisions on overrides may not be made until the first meeting of the course.
Fall NEUR1650 S01 16053 TTh 2:30-3:50(12) (D. Berson)

NEUR 1660. Neural Computation in Learning and Decision-Making.
Your brain is constantly making decisions, receiving feedback about those decisions, and learning from that feedback. In this course we will examine the neuroscience underlying these processes from a computational perspective. The course will involve reading scientific papers from cognitive neuroscience, building and testing the computational models that have been developed to synthesize this literature, and, as a final project, extending an existing model of learning or decision making and characterizing its behavior. A primary goal for the course is to develop the tools and motivation to translate verbal theories of behavior into formal and testable computational models.

NEUR 1740. The Diseased Brain: Mechanisms of Neurological and Psychiatric Disorders.
The goals of this course are to illustrate what basic science can teach us about neurological disorders and how these pathologies illuminate the functioning of the normal nervous system. Consideration will be given to monogenic diseases (e.g. Fragile X Syndrome, Duchenne Muscular Dystrophy and Tuberous Sclerosis) as well as genetically complex disorders, such as Autism, Schizophrenia and Alzheimer's Disease. Emphasis will be placed on the cellular and molecular basis of these
disorders and how insights at these levels might lead to the development of therapies. Prerequisites: NEUR 1020, BIOL 0470 suggested.

NEUR 1930I. Neural Correlates of Consciousness.
This course will consider the neuroscience of consciousness from a variety of perspectives, using examples from behavior, neurophysiology, neuroimaging and neurology. The course content will focus on primary literature, using review articles for background. Students will lead discussions. Sign-up required by Google Docs (link below). Please keep in mind that overrides may not be given until after the first meeting. Overrides are given based on seniority, concentration requirements, etc. Strongly Recommended: NEUR 1030. Enrollment limited to 15.

NEUR 1930J, C2S Neurotech: From Concept to Startup- Translating Neurotechnology.
To provide an understanding of the process of translating neurotechnology concepts into applications that can benefit people with nervous system disorders. Emphasizing principles useful to (1) recognize viable neuroscience concepts that can be applied to human nervous system disorders and (2) implement the essential engineering and clinical steps to translate concepts into real world, useful solutions. This is for students interested in translational neuroscience research in academia or in entrepreneurship and commercialization of neurotech innovations. Please request override via CoursesBrown.

NEUR 1930N. Region of Interest: An In-Depth Analysis of One Brain Area.
An in-depth exploration of one region of the brain. Topics will include: cell types and properties; synaptic properties; plasticity; connections to other brain areas; sub-divisions within the area; the region's role in sensation and perception; the region's role in action and behavior; the region's role in learning and memory; and diseases and disorders. Students will gain a deeper understanding of concepts and principles that apply throughout the brain. Students will gain experience with primary literature and learn about techniques for studying the area. Topic Fall 2020: Amygdala. Request overrides through C@B. Overrides will not be given until after first meeting.

NEUR 1940B. Deep Learning in Neuroethology.
Critical readings class will examine neural mechanisms for natural behavior (neuroethology) through reading classic studies and following current research. The course will emphasize the application of deep learning methods to movement patterns, spatial orientation, and social communication. DeepLabCut is one of several new programs that will focus on issues affecting these populations.

Laboratory-oriented research in neuroscience, supervised by staff members. A student, under the guidance of a neuroscience faculty member, proposes a topic for research, develops the procedures for its investigation, and writes a report of the results of his or her study. Independent study may replace only one required course in the neuroscience concentration. Prerequisites include NEUR 0010, 1020 and 1030. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Permission must be obtained from the Neuroscience Department.

NEUR 2030. Advanced Molecular and Cellular Neurobiology I.
Focuses on molecular and cellular approaches used to study the CNS at the level of single molecules, individual cells and single synapses by concentrating on fundamental mechanisms of CNS information transfer, integration, and storage. Topics include biophysics of single channels, neural transmission and synaptic function. Enrollment limited to graduate students.

NEUR 2040. Advanced Molecular and Cellular Neurobiology II.
This course continues the investigation of molecular and cellular approaches used to study the CNS from the level of individual genes to the control of behavior. Topics include patterning of the nervous system, generation of neuronal diversity, axonal guidance, synapse formation, the control of behavior by specific neural circuits and neurodegenerative diseases. Enrollment is limited to graduate students.

Focuses on systems approaches to study nervous system function. Lectures and discussions focus on neurophysiology, neuroimaging and lesion analysis in mammals, including humans. Cognitive neuroscience approaches will become integrated into the material. Topics include the major sensory, regulatory, and motor systems. Enrollment limited to graduate students.

NEUR 2060. Advanced Systems Neuroscience.
Focuses on cognitive approaches to study nervous system function. Lectures and discussions focus on neurophysiology, neuroimaging and lesion analysis in mammals, including humans. Computational approaches will become integrated into the material. Topics include the major cognitive systems, including perception, decisions, learning and memory, emotion and reward, language, and higher cortical function. Instructor permission required.

NEUR 2110. Statistical Neuroscience.
A lecture and computing lab course for senior undergraduate and graduate students with background in either systems neuroscience or applied math/biomedical engineering on the statistical analysis and modeling of neural data, with hands-on Matlab/Octave/Python-based applications to real and simulated data. Topics will include signal processing, hypothesis testing and statistical inference, modeling of multivariate time series and stochastic processes in neuroscience and neuroengineering, neural point processes, time and spectral domain analyses, and state-space models. Example datasets include neuronal spike trains, local field potentials, ECoG/EEG, and fMRI. Sign-up sheet in Sidney Frank Hall, Room 315 beginning on the first day of registration. Instructor permission required.

NEUR 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

NEUR 2980. Graduate Independent Study.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

NEUR 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Medical Education

MED 2050. Population and Clinical Medicine I.
This is the first semester of Population and Clinical Medicine, a two-semester course focused on the integration of population medicine and clinical practice. In this course, students will focus on topics integral to clinical medicine, but expand beyond the patient into the population and beyond. Given the importance of population health interventions for impacting the health of vulnerable and underserved patients, the course will focus on issues affecting these populations.

MED 2110. Introduction to Medical Sciences and Patient Care.
This 2-week intensive course introduces students to the wide variety of topics explored in the Master’s of Medical Sciences program, with a focus on patient care aspects. The course combines seminar classroom instruction with field work/immersion at community healthcare sites. Topics covered include: biopsychosocial model of healthcare; intersection between science, social science and humanities in healthcare; introduction to community health centers; professionalism in healthcare; basic healthcare communication skills; quality improvement skills; and strategies for mastery of basic science knowledge. Students will be assessed using multiple methods including: seminar participation, reflective essays/field
notes, attendance at field-work sites, & assessment from community mentors. Fall MED2110 S01 17746 Arranged (G. Anandarajah)

MED 2120. Patient Care in Complex Systems I. This is the second of a three course series for Master of Medical Sciences students. This course introduces students to the variety of complex factors affecting health, imparting both theoretical knowledge and practical skills. Teaching methods: interactive seminars and experiential learning at community healthcare sites with members of multidisciplinary teams. Topics covered: healthcare systems, social determinants of health, roles of interdisciplinary healthcare team members, quality improvement, and epidemiology. Students will begin developing a project at their clinical sites which will be implemented in spring semester. Student assessment includes: seminar participation, reflective essays, attendance at field-work sites, and assessment from community mentors. Pre Requisites: MED 2110 Fall MED2120 S01 17747 Arranged (G. Anandarajah)

MED 2140. Human Histology. Human Histology provides an in-depth examination of the basic architecture of the body. Fundamental to this understanding is the cell and how during early development cells in the aggregate undergo specialization as tissues, which are the building blocks of the body. This course focuses first on the biology of the four basic tissues (epithelium, connective tissue, muscle and nerve) and second, how they contribute to the functional anatomy of all organs and systems. We will emphasize characteristic developmental, structure-function and regulatory relationships within normal cells and tissues, which in turn are the foundation for the understanding of pathological alteration. Fall MED2140 S01 17748 Arranged (G. Anandarajah)

MED 2150. General Pathology. Pathology is the study of the causes, mechanisms, and consequences of disease. In General Pathology students study in detail the cell and tissue alterations that lead to the production of human diseases. To uncover such alterations, morphological observations are correlated with studies involving molecular biology, biochemistry, and genetics. In studying the pathogenesis of human disease we pay close attention to epidemiological parameters, population health, aging, and to environmental and occupational health problems. General Pathology been integrated, whenever possible, with other courses in the Fall Semester of the Gateways Program, in order to maximize learning opportunities. Fall MED2150 S01 17749 Arranged (G. Anandarajah)

MED 2160. Human Anatomy 1. This course explores the anatomical organization of the human body, viewing anatomical structures as a product of development and functional demand. Human Anatomy provides an opportunity for students of diverse backgrounds, interests, and goals to emerge with an understanding of the human body as a cornerstone of medical science. The course uses a combination of lectures, on-line modules, and mandatory laboratory sessions examining human cadaver proceedings, to impart broad conceptual and in-depth knowledge of this subject. Fall MED2160 S01 17750 Arranged (G. Anandarajah)

MED 2170. Scientific Foundations of Medicine. Scientific Foundations of Medicine is an integrated cross-disciplinary course that introduces the fundamental basic science principles relevant to the study of health, disease mechanisms and clinical medicine. As such the course consists of six blocks of core topics that incorporate foundational principles of molecular biology, cellular and metabolic biochemistry, nutritional science, cell physiology, inheritance patterns, mechanisms of genetic disorders, and immunology. Grounding in these scientific principles gives students insight into the biological complexity and genetic diversity that underlies disease processes. Fall MED2170 S01 17751 Arranged (G. Anandarajah)

MED 2210. Radiological Physics and Dosimetry. This course will cover the fundamental physics behind radiation production and interaction, including a review of pertinent mathematics, classical mechanics, and nuclear physics. Topics to be covered within basic radiation physics: radioactive decay, radiation producing devices, characteristics of the different types of radiation (photons, charged and uncharged particles), mechanisms of their interactions with materials, and essentials of the determination of absorbed doses, by measurement and calculation, from ionizing radiation sources used in medical physics (clinical) situations. Fall MED2210 S01 16168 Arranged (G. Cardarelli)

MED 2220. Radiation Protection & Instrumentation. This course examines principles of radiation protection with application to the hospital setting in radiation oncology, diagnostic imaging, and nuclear medicine. Designs of facilities and quality management programs are examined. Radiation safety practices are reviewed for involved hospital staff, patients, and the general public. This includes various radiation sources: electronically-generated photons and electrons, sources of sealed radioactivity, and unsealed sources of radioactivity. Additionally, the practice of radiation measurements as performed by the medical physicist is taught. This aspect includes associated dosimetry protocols, instrumentation, and clinical contexts. A practicum permits hands-on opportunities to assimilate the theoretical basis and rationale for radiation measurements Fall MED2220 S01 16169 Arranged (M. Rivard)

MED 2230. Computational Medical Physics. The aim of the Computational Medical Physics course is to familiarize students with mathematical, statistical and computational techniques in Medical Physics and how they integrate at a systems level. Students will learn about the emerging field of Computational Medical Physics through the application of mathematical modeling, computer simulations and quantitative and data-intensive analyses to medical data towards enhancing the accuracy, safety and efficiency of patient care and providing an understanding of cancer research. Basic programming skills are expected. Fall MED2230 S01 17474 Arranged (R. Munbodh)

MED 2250. Radiation Therapy Physics. This course will provide a comprehensive survey of basic radiotherapy physics, fundamental radiation therapy, and contemporary radiation therapy. The basic principles of radiotherapy treatment modalities, radiation detection, dose calibration methods, and image-based treatment planning will be reviewed. Topics to be covered include external beam radiation therapy (photons, protons, and electrons), brachytherapy, and special procedures. Image guidance methods will be discussed as well as patient and machine quality assurance. Fall MED2250 S01 17474 Arranged (R. Munbodh)

MED 2260. Physics of Medical Imaging. The course provides the necessary physics background that underpins day-to-day medical imaging physics activities. It is aimed primarily at new entrants to the profession, but should be of benefit to postgraduate students, postdoctoral research workers, physicist-managers, representatives of allied commercial organizations and anyone wishing to deepen or re-establish their understanding of the physics of medical imaging. Overviews of specialized or research related topics, such as positron emission tomography and magnetic resonance spectroscopy are given. MED 2260. Physics of Medical Imaging. Fall MED2260 S01 17474 Arranged (R. Munbodh)

MED 2980. Independent Study in Population Medicine. For students enrolled in the Primary Care-Population Medicine program at Alpert Medical School, this course is structured to allow students to conduct research focused on population health with a mentor at Brown University. Fall MED2980 S01 17374 Arranged (R. Munbodh)

Program in Liberal Medical Education

PLME 0400. Introduction to Medical Illustration. This semester course explores the field of medical illustration and its many facets. Depiction of diseases, anatomy, medical practices and surgical procedures has been around since antiquity. Not only has medical illustration evolved over the centuries, it has played the role of historian, documenting the beliefs and knowledge of its time. Today, medical illustration is as present as ever despite the advent of other methods of medical documentation, including photography and videography. Fall PLME0400 S01 17274 Arranged (F. Luks)

PLME 0800. Wilderness, Disasters, and Global Health. “Wilderness, Disasters, and Global Health” is an interdisciplinary and integrative science course that explores the provision of medical care
when challenges exist with regard to transportation, communication, equipment, facility infrastructure, medication supply lines, and the affordability and availability of skilled healthcare providers. This course, with a maximum enrollment of 15, is designed for any Brown senior who is interested in the outdoors, healthcare, or a science-based field. Instructor is an emergency physician, and anyone planning to pursue a medical career will learn skills to prepare for, and respond to, emergencies in a variety of limited resource environments.

Fall 

PLME 1000. PLME Senior Seminar in Scientific Medicine. 
This course is an interdisciplinary and integrative science course that will complement the preparation of both PLME and pre-medical students for the study of medicine in the 21st century. The course will use a case-based approach to relevant and contemporary subjects in medicine and health care, such as: biological systems and their interactions; diagnosis and therapy optimization; and the humanistic aspects of patient care. The course is intended for seniors interested in attending medical school but who will preferentially enroll PLME students. Prerequisite: PLME competency in Biology, Chemistry (inorganic and organic), Physics, and introductory calculus. Enrollment limited to 40. S/NC

Fall  
PLME1000  S01 17273  W  3:00-5:30 (R. Merritt) 

Business, Entrepreneurship and Organizations

BEO 1930A. BEO Capstone I: Organizational Studies Track.
The first in a two-semester Capstone for BEO Organizational Studies track seniors, open to all BEO seniors. Capstone builds upon concepts covered in BEO courses, specifically concepts from SOC 1311 and 1315. Students will synthesize knowledge at several levels: across disciplines, across theoretical understanding and practical application, and across private and public sector experiences of entrepreneurship and innovation. Students will be organized into client-mentored teams for social entrepreneurship and social innovation projects. BEO 1930A (fall) required; 1940A (spring) strongly advised for all Organizational Studies track seniors. Application required to match students to projects. Project team meetings required outside scheduled lectures.

Fall BEO1930A  S01 16936  Arranged (C. Spearin) 

BEO 1930B. BEO Capstone I: Entrepreneurship and Technology Management Track.
The first in a two-semester Capstone required of BEO Tech track seniors. Student teams from Engineering, BEO and other technical and non-technical disciplines form simulated high tech start-up companies working on mentor-defined opportunities. Concepts reviewed in class include: product commercialization, intellectual property, marketing, product requirements documentation, team building, safety, environmental and legal requirements. BEO Tech track concentrators should complete ENGN 1010 prior to course. Enrollment is limited. Students must complete formal application (BEO Tech track seniors automatically approved). Project team meetings required outside scheduled lectures. Non-BEO concentrators require instructor permission.

Fall BEO1930B  S01 16937  Arranged 'To Be Arranged' 

BEO 1930C. BEO Capstone I: Business Economics Track.
Designed for BEO Business Economics track seniors, this capstone is open to all BEO students, and builds upon BEO concepts in economics, finance, strategy, and markets. Students form teams to solve existing business problems, simulating groups of consultants. Projects range from recommending appropriate finance for new investments to project evaluation and pricing of new services. Student teams have client-mentors. Students apply analytical frameworks of BEO disciplines to hone writing, presenational, leadership and organizational skills. Application required to match students to projects. Project team meetings required outside scheduled lectures.

Fall BEO1930C  S01 16938  Arranged (B. McNally) 

BEO 1940A. BEO Capstone II: Organizational Studies Track.
Continuation of Semester 1, BEO Capstone I: Organizational Studies Track (BEO 1930A). This course involves the completion of team projects begun in fall semester.

BEO 1940B. BEO Capstone II: Entrepreneurship and Technology Management Track.
Continuation of Semester 1, BEO Capstone I: Entrepreneurship and Technology Management Track (BEO 1930B). This course involves the completion of team projects begun in fall semester. Non-BEO concentrators require instructor permission.

Course allows concentrators to complete BEO 1930 as an independent study due to scheduling conflicts.

Chemistry

CHEM 0080G. Chemistry in Movies.
This first-year seminar will introduce topics of chemistry that appear in our daily life and/or in the movies. Each topic will be introduced in a movie scene, after which a lecture and in-class discussion will follow. Various topics come from the areas of physical, organic, and inorganic chemistry, as well as from biological sciences. Examples range from safety practices in Harry Potter and the Chamber of Secrets, applications of chemistry in spaces for survival featured in Apollo 13, to heavy metal toxicity shown in Erin Brockovich. Each week introduces a new movie and chemical topics associated with it. Enrollment limited to 19 first-year students.

Fall CHEM0080G  S01 17876  M  3:00-5:30(13) (E. Kim) 

CHEM 0100. Introductory Chemistry.
Explores stoichiometry, atomic and molecular structure, chemical bonding, solutions, gases, chemical reactions, equilibria, thermochemistry. Three hours of lecture, one conference per week, no laboratory section. S/NC

Fall CHEM0100  S01 16088  Arranged (C. Morton) 

CHEM 0330. Equilibrium, Rate, and Structure.
Explores the electronic structure of atoms and molecules, thermodynamics, solution equilibrium, electrochemistry, chemical kinetics, and reaction mechanisms. Course includes lecture and laboratory sections. Laboratory cannot be taken without the lecture. Students who previously passed 0330 lab may be excused from repeating the lab portion of the course. Required background: CHEM 0100 or AP Chemistry 4 or CHEM Placement Test 8 or IBC Chemistry.

Fall CHEM0330  M01 18406  Arranged 'To Be Arranged' 
Fall CHEM0330  S01 16069  Th  10:30-11:50(13) (B. Rubenstein) 

CHEM 0332. Equilibrium, Rate and Structure - Tutorial.
The CHEM 0332 tutorial program offers students the opportunity to master the concepts taught in the fall semester CHEM 0330: Equilibrium, Rate and Structure course by focusing on active problem solving. Students who struggle in the fall CHEM 0330 course may be invited to join the tutorial program. Students accepted into the tutorial program begin by reviewing compound and reaction stoichiometry at the beginning of the spring semester. Tutorial students enroll in CHEM 0332 during the spring semester to complete their studies of equilibrium, acid-base equilibria, thermodynamics, atomic and molecular structure and kinetics. Students in the CHEM 0332 tutorial program complete weekly problem sets during the spring semester and participate in two mandatory, regularly scheduled problem sessions during each week of the spring semester. To qualify for consideration, the student must be struggling in the midterm exams and on track to pass the laboratory. Accepted students receive a grade of incomplete for the Fall CHEM 0330 course. Upon successful completion of the CHEM 0332 tutorial program in the spring semester, the incomplete in Fall CHEM 0330 is replaced by the student’s tutorial program grade. An override by Ms Sheila Quigley is required.

CHEM 0350. Organic Chemistry.
Sequel to CHEM 0330. Investigates the constitution and properties of the different classes of organic compounds, with considerable attention to reaction mechanisms. The laboratory work involves an introduction to microscale preparative and analytical techniques of organic chemistry and the preparation of representative organic compounds. Three hours of lecture and five hours of prelaboratory and laboratory. Prerequisite: CHEM 0330.

Students MUST register for a common meeting, a lecture section, and a lab.
If you previously completed CHEM 0350 laboratory but received a grade of no credit in the course, please register for lab section 11.

CHEM 0360. Organic Chemistry.
Sequel to CHEM 0350. Investigates the constitution and properties of organic compounds at a fundamental level with an introduction to physical organic, bioorganic, and synthetic organic chemistry. Laboratory work is concerned with the identification and characterization of organic compounds, including modern instrumental methods. Three hours of lecture and five hours of prelaboratory and laboratory. Prerequisite: CHEM 0350.

Students MUST register for a lecture section, a lab and a conference. If you previously completed CHEM 0360 laboratory but received a grade of no credit in the course, please register for lab section 11.

Fall CHEM0360 M01 18102 Arranged "To Be Arranged"
Fall CHEM0360 S01 16071 MWF 9:00-9:50(01) (M. Zimmt)

CHEM 0500. Inorganic Chemistry.
Examines the chemistry of main group and transition metal elements with treatment of covalent bonding and molecular structure along with the methods of studying inorganic compounds and reactions. Three hours of lecture and five hours of prelaboratory and laboratory attendance. Prerequisite: CHEM 0360. Students MUST register for a lecture section and a lab.

CHEM 0970. Undergraduate Research.
Prerequisite: permission of the staff. Permission should be requested before the end of the preceding semester. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CHEM 0980. Undergraduate Research.
See Undergraduate Research (CHEM 0970) for course description. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CHEM 0980S. Undergraduate Research - Writing Designated and Mandatory S/NC.
Students in this independent undergraduate research course will be expected to work on several scaffolded writing assignments throughout the semester. As with all writing-designated courses, students will receive feedback on their writing that they can incorporate into a revised version of the assignment or a future submission. Students who will not be engaged in this level of scientific writing should enroll in the traditional undergraduate research course, CHEM 0970/0980. This independent study is Mandatory S/NC.

CHEM 0981. Undergraduate Research - Writing Designated.
Students in this independent undergraduate research course will be expected to work on several scaffolded writing assignments throughout the semester. As with all writing-designated courses, students will receive feedback on their writing that they can incorporate into a revised version of the assignment or a future submission. Students who will not be engaged in this level of scientific writing should enroll in the traditional undergraduate research course, CHEM 0970/0980.

CHEM 1060. Advanced Inorganic Chemistry.
Covers the physical and chemical properties of transition metal compounds as well as current research topics in inorganic chemistry. Laboratory is designed for the practice of modern inorganic chemistry through the synthesis and spectroscopic characterization of air-sensitive transition metal compounds. Prerequisite: CHEM 0500.

Fall CHEM1060 S01 16080 MW 3:30-9:50(01) (O. Chen)

CHEM 1140. Physical Chemistry: Quantum Chemistry.
An introduction to the quantum theory of chemical systems. Elements of quantum mechanics; electronic structure of atoms and molecules; study of molecular structure and behavior by spectroscopy; chemical bonding are all explored. Prerequisites: CHEM 0330, MATH 0180 or equivalent. PHYS 0030 and PHYS 0040 or PHYS 0050 and PHYS 0060 or PHYS 0070 and PHYS 0470 or ENGN 0030 and ENGN 0040.

Fall CHEM1140 S01 16100 MWF 10:00-10:50(14) (R. Stratt)

Examines the question: Where does chemical equilibrium come from? Focuses on macroscopic perspectives on chemical systems and the molecular origins of macroscopic behavior along with elements of statistical mechanics, the laws of thermodynamics, and the relationships between the two. Prerequisite: CHEM 1140 or written permission of the instructor.

CHEM 1160. Physical Chemistry Laboratory.
An introduction to modern instrumentation and experimental techniques as applied to physical chemistry. Experiments will emphasize application of the ideas of spectroscopy, kinetics, statistical mechanics, and thermodynamics to systems of chemical and biochemical interest. Required course for concentrators in chemistry. One to two afternoons of laboratory per week. Prerequisites: CHEM 1140 or permission of the instructor.

CHEM 1230. Chemical Biology.
This course covers topics at the interface of chemistry and biology and, specifically, the use of chemical tools to probe biological systems. Using examples from the recent literature, we will discuss using the central methods of chemistry, namely the ability to design and synthesize compounds with a particular set of properties, to analyze biological problems. Specific topics include molecular recognition of DNA, artificial enzymes, small molecule sensors, and in vivo imaging of proteins, nucleic acids, and cell-surface carbohydrates. Prerequisites: CHEM 0360 and BIOL 0280. If enrollment exceeds the limit, permission to enroll will be allotted in the order: 1) first year graduate students, 2) senior concentrators in Chemistry or Biochemistry 3) junior concentrators 4) other students. Students who have registered or have permission to enroll must attend the first three classes or risk losing their places to someone on the waiting list.

CHEM 1240. Biochemistry.
Examines the chemical, mechanistic, and structural basis for enzymatic catalysis. Uses examples from the recent literature to examine how the experimental and conceptual tools of chemical synthesis, isotopic labeling, stereochemistry, enzymology, kinetics, and protein structure can be brought to bear to unravel the chemical and physical principles underlying the enormous catalytic acceleration and exquisite structural specificity of enzyme-catalyzed reactions. Prerequisites: Strong background in organic chemistry (CHEM 0360, A or B performance preferable) plus at least one semester of Biochemistry (BIOL 0280). Enrollment limited to 25 students, written permission required.

Fall CHEM1240 S01 16101 TTh 9:00-10:20(02) (J. Morin)

CHEM 1450. Advanced Organic Chemistry.
Lectures cover topics of current interest in organic reaction mechanisms, synthesis, and structure determination. Laboratory emphasizes spectroscopic and separation techniques and modern synthetic methods. Prerequisite: CHEM 0360. Students MUST register for a lecture section, conference and a lab.

CHEM 1560G. Nuclear Magnetic Resonance.
These special topics courses cover the basics of modern NMR spectroscopy. Topics to be included are as follows: modern Fourier transform methodology, modern NMR instrumentation, and a comprehensive discussion of one and two dimensional experiments that are routinely performed. Topics such as coherence transfer and pulsed field gradients will also be included. Experimental methods covered in detail include COSY, TOCSY, HSCQ, HMBCC, NOSEY, ROSEY, EXSY and DOSY methodology. This course will not focus on structure determination or spectral interpretation but rather on experimental methodology.

CHEM 1560J. Topics in Bioinorganic Chemistry.
Covers current topics of bioinorganic chemistry with review of fundamental inorganic and biochemical chemistry. Topics include metal ion transport and storage, oxygen metabolism, electron transfer, respiration and photosynthesis, metal ion receptors and signaling, hydrolytic chemistry, metallo-neurochemistry, and medicinal bioinorganic chemistry. Students are strongly urged to complete both CHEM 0500 and CHEM 0360 prior to a special topics course.
CHEM 1560N. Organometallic Chemistry.
Modern organometallic chemistry continues to find unique applications including next generation lighting displays, therapeutics and imaging, energy science, and green chemical synthesis. In this course we will briefly review fundamentals of organometallic chemistry (MO theory, ligand field theory, Pearson’s HSAB theory), and then delve into the structure, bonding, synthesis, reactivity, and mechanisms associated with organometallic complexes and their associated applications. Significant emphasis will be placed on effective oral and written communication skills, with frequent peer and instructor feedback provided. Prerequisites: CHEM 3060, CHEM 0500. PLEASE NOTE: This class is WRIT designated for Undergraduates Only. Graduate Students register for CHEM 2310.
Fall CHEM1560N S01 17495 TTh 10:30-11:50(13) (J. Robinson)

Focuses on synthesis, properties, and applications of nanoscale materials. It begins with the introduction to size-dependent properties and to general characterization methods of nanomaterials. It then outlines the synthesis, surface chemistry and self-assembly of nanomaterials. It further reviews catalytic, optical and magnetic properties of nanomaterials. Finally, the course highlights the applications of nanomaterials in information storage, energy conversion, and biomedicine. Prerequisites: CHEM0350, PHYS 0030 or 0050, BIOLO280 recommended.
Fall CHEM1700 S01 16102 MWF 11:00-11:50(16) (S. Sun)

CHEM 2010. Advanced Thermodynamics.
Fundamental principles of macroscopic equilibrium thermodynamics. The three laws of thermodynamics, the thermodynamic potentials, temperature scales, heat engines and refrigerators, entropy, kinetic theory, and transport phenomena. Applications to solids, liquids, and magnetic systems; Gibbs relations, first and second order phase transitions, thermal radiation, gas expansions.
Fall CHEM2010 S01 16103 TTh 1:00-2:20(08) (G. Diebold)

Introduction to modern equilibrium statistical mechanics, including the classical and quantum descriptions of ideal gases, the molecular basis of thermodynamics, the concepts of ensembles and fluctuations, and the implications of quantum mechanical indistinguishability. Applications include chemical and phase equilibria, the transition-state theory of chemical reaction rates, and the theory of liquids.

CHEM 2310. Organometallic Chemistry.
Modern organometallic chemistry continues to find unique applications including next generation lighting displays, therapeutics and imaging, energy science, and green chemical synthesis. In this course we will briefly review fundamentals of organometallic chemistry (MO theory, ligand field theory, Pearson’s HSAB theory), and then delve into the structure, bonding, synthesis, reactivity, and mechanisms associated with organometallic complexes and their associated applications. Significant emphasis will be placed on effective oral and written communication skills, with frequent peer and instructor feedback provided. Prerequisites: CHEM 3060, CHEM 0500. PLEASE NOTE: This class is WRIT designated for Undergraduates Only. Graduate Students register for CHEM 2310.
Fall CHEM2310 S01 16104 TTh 10:30-11:50(13) (J. Robinson)

This course examines methods for determining organic reaction mechanisms. Types of experiments introduced may include kinetics, free energy relationships, isotope effects, molecular orbital theory, spectroscopy, and product distribution analysis. Reactions typically covered include pericyclic reactions, reactive intermediates, organometallic reactions, and substitution/addition/elimination. The course makes extensive use of the primary literature, with a strong emphasis on the development of effective communication strategies. Completion of CHEM0500, and CHEM1140 is strongly recommended.
Fall CHEM2410 S01 16105 MWF 9:00-9:50(01) (A. Basu)

CHEM 2420. Organic Reactions.
Study of organic reactions and reaction mechanisms. Discussion and analysis of organic transformations. Topics can include arrow pushing strategies and synthetic methods.
Fall CHEM2420 S01 16106 MWF 8:00-8:50(01) (P. Williard)
systems; modern views of ancient slavery from Adam Smith to Hume to Marx to M.I. Finley. Readings in English.

CLAS 1120U. The American Presidents and the Western Tradition. We are accustomed to engaging the American presidency as a public office best approached through the prism of government or political science, but this course studies the ways in which the presidents in thought and action are part of a larger continuum of humanistic expression in the western tradition. It is organized around five categories: memory, language, consolation, farewell, and self-reflection. Our work involves reading and viewing/listening to various materials, including videos and original documents. The words we study, both by and about presidents, will be compared to various masterworks of Greco-Roman antiquity and the western Middle Ages.

CLAS 1130. The Fragility of Life in Ancient Greece. This interdisciplinary course explores the fragility of life in the Ancient Greek city-state form multiple perspectives: those of state-building, the population stress in the city, the capacity for the family to maintain and sustain itself, to those of the individual: man, woman, and child, whose life experiences left them vulnerable to disease and economic hardship. This course explores Ancient Greek socio-economic history addressing health, disease, fertility and childbirth, migration, mobility, and population and family ‘management’ as well as topics fundamental to historical demography (mortality, birth rates, and growth) over the longue durée approach (Archaic through Roman imperial era).

CLAS 1175. High Crimes and Misdemeanors: Impeachment trials and their Rhetoric. This course explores the history of impeachment trials in Athens, Britain, and the USA. We study some of the early deployments of impeachment (eisangelia in Greek) at Athens, its brief flourish in fourteenth century Britain, and its flowering in the seventeenth and eighteenth centuries. Subsequently we turn to the impeachment of Warren Hastings in 1788-1795 and then to the earliest impeachments in the US. We keep in mind the different time periods and governmental structures (direct democracy, monarchy with parliament, representative democracy) and investigate how legal processes—and their rhetoric—function in each of them.

CLAS 1202. Foundations Classical Heritage (HIST 1202). Interested students must register for HIST 1202.

Fall CLAS1202 S01 17168 Arranged 'To Be Arranged'

CLAS 1310. Roman History I: The Rise and Fall of an Imperial Republic. The social and political history of Ancient Rome from its origins to the death of Augustus in 14 CE. Focuses on the social conflicts of the early Republic; the conquest of the Mediterranean and its repercussions; the breakdown of the Republic and the establishment of monarchy. Readings emphasize ancient sources in translation.

CLAS 1320. Roman History II: The Roman Empire and Its Impact. The social and political history of the Roman Empire (14-565 CE). Focuses on expansion, administration, and Romanization of the empire; crisis of the 3rd century; militarization of society and monarchy; the struggle between paganism and Christianity; the end of the Empire in the West. Special attention given to the role of women, slaves, law, and historiography. Ancient sources in translation.

Fall CLAS1320 S01 16949 MWF 11:00-11:50(16) (J. Bodel)

CLAS 1430. The Cultures of Roman Imperialism (HMAN 1974U). Interested students must register for HMAN 1974U.

Fall CLAS1430 S01 17203 Arranged 'To Be Arranged'

CLAS 1441. Merchants, Trade, and Commerce in the Roman World. Exotic spices, fermented fish sauce, mass-produced pottery, olive oil, fine wine, not-so-fine wine, marble, bricks, metals, people, art, elephants—these are just a few of the things that the Romans traded. This course draws on archaeological, literary, and epigraphic material to investigate the world of Roman trade from the goods that were moved, to the logistics of transport, to the merchants and traders themselves. Who ventured to India in search of spices? Who ran the local wine shop? How were colossal columns transported across deserts?

CLAS 1750V. God of the Greek Philosophers (HMAN 1974V). Interested students must register for HMAN 1974V.

CLAS 1930C. Parasites and Hypocrites. The course is a study of the many forms of toadying, groveling, feigning friendship, flattery, all manner of things, and so on, that were such a large source of concern — and comedy — in antiquity. The anxieties over hypocrisy in a democracy and parasites in client-patron systems will be explored historically, in literary representations, and in their social, political, and economic contexts. Authors to be read include Aristophanes, Plutarch, Lucian, Plautus, Horace, and Petronius.

Fall CLAS1930C S01 16951 Thh 9:00-10:20(02) (K. Haynes)

CLAS 1970. Special Topics. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CLAS 1990. Conference: Especially for Honors Students. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CLAS 2101L. Critical Approaches to Classical Texts: Theory and Methods. These seminars will examine categories fundamental to the study of ancient literature and historiography, highlighting the relevance of ancient philosophy, rhetoric and poetics to modern critical/theoretical approaches. Topics can include: text, author, context, literature, genre, representation, emulation, narrative, historiography, commentary, reception. Contradictions in the idea of ‘classics’ can also be considered, in connection with questions of diversity and ethical approaches to Greco-Roman texts. The course aims to draw on participants’ needs and experiences to offer firm and constructive guidelines for professional academic writing, eliminating common errors and misconceptions (intentional and biographical fallacies, confusion between allusion and intertextuality, ‘topoi and ‘tropes’).

Fall CLAS2101 S01 17826 M 3:00-5:30 (A. Laird)

CLAS 2106G. The World of Late Antiquity. Focused on the Mediterranean world between the third and ninth centuries CE, this seminar introduces students to the study of late antiquity and the early middle ages from a multidisciplinary perspective. Class sessions focus on the intensive reading of a small collection of closely-related primary sources in the original language and contextualizing them through a grounding in other disciplines essential to the study of ancient and medieval history, including archaeology, codicology, palaeography, numismatics, and prosopography. Topics vary by semester and may include such themes as the body, emotional and psychological histories, trauma, slavery, violence, “barbarians,” or interfaith interaction. Prerequisite: Latin

CLAS 2110K. Vision and Visualization in Literature: The Rhetoric of Enargeia. How does writing make us see? We will study rhetorical concepts of “vivid description” (enargeia, phantasia, evidentia) from ancient Greek and Roman theory and literary practice and follow their reception in later periods and literary traditions, including modern evaluations of their significance (all readings in English). Taking texts from poetry, historiography, philosophy, and elsewhere, we will explore “vividness” particularly in terms of tropes of persona-fashioning (pros#popoeia) and subject-positioning, with attention to the ethical and ideological implications that that may entail, and explore its relations with such topics as echprasis, narratology, and spectacularly.

CLAS 2450. Exchange Scholar Program.

CLAS 2970. Preliminary Examination Preparation. For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

Fall CLAS2970 S01 15457 Arranged 'To Be Arranged'

CLAS 2980. Reading and Research. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.
CLAS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall CLAS2990 S01 15458 Arranged 'To Be Arranged'

CLAS XLIST. Courses of Interest to Classics Concentrators.

Greek

GREK 0110. Introduction to Ancient Greek.
Intensive, one-semester introduction to Greek. No previous knowledge of Greek is required. This is a double credit course.

GREK 0200. Essentials of the Greek Language.
Second half of a two-semester approach to ancient Greek with special emphasis on developing facility in rapid reading of Greek literature. Selections from Attic Greek authors. No previous knowledge of Greek is required.

GREK 0300. Introduction to Greek Literature.
Introduction to Greek literature through intensive reading. Prerequisite: GREK 0200, GREK 0110, or the equivalent. This course focuses on translation and comprehension of Classical Greek prose. The goal is to expand your vocabulary, increase your ease with morphology, and deepen your understanding of syntax as each of these elements of the language interact with each other. The primary text will be Plato’s Symposium, in which Socrates and other guests at a drinking party consider the nature of love, and its role in personal relationships, education, and even politics.
Fall GREK0300 S01 16953 MWF 1:00-1:50(06) 'To Be Arranged'

GREK 0400. Introduction to Greek Literature.
Prerequisite: GREK 0300 (or the equivalent). Review of grammar of the Attic dialect through rapid reading of texts by Lysias, Plato, or Xenophon. Emphasis on syntax and style.

GREK 1050A. Aristophanes.
Addresses students with at least an intermediate-level command of Ancient Greek, but previous knowledge of Aristophanic language and poetry is not required. We will read in the original language Aristophanes’ Frogs, and study different aspects (language, meter, historical background, theatrical performances, literary interpretations, etc.) of this play and of Aristophanic comedy generally. Frogs, composed towards the end of the Peloponnesian War, is one of Aristophanes’ most puzzling plays. It presents a fantasy (and comic!) vision of the afterlife and, indirectly, informs us about the literary criticism of the time.

GREK 1080. Attic Orators.
No description available.
Fall GREK1080 S01 17015 TTh 1:00-2:20(08) (A. Scaturo)

GREK 1090. Athenian.
In the fourth century BCE, Athenians already looked back with nostalgia on a fifth-century "Golden Age"—on the age of "Periclean Athens." The third quarter of the fourth century did nevertheless see the rise of a statesman, Lycurgus, who rivaled Pericles in reputation and influence. The "Lycurgan Era" was a time of cultural efflorescence in Athens, but also one in which the city lived increasingly under the threatening shadow of Macedon. In this course we read, in Greek, one or more texts from the Lycurgan Era, Athens’ "Silver Age." (Possible authors include Aristotle, Demosthenes, Aeschines, Lycurus, Hyperides.)

In this class we will read Books I, II, III, and X of Aristotle’s Nichomachean Ethics and discuss his treatment of the highest human good, moral virtue, the doctrine of the mean, and his theory of action.

GREK 1150. Greek Prose Composition.
Survey of Greek grammar and an opportunity to reflect on problems of translation. Main goals: to improve the students’ command of prose syntax (both in reading and writing), and to develop a keen sensitivity towards issues of translation. A variety of texts written in Attic prose are read and analyzed in class. Students are expected to write two to three compositions a week in good Attic prose. Advanced knowledge of ancient Greek is a prerequisite for this course.

GREK 1810. Greek Literature Survey to 450 BCE.
Surveys early Greek literature to 450 BCE. Works studied include the Iliad, Odyssey, the Hesiodic poems, Pindar, Bacchylides, and Aeschylus. Emphasis on literary interpretation, the poetics of oral poetry, and the early history of various literary genres. Extensive readings in the original.
Fall GREK1810 S01 16955 Arranged (J. Hanink)

GREK 1910. Special Topics.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

GREK 2970. Preliminary Exam Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall GREK2970 S01 15483 Arranged 'To Be Arranged'

GREK 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

GREK 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall GREK2990 S01 15484 Arranged 'To Be Arranged'

Latin

LATN 0110. Introduction to Latin.
This course offers a rapid introduction to the Latin language and grammar. As a one-semester introduction to material often covered in two semesters, this course carries two credit hours instead on one. The workload for this course is correspondingly heavy; students may expect an average of ten hours of homework—including memorization, practice, and preparation of vocabulary and grammar—per week. There are no prerequisites for this course.

LATN 0200. Essentials of the Latin Language.
Second course in an intensive two-semester approach to Latin. Special emphasis on developing facility in the rapid reading of Latin literature. No previous knowledge of Latin is required prior to taking this two course sequence.

LATN 0300. Introduction to Latin Literature.
Introduction to Latin literature through intensive reading of major authors in prose and poetry with careful attention to grammar and style. Prerequisite: LATN 0100, 0200 or 0110 (or equivalent).
Fall LATN0300 S01 16957 MWF 10:00-10:50(14) 'To Be Arranged'

LATN 0400. Introduction to Latin Literature.
Introduction to Latin literature through intensive reading of major authors in prose and poetry with careful attention to grammar and style. Prerequisite: LATN 0100, 0200 or 0110 (or equivalent).

LATN 1040A. Virgil: Eclogues and Georgics.
Virgil, most famous as the poet of the Aeneid, began his career with two smaller masterpieces: a collection of ten bucolic poems (Eclogues) modeled on the Idylls of the Hellenistic poet Theocritus, and a didactic work on agriculture in four books, the Georgics, which found its inspiration both in Hellenistic models and in more recent Roman antecedents (including Lucretius’ De Rerum Natura) and is viewed by many as the poet’s finest achievement. We will read selections from both works, concluding with the epyllion at the end of Georgics Four, which relates the tragic love story of Orpheus and Eurydice.

LATN 1060I. Senecan Tragedy.
Close reading and thorough translation of two Senecan revenge tragedies, the Medea and Thyestes. Emphasis will be on translation of the Latin, but as time permits we will also be discussing the two plays in their mythological, cultural, historical, and performance contexts. Students should already have four semesters of Latin (LATN 0400) or the equivalent.

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## Course Descriptions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>LATN 1060I</td>
<td>LATN1060I S01 16959 MWF 11:00-11:50(16) (J. Debrohun)</td>
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<tr>
<td>LATN 1110F</td>
<td>LATN1110F FAll. Fortunatus.</td>
<td>Wide reading in the occasional poetry of the most prolific writer of the early Middle Ages, attending to diction, metre, imagery, allusion, and paying special attention to the (homo- and hetero-) erotic pieces written to the poet's friends.</td>
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<tr>
<td>LATN 1110G</td>
<td>LATN1110G Latin Love Elegy.</td>
<td>Reading of representative selections from each of the Roman elegists: Tibullus, Propertius, and Ovid. Discussion also of the origins and development of love elegy at Rome and exploration of the themes and topoi that define the genre. Follows the poets' negotiations with various discourses and ideologies in Augustan Rome: literary, social, sexual, and political.</td>
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<tr>
<td>LATN 1110Y</td>
<td>LATN1110Y Latin Epistolography.</td>
<td>Through reading letters from different periods of Roman History, students will become more familiar not only with the ways letters negotiated Roman social, political, and intellectual networks but also how Roman authors drew on epistolary conventions to compose literature in other forms. Authors to be read may include but are not limited to Cicero, Ovid, Pliny the Younger, and Fronto.</td>
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<tr>
<td>LATN 1120G</td>
<td>LATN1120G Reading Humanist Latin Texts.</td>
<td>The course will explore in depth some important Renaissance or ‘early modern’ works of Latin literature, many of which have not been translated into English. As well as opening up a new field of Latin writing, the course will extend general knowledge of classical literature by involving some less commonly studied ancient sources. It will also introduce some early imprints, enabling you to consider texts directly in the original form in which they first appeared.</td>
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<tr>
<td>LATN 1820. Survey of Roman Literature II: Empire.</td>
<td>This course will survey the major authors of Latin literature in chronological order from Virgil.</td>
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<tr>
<td>LATN 2080I. Latin Atlantic Epic.</td>
<td>This course will involve study of Latin epics produced in Europe and the Americas (1500-1780) which addressed themes particular to the discovery, conquest and colonisation of the New World. A range of texts will be introduced, but the class will probably focus on two or three works in particular over the course of the semester. The historical conditions in which these epics will be considered as well as the poets’ classical models and their sources in early modern Latin and vernacular writing.</td>
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<td>For graduate students who have met the residency requirement and are continuing research on a full time basis.</td>
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<tr>
<td>MGRK 0100. Introduction to Modern Greek.</td>
<td>Designed for students with little or no prior knowledge of Modern Greek. The aim is to introduce students to basic linguistic structures and develop the ability to comprehend and produce text, as well as to speak and understand speech, in a variety of contexts and registers. The course objectives are to enable students to perform a range of tasks, master a minimum core vocabulary and acquire knowledge and understanding of various forms of Greek culture.</td>
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<tr>
<td>MGRK 0200. Introduction to Modern Greek.</td>
<td>A continuation of MGRK 0100. New students may place into it, after special arrangement with the instructor. The course continues on an integrative skills approach and aims to develop language skills, within a framework of specific topics and functions. The course objectives are to enable students to perform a range of tasks, master a minimum core vocabulary and acquire knowledge and understanding of various forms of Greek culture.</td>
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<tr>
<td>MGRK 0300. Intermediate Modern Greek.</td>
<td>Develops linguistic and cultural competence and may be taken by anyone who has completed MGRK 0200 or after consultation with the instructor and/or a placement exam. It focuses on further development of the four language skills as well as knowledge and understanding of various aspects of Greek society. It employs a variety of materials, including film, digital stories, internet based sources, music, art, and literature.</td>
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<tr>
<td>MGRK 0400. Intermediate Modern Greek.</td>
<td>A continuation of MGRK 0300. New students may place into it, after special arrangement with the instructor. It aims to enhance language skills within a variety of registers and themes; enable the students to master, use and understand effectively essential linguistic structures; examine a variety of expressive forms within an authentic cultural context.</td>
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<tr>
<td>MGRK 0500. Advanced Modern Greek.</td>
<td>May be taken by students who have completed the previous sequences or by anyone who places successfully into the course. The course places emphasis on the improvement of writing and oral skills, via presentations, collaborative projects, conversations and assignments based on topics and texts, drawn from a variety of sources and cultural forms of expression.</td>
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<tr>
<td>MGRK 0600. Advanced Modern Greek.</td>
<td>A continuation of MGRK 0500. Students who have not taken the previous sequence may take a placement test, after consultation with the instructor. The course aims to promote range, accuracy and fluency and enable students to develop ease and spontaneity with the language. Authentic materials drawn from a range of sources inform the content of the course and include films, literature, media, testimonies, music and internet based sources. The development of transcultural competence will be an essential component of the course.</td>
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<tr>
<td>MGRK 1800. In Other Words: Translating Greece.</td>
<td>This is an advanced undergraduate seminar that will offer students the opportunity to build on their linguistic, cultural and critical literacies, by translating from Greek into English. Over the course of the semester we will be thinking critically about texts, their ideological, historical and social coordinates and their embedded discourses of Greekness, community, diglossia, identity and gender, among others. In addition to translating from Greek into English, we will read and discuss essays on translation, in order to consider in an informed way the issues (untranslatability?) and types of decision making associated with the practice of translation.</td>
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<tr>
<td>MGRK 1910. Special Topics in Modern Greek.</td>
<td>No description available.</td>
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<tr>
<td>MGRK 2200. Modern Greek for Classicists and Archaeologists.</td>
<td>This graduate level course promotes the acquisition and further refinement of the necessary translilingual and transcultural skills to prepare students in the fields of Classics and Archaeology to carry out research in Greece and Cyprus. In addition, it involves training in linguistic skills that will enable students...</td>
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students to study closely a range of texts of relevance to these disciplines. Primary emphasis will be on the development of reading, oral and aural skills using a variety of text and web based materials, of discipline specific content but also in professional and other communicative contexts of cultural currency.

Fall MGRK2200 S01 17911 Arranged (E. Amanatidou)

Sanskrit

SANS 0100. Elementary Sanskrit I.
This course introduces Sanskrit to students who have no prior knowledge of any language other than English. Students quickly learn to read the Devanagari script and study the basics of the sound-system of Sanskrit. The course rapidly surveys the basics of Sanskrit grammar while using adaptations of classical Indian myths and stories as reading exercises.
Fall SANS0100 S01 17132 MWF 12:00-12:50(15) (D. Buchta)

SANS 0200. Elementary Sanskrit II.
This course continues the survey of grammar and the reading exercises of SANS 100. The second half of this course reads selected passages of the Bhagavad Gita and the beginning of the classic story of Nala and Damayanti from the Mahabharata. Prerequisite: SANS 0100.

SANS 1400. The Sanskrit Grammatical Tradition.
Introduction to the Sanskrit tradition of Vyakaran (grammatical derivation and analysis) through reading Pinni’s Astadhyayi and commentaries upon it.

SANS 1600. Sanskrit Poetry and Drama.
Introduction to kavya (classical Sanskrit belles lettres)—poetry, drama, and prose narrative—through the reading of authors of the Classical Period as well as works on aesthetics and commentaries upon them.
Fall SANS1600 S01 17098 MWF 9:00-9:50(01) (D. Buchta)


Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor's permission required.

SANS 2970. Sanskrit Preliminary Exam Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall SANS2970 S01 15533 Arranged 'To Be Arranged'

SANS 2980. Sanskrit Reading and Research.
Section numbers will vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

Cognitive, Linguistic and Psychological Sciences

Cognitive, Linguistic and Psychological Sciences

The topic of this course is the scientific study of animal behavior, based on the theoretical framework proposed by Nobel Prize winner Niko Tinbergen. This framework addresses four basic questions about behavior: its evolutionary history, its function, its development, and its causation (underlying mechanisms). Using Tinbergen's framework, we will study two major categories of behavior—mating and aggression—in a range of animal species.
Fall CLPS0110 S01 16850 M 12:00-12:50(15) (A. Simmons)

CLPS 0220. Making Decisions.
Life is full of decisions. Some decisions are made rationally, others could be improved. This course considers the psychology of human decision-making, the analysis of optimal decision-making, and implications for individual action and social policy. Topics include: chance and preference (e.g., how do consumers weigh attributes when making purchases?); the value of information (e.g., when should physicians order expensive diagnostic tests?); risky choice (e.g., is it rational to play the lottery?).

CLPS 0300. Introduction to Linguistics.
The ability to speak and understand a language involves having mastered (quite unconsciously) an intricate and highly structured rule-governed system. Linguists seek to model that rule system. This course introduces the principles underlying phonology (the principles that govern how sounds are put together), syntax (the rule system governing sentence structure), and semantics (the system that relates sentences to meanings).

An examination of children’s thinking and cognitive development from infancy to middle childhood. Considers a range of topics including memory, reasoning, categorization, perception, and children’s understanding of concepts such as space, time, number, mind, and biology. Major theories of cognitive development are described and evaluated in light of the available psychological data.

CLPS 0700. Social Psychology.
Examines the theories, findings, and methods of social psychology. Topics include: social cognition (person perception, attitudes), social influence (cultural sources of attitudes, conformity), and social relations (aggression, altruism, prejudice). Students become better informed consumers of empirical research and acquire a new framework for interpreting social behavior. Applications to historic and current events.
Fall CLPS0700 S01 16857 TTh 2:30-3:50(12) (O. FeldmanHall)

CLPS 0701. Personality.
A survey of the major perspectives (psychoanalytic, behavioral, humanistic, etc.) within theories of personality. Particular emphasis is placed on the integration of research and theory.
Fall CLPS0701 S01 17395 TTh 9:00-10:20(02) (C. Ellis)

CLPS 0710. The Psychology and Philosophy of Happiness.
The course explores four fundamental questions about happiness: What is happiness—pleasure, life satisfaction, something else? How is happiness achieved—what are the myths and realities about what conduces to happiness? Can happiness be achieved—are we naturally well suited to be happy? Why pursue happiness—is it sufficient, or even necessary, for a good life? The course examines classic contributions from philosophy and psychology, the two disciplines that have studied happiness most extensively. Team-taught by professors from both philosophy and psychology, it invites students to compare and combine both approaches.

CLPS 0800. Language and the Mind.
Explores fundamental issues in psycholinguistics: what is the nature of language; what are its biological underpinnings; how does the mind process speech, recognize words, parse sentences, comprehend discourse; what do effects of brain injuries on language reveal about the organization of language in the mind? Syntheses of results from multiple modes of analysis—linguistic, psychological, computational, and neurophysiological—are emphasized.

CLPS 0900. Statistical Methods.
A survey of statistical methods used in the behavioral sciences. Topics include graphical data description, probability theory, confidence intervals, principles of hypothesis testing, analysis of variance, correlation, and regression, and techniques for categorical data. Emphasizes application of statistical methods to empirical data.
Fall CLPS0900 S01 16858 MW 8:30-9:50(01) (S. Costa)

CLPS 0950. Introduction to programming.
This course will provide an introduction to matlab programming for students in the life sciences with no prior programming experience. At the end of this course, students will be able to implement matlab functions independently to solve many common programming challenges associated with the study of the mind, brain and behavior — from conducting sophisticated data analyses to parsing complex data files to implementing psychophysics experiments. The course is designed for students in psychology, cognitive science, neuroscience and other non-computer science majors interested in learning matlab. Beyond teaching specific coding skills, this course will support students' development as computational thinkers.
Course Descriptions

CLPS 1195. Life Under Water in the Anthropocene.
The application of knowledge of human characteristics to the design of equipment, facilities, and environments for human use. Research on attention, perception, learning, and decision making will be applied to problems in various areas including: aviation, highway safety, industrial safety, consumer products, human-computer interaction, and aging. Enrollment limited to 25.

CLPS 1250. Human Factors.
An introductory course in the scientific study of such phenomena. Specific topics include: presupposition, implicature, speech acts, deixis, anaphora, (in)definiteness, and information structure. No prior research experience required. Fall CLPS1195 S01 16884 Th 2:30-5:30(12) (R. Colwill)
Fall CLPS1195 S01 16884 T 2:30-3:50(12) (R. Colwill)

CLPS 1280B. Special Topics in Cognition: Collective Cognition.
As individuals, we know little. We overestimate our knowledge of common objects and political policies, and the depth of our arguments. But humanity has achieved great things using its mental powers. The most likely reason is that we live in a community of knowledge, guided by shared intentionality. Communities understand how things work, and individuals fail to distinguish what they know from the knowledge that resides in other people’s heads. In this course, we will evaluate these claims and discuss how they constrain theorizing in cognitive science. We will draw from literatures in psychology, philosophy, and computer science. Fall CLPS1280B S01 17635 M 3:00-5:30 (S. Sloman)

CLPS 1310. Phonology.
Examines some of the classic and current issues regarding sound structure in the world's languages and introduces the theoretical tools needed to solve them. After an introduction to articulatory phonetics and phonemic analysis, it focuses on phonological analysis of different languages, and discusses rule-based and constraint-based approaches to phonology. Implications for language learning and language change are discussed. Prerequisite: CLPS 0030.
Fall CLPS1310 S01 17725 MWF 10:00-10:50(14) (U. Cohen Privva)

CLPS 1341. Lexical Semantics.
The representation of word meaning and generalizations about the way in which meanings are packaged into words. Topics include: "fuzzy" meanings, natural kind terms, how word meanings are decomposed. Special emphasis on how temporal properties are encoded, on the status of "thematic relations," and on how the fine-grained structure of word meanings impacts on the syntax. Recommended prerequisite: CLPS 0300 (COGS 0410).

CLPS 1360. Introduction to Corpus Linguistics.
The study of Linguistics relies on language production data. Language corpora contain various sources of such data, often annotated to include additional information such as syntactic, semantic and phonological properties. Such databases often complement or even replace data sources used in other disciplines. This class aims to train students in the use of some of the tools that are commonly used to access and evaluate data in linguistic corpora. Prerequisite: CLPS 0300. Enrollment limited to 25.
Fall CLPS1360 S02 17726 MWF 11:00-11:50(16) (U. Cohen Privva)

CLPS 1370. Pragmatics.
Any time we utter a sentence in conversation, the perceived meaning of that sentence interacts with the discourse context in a rich variety of ways. On the one hand, aspects of a sentence’s meaning are "filled in" or enriched by the prior conversation as well as non-linguistic context. On the other hand, utterances shape the future of the conversation in various ways too. This course is an introduction to the scientific study of such phenomena. Specific topics include: presupposition, implicature, speech acts, deixis, anaphora, (in)definiteness, and information structure.

Fall CLPS1370 S01 17705 TTh 10:30-11:50(13) (S. AnderBois)

CLPS 1420. Cognitive Neuropsychology.
This foundation course in cognitive neuropsychology will explore the effects of brain damage on cognitive function. The goals of cognitive neuropsychology are to understand the effects of brain pathology within the context of modern theories of cognition, and to draw inferences about normal or intact cognitive function from patterns of dysfunction observed with brain pathology. Readings will focus on research investigations of brain damaged populations within one or more areas of cognition (e.g., perception, memory, or attention) that address topics of current relevance. Pre-Requisites: CLPS 0010 or CLPS 0040 or CLPS 0200 or CLPS 0400 or NEUR 0010. CLPS 090 is also strongly recommended.

CLPS 1480B. Cognitive Aging and Dementia.
This seminar examines the cognitive changes associated with normal aging and age-related dementia (e.g., Alzheimer’s Disease). Topics covered will include changes in the neurocognitive systems mediating memory, perception, and attention. The course is primarily intended as an advanced seminar for junior and senior concentrators in Psychology, but is also intended for other students interested in aging and the neuropsychology of cognition. Recommended prerequisites: An introductory course in cognitive neuroscience (CLPS 0400 (COGS 0720), CLPS 0400 (PSYC 0470)) or permission of the instructor. Preference will be given to senior concentrators in Psychology and related areas. Enrollment limited to 20.

CLPS 1480H. Disorders of Memory.
In his 1882 treatise on Diseases of Memory, Ribot wrote that “the disorders and maladies of this faculty, when classified and properly understood, are no longer to be regarded as a collection of amusing anecdotes of only passing interest. They will be found to be regulated by certain laws which constitute the very basis of memory and from which its mechanism is easily laid bare.” In that spirit, this seminar will examine how both organic (e.g., Korsakoff syndrome, herpes encephalitis, semantic dementia) and functional (e.g., fugue, posthypnotic amnesia, multiple personality disorder) amnesias can inform our understanding of human memory.

CLPS 1492. Computational Cognitive Neuroscience.
We explore neural network models that bridge the gap between biology and cognition. Begins with basic biological and computational properties of individual neurons and networks of neurons. Examines specialized functions of various brain systems (e.g., parietal cortex, frontal cortex, hippocampus, ganglia) and their involvement in various phenomena, including perception, attention, memory, language and higher-level cognition. Includes a lab component in which students get hands on experience with graphical neural network software, allowing deeper appreciation for how these systems work. Prerequisites: CLPS 0400 or CLPS 0200 or NEUR 0010.
Fall CLPS1492 S01 16865 TTh 1:00-2:20(8) (M. Frank)

CLPS 1495. Affective Neuroscience.
This course will survey key topics and methods in research on the neuroscience of affect and emotion. It is ideally suited for advanced undergraduates or graduate students who have taken an introductory course in cognitive neuroscience (CLPS 0040 (COGS 0720), CLPS 0400 (PSYC 0470)) or permission of the instructor. Preference will be given to senior concentrators in Psychology and related areas. The course will include in-class presentations, discussions, short lectures, short and long forms of reading responses, and a final research proposal.
Fall CLPS1495 S01 16872 T 4:00-6:30 (A. Shenhav)

CLPS 1500. Perception and Action.
The ecological approach treats perceiving and acting as activities of an agent-environment system rather than as isolated "mind," and offers an alternative to the prevailing computational/representational view. Topics include inferential and direct perception, perception of the 3D environment, visual control of action, dynamics of motor coordination, and self-organization of behavior. Lecture and discussion. Prerequisite (any one of the following): CLPS 0010 (PSYC 0010), CLPS 0020 (COGS 0010), CLPS 0500 (COGS/PSYC 0440), or CLPS 0510 (COGS 0110).
CLPS 1540. Perceiving and Acting in 3D.
How does visual stimulation inform the brain about the three-dimensional structure of the world? What information is important for complex organisms, like humans and other primates, to be able to successfully interact with the surrounding environment? In this course we will examine how different sources of visual information such as stereo, contours, texture gradients, shading, and optic flow contribute to the vivid experience of 3D shape by the human visual system. Moreover, connections will be made to the mechanisms that govern goal directed actions, in order to unveil the commonalities between 3D processing for conscious perception and visuomotor mappings.

Fall CLPS1540 S01 16866 T 4:00-6:30 (F. Domin)  


This course will focus on perceptual learning and visual plasticity. The goal of this course is to understand the mechanisms of visual perceptual learning and visual brain plasticity. Perceptual learning is defined as long-term performance improvement as a result of visual experiences. Enrollment limited to 20. Recommended prerequisites: CLPS 1291, 1500, and 1520.

Fall CLPS1550 S01 17727 M 3:00-5:30 (J. Song)  

CLPS 1570. Perceptual Learning.

This course will focus on perceptual learning and visual plasticity. The goal of this course is to understand the mechanisms of visual perceptual learning and visual brain plasticity. Perceptual learning is defined as long-term performance improvement as a result of visual experiences. Enrollment limited to 20. Recommended prerequisites: CLPS 1291, 1500, and 1520.

Fall CLPS1570 S01 17727 M 3:00-5:30 (J. Song)  

CLPS 1580C. Visualizing Information.

There has been an explosion of interest in how to present information in a visual way rather than as a bunch of boring numbers. Visualizations can be outstanding at conveying information, but there have also been colossal failures. We will explore the good, the bad, and the ugly and harness knowledge of visual perception to understand why some are more successful than others. Someone interested in how to create effective visual displays (posters, infographics) would benefit from this course. Some background in visual perception is recommended such as a CLPS or NEUR course about vision or familiarity with graphic design.

CLPS 1650. Child Language Acquisition.

All normally developing children acquire language, yet there is little agreement about how this takes place. This class explores the course of language acquisition from birth to babbling and first words to the use of complex syntax, discussing philosophical, theoretical, and methodological approaches to the problem. Includes practical experience analyzing child language data. Prerequisite: CLPS 0030 (COGS 0410) or CLPS 0800 (COGS 0450), or permission of the instructor.

Fall CLPS1650 S01 16861 TTh 1:00-2:20(08) (J. Morgan)  

CLPS 1700. Abnormal Psychology.

The study of anxiety, stress, and neurotic disorders, psychosomatic disorders, deviant social behavior, affective disorders, and schizophrenia. Considers theories of etiology (causes) and methods of therapeutic treatment, case studies, experimental research, and clinical research.

CLPS 1730. Psychology in Business and Economics.

The goal of this course is to explore emerging themes at the intersection of psychological science, business, and behavioral economics. Psychologists are primarily interested in detecting limits to human rationality, whereas economics tends to proceed within the rational-actor model. In business, questions arise of how theoretical models and empirical findings related to the practice of managerial decision-making. Investigations of power and the psychological impact of money are relatively recent additions to the suite of research topics. New methodologies, such as neuro-imaging have led to advances not represented in the traditional framework of organizational psychology. Enrollment limited to 20 junior and senior Psychology and Behavioral Decision Making concentrators.

Fall CLPS1730 S01 16868 TTh 9:00-10:20(02) (J. Krueger)  

CLPS 1750. Blame and Punishment.

This hybrid lecture/seminar course provides a scientific investigation of two related but distinct forms of human moral regulation: blame and punishment. Students will be exposed to the interdisciplinary literature on moral judgment and moral sanctions, drawing on psychology, cognitive science, behavioral economics, sociology, history, law, and anthropology. Students will learn about the cognitive, social, and affective differences between blame and punishment, about their distinct cultural history and institutional dynamics, and about their functional and dysfunctional uses. Students will critically examine core research articles on the topics, and they will present, discuss, and write about their responses to the work.

Fall CLPS1750 S01 17041 TTh 2:30-3:50(12) (B. Malle)  

CLPS 1760. The Moral Brain.

How do we learn to cooperate, help others in need, and appropriately respond after being treated unfairly? The human mind strives to resolve the competing pressures of self-interest against the greater good. By drawing upon many disciplines including philosophy, social and affective neuroscience, abnormal psychology, law, and experimental economics, this course covers topics from 18th-century philosophy to modern-day neuroscience. We will examine 1) the philosophical and epistemological foundations of moral thought, 2) the influence of emotion and contextual framing on moral action, 3) the psychopathology of immoral choice, and 4) the underlying cognitive and neurobiological processes that guide moral decision-making.

CLPS 1770. Stigma and Prejudice.

This seminar focuses on empirical research ranging across several topics in the psychology of prejudice, stereotyping, discrimination, and social stigma. We will read, interpret, and discuss quantitative research in social psychology (i.e., studies that contain statistics in their results) and the implications of these scholarly contributions to our knowledge of the inner workings of intergroup behavior. This includes understanding individual differences and contexts related to exhibiting prejudicial behaviors (prejudice/bias), the implications of this behavior for targets of discrimination (stigma), and contributions of each of these to how groups and group members interact with one another in society (intergroup relations).

CLPS 1800F. Logic in Language and Thought.

The best theories of how language conveys meaning propose that word meanings have an abstract and formal logical structure. But how could young children figure this out? This course is going to look at the most abstract and logical words words as case studies: e.g. not, and, or, every, some, if… then. In each case, we will first try to understand the relationship between these word meanings and the corresponding logical operators. We will then ask, how could these words be learned? We'll draw on existing research across the cognitive sciences, and come up with next steps of our own.

Fall CLPS1800F S01 16862 Th 4:00-6:30 (R. Feiman)  

CLPS 1900. Research Methods And Design.

This course is designed to provide CLPS concentrators (psychology/cognitive science/cognitive neuroscience) with a variety of tools needed to conduct research: sources of data, standard designs (e.g., factorial experimental, correlational, longitudinal), research ethics, and best practices of literature review (e.g., meta-analysis). The course will include lectures, laboratory exercises, data collection, statistical analysis, and presentation of findings in written and oral reports. (Previously CLPS 1091)  

CLPS 1901. Research Methods.

This course is designed to provide CLPS concentrators (Cognitive Science/ Cognitive Neuroscience/Psychology) with a variety of tools needed to conduct research: sources of data, standard experimental designs, and research ethics. The course will include lectures, section meetings, data collection, statistical analyses, and written and oral reports. This is not a laboratory course.

Fall CLPS1901 S01 16964 MWF 1:00-1:50(06) (L. Welch)  


This is the capstone course for the Behavioral Decision Sciences (BDS) concentration. It entails a research project that serves as a culmination of each student’s experience within the concentration. Students should choose a research topic compatible with the three electives that they have
taken or will take as part of the concentration. They will also need a faculty advisor for the project. The course entails presentation of your ideas and plans, as well as your final results.

CLPS 1970. Directed Reading in Cognitive, Linguistic and Psychological Sciences. Independent study or directed research in cognitive science. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

CLPS 1980. Directed Research in Cognitive, Linguistic and Psychological Sciences. Required of all ScB concentrators and Honors students in psychology. Instructor permission required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CLPS 2001. Core Concepts in Cognitive and Psychological Sciences I. This course is the first of a two-course sequence that provides graduate students with background in the core topics and themes in the cognitive and psychological sciences. Topics include sensory systems, perception, action, evolution and development, phonetics and phonology, attention, learning, memory, and executive function. Students are also introduced to a wide range of approaches and levels of analysis that scientists adopt to study these topics. Weekly topics are addressed in lectures and assigned readings. A separate seminar session involves presentation of current papers by students and discussion with faculty. Open to graduate students only. Fall CLPS2001 S01 16870 M 3:00-5:30 (D. Badre)

CLPS 2091. Graduate First Year Project Research. Please check Banner for the correct section number and CRN to use when registering for this course.

CLPS 2092. Graduate First Year Project Research. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

CLPS 2095. Practicum in Teaching. Each student will assist a designated faculty member in teaching a course in cognitive science or related discipline. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

CLPS 2096. Directed Graduate Research. No description available. Instructor permission required.

CLPS 2450. Exchange Scholar Program. Fall CLPS2450 S01 15459 Arranged 'To Be Arranged'

CLPS 2908. Multivariate Statistical Techniques. This course covers the basic multivariate techniques currently used in psychology and related sciences: multiple regression, logistic regression, principal components and factor analysis, multivariate analysis of variance, discriminant function analysis, and log-linear analysis. Students will learn these techniques' conceptual foundations, their proper selection for a given data set, and the interpretation of computer output from statistical analysis packages (primarily SPSS). Enrollment limited to 20 graduate students.

CLPS 2970. Preliminary Examination Preparation. For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination. Fall CLPS2970 S01 15460 Arranged 'To Be Arranged'

CLPS 2990. Thesis Preparation. For graduate students who have met the residency requirement and are continuing research on a full time basis. Fall CLPS2990 S01 15461 Arranged 'To Be Arranged'

Linguistics

LING XLIST. Courses of Interest to Concentrators in Linguistics.

Humanities

HMAN 0800B. The Art of International Relations. From the ritual handshakes of country leaders to iconic photographs of migrants and refugees, from the use of music in combat and torture to the mobilization of art to make a better world, aesthetics informs the way international actors present themselves, portray the world, perceive others, and conceive of peace, conflict, and war. At the intersection of the humanities and social sciences, this course explores cultural practices constitutive of the diplomatic stage, international society, transnational networks, globalization, and postcoloniality in the 20th and 21st centuries. These include theatre, literature, music, dance, images, film, television, and social media. This course may be counted as a track elective in the security track of the international and public affairs concentration.

HMAN 1971S. Introduction to iPhone/iPad Moviemaking Using 3-D and 360 VR Comparisons. Mobile Devices are democratizing movie-making by lowering barriers to entry, enabling students to become full-fledged members of the film industry virtually overnight. This pioneering course provides the basic tools for students to create and distribute no- and low-budget live-action motion pictures with professional production values utilizing only their personal smartphones. Students will acquire the skills to plan, capture and edit short motion pictures through hands-on instruction and experimentation with low-cost accessories, including selfie-sticks, lens adapters, directional microphones and iPhone apps like Filmic Pro, Vizzywig and iMovie. Limited to junior, senior and graduate students.

HMAN 1974Q. Revolutionary England, 1642-1660: Civil War, Regicide, and Republic. This course examines England’s mid-seventeenth century revolution, looking at high and low politics, the rise of popular radicalism, and the conflict in the empire. Themes explored include: the trial of Charles I; the commonwealth, 1649–53; the Ranters and the sexual revolution; the Digger commune at St. George’s Hill; Oliver Cromwell’s war crimes in Ireland; Cromwell as Lord protector, 1653–58; the social and gender egalitarianism of the Baptists, Quakers, and Fifth Monarchs; the revolutions in the Caribbean and Atlantic; and the Western Design and capture of Jamaica.

HMAN 1974S. The Costs of Climate Change. This seminar examines debates over the costs - economic, environmental, and social - of climate change. We will explore how economists attempt to solve seemingly impossible problems of valuation like: how much should we value the wellbeing of current versus future generations? How much value does the ecosystem as a whole provide? We will then survey how these numbers (sometimes) enter into environmental regulatory debates. Finally, we will study how movements fighting for environmental justice adopt - or reject - the language of economics to make claims about the morality and economics of fossil fuel producers.

HMAN 1974T. Anthropology of Infrastructure: Comparative Ethnographic Perspectives. Basic infrastructure – e.g., electricity grids, water supply systems, roads, railroads, and the Internet – is commonly seen as a foundational requirement for and visible manifestation of modern human life. Yet inequalities in infrastructure are both causes and consequences of the profound disparities that characterize the contemporary world. This course aims at deciphering the complex interaction between infrastructure, society, politics, and human experience. Taking a comparative ethnographic approach, students will ask whether technology has produced a better world, and for whom. From economics and governance to ethics and sociality, students will explore humans’ relationship to infrastructure.

HMAN 1974U. The Cultures of Roman Imperialism. “The Cultures of Roman Imperialism” explores the cultural feedback loops between capital and provinces in the ancient Roman world, studying the
literature (and some material culture) not only of expansionist Rome, but of the populations subject to Rome (including Greek, Egyptian, and Judaic). How did Rome appropriate local cultural forms to legitimize its own power? How did local cultures push back with their own appropriations? We will find new ways to study an ancient empire that has subsequently been a model not only for governance, whether enlightened or oppressive, but also for dialogue and interchange, however fraught.

**HMAN 1974. God of the Greek Philosophers.**
This seminar will focus on the views of Plato and Aristotle on god’s thought and human thought. Plato treats god as a craftsman who looks to unchanging forms and attempts to replicate them in recalcitrant materials. By contrast, Aristotle regards the cosmos as eternal. His god maintains the world as the relatively stable place it is and does so as an object of desire and thought. God’s own activity—thinking of thinking—is extremely simple, whereas ours is necessarily more complex and involves recognizing our place and contribution to the order of things.

**HMAN 1974W. Earth Histories: From Creation to Countdown.**
This course offers a humanistic perspective on global climate change, arguably the most pressing issue facing our species today. At the heart of this issue lies the idea that human beings have been elevated to the level of a geological force, merging geological and historical time and necessitating a critical conversation between the sciences and the humanities. To that end, we will foster a collaborative dialogue about the diverse “temporalities” that inform our thinking about the earth and its history, from creation stories to the modern idea of progress. Students will also curate a group exhibition about earth histories.

**HMAN 1990. Independent Study.**

**HMAN 2400L. Environmental Humanities.**
We live in a time of immense global change and ecological rupture that poses a foundational challenge for modern society. How are we to respond to environmental crises that take place on a geological scale without papyrus over complex issues of social inequality, racial difference, and powerful gender norms? How might we promote the flourishing of sustainable communities that include both human and non-human, present and future beings? This collaborative seminar will address deep philosophical questions like these by exploring a range of work in environmental humanities. The readings reflect a diversity of disciplinary commitments and methodological approaches ranging from History, Anthropology, and Philosophy to Indigenous Studies and Science Studies.

**HMAN 2400Q. War and the Politics of Cultural Memory (ENGL 2901D).**
Interested students must register for ENGL 2901D.

**HMAN 2400Y. Suspicion and Its Others (ENGL 2901N and RELS 2110C).**
Interested students must register for ENGL 2901N or RELS 2110C.

**HMAN 2400Z. Instruments and Instrumentalities.**
What is an instrument? Today, in a variety of fields, the definitions of instrument and instrumentality are transforming. While retaining its older connotations of delegation, means to ends, and tool-use, the “instrument” now also implies bigger, messier complexes of technologies, bodies, and rationalities. In this seminar, we will think transversally across categories and contexts to consider the form and meaning of musical instruments, technical instruments, and ideas of instrumentality. Readings will draw from music, media studies, science and technology studies, sound studies, cultural studies, and related fields. This is a distributed seminar, collaboratively taught between Brown and McGill Universities.

**HMAN 2401. Memory/Matter/Time: Literature and the Changing Earth (ENGL 2761R).**
Interested students must register for ENGL 2761R.

**HMAN 2401A. Bakhtin and the Political Present: Literature, Anthropology, Dialogue (ENGL 2901M).**
Interested students must register for ENGL 2901M.

**HMAN 2401B. Thinking Breath: An Inquiry Across Philosophy, Literature, and Performance.**
This collaborative seminar proposes an interdisciplinary and inter-cultural inquiry into breath as the shared fragment of philosophical, spiritual, therapeutic, athletic, musical, and environmental practices, among others. How does breath travel across disparate traditions, bodies, and technologies? Is it vital or metaphysical? Is it restricted to particular genres? Does it have a history? Topics include punctuation and phrasing; climate change and the crisis of oxygen; circular breathing and ‘breathy’ vocalization in musical traditions; the notion of “ruh” in Sufism, pneuma in ancient Greek thought, “qi” in ancient Chinese thought, and “breath” as a synonym for “self” in ancient Indian philosophy.

**HMAN 2401C. Inscribing the Event: Poetics and Politics of the Date.**
What is a date? How does it relate to our understanding of historical time? How can the idea of a date be represented in words and images? What does it mean to commemorate the anniversary of a date? When it comes to a date, what is the relation between repeatability and singularity? This seminar will devote itself to the vexing question of the date in literature, the arts, critical thought, and cultural theory. Texts to include Marx, Benjamin, Faulkner, Adorno, Derrida, Celan, among others. Graduate students from diverse fields welcome. Final collaborative seminar project required.

**HMAN 2401D. The Fugitivity of Slowness, Stillness, and Stasis.**
Slowness, stillness, stasis – these terms signal diminished velocity, extended duration, delayed development or reduced exertion. But what if we understand them as an intensification, rather than a reduction, of forces? How do slowness, stillness, and stasis animate fugitivity in various bodies of thought? What if slowness, stillness, and stasis instantiate modes of anti-colonial practice and thought, or imagine/realize a world nonsensical to much of dominant western thought? This collaborative humanities seminar will explore practices of slowness, stillness, and stasis in literature, theory, performance and art, and the ways in which they unsettle our understanding of fugitive social practices of refusal.

**HMAN 2500. Project Development Workshop.**
In this capstone course, students completing the Graduate Certificate in Collaborative Humanities pursue individual or collaborative projects, such as a dissertation prospectus, a dissertation chapter, or a methodological/theoretical exercise relating to their field of interest. Weekly sessions are devoted to work-in-progress and discussion of key texts addressing method and theory in and beyond the humanities. At the end of the semester, participants present in a Collaborative Public Workshop. Admission to the seminar requires a formal application process and the completion of two HMAN 2400 seminars.

**Comparative Literature**

**COLT 0510C. The World of Lyric Poetry.**
Lyric poetry is the prime mode for conveying emotion in many cultures, from ancient times to the present day. This course will survey the variety of forms and themes from the earliest texts from Greece, Rome, China and Japan, then the glories of the Renaissance and the Tang Dynasty, then move to the challenges for lyric expression in the modern world. Enrollment limited to 19 first year students.

**COLT 0610D. Rites of Passage.**
Examines a seemingly universal theme—coming of age—by focusing on texts from disparate periods and cultures. Proposes that notions of “growing up” are profoundly inflected by issues of class, gender and race, and that the literary representation of these matters changes drastically over time. Texts from the Middle Ages to the present; authors drawn from Chrétien de Troyes, Quevedo, Prévoit, Balzac, Brontë, Twain, Faulkner, Vesaas, Rhys, Satsrap and Foer. Enrollment limited to 19 first year students.

**COLT 0610E. Crisis and Identity in Mexico, 1519-1986.**
Examines four moments of crisis/critical moments for the forging of Mexican identity: the “Conquest” as viewed from both sides; the hegemonic 17th century; the Mexican Revolution as represented by diverse stakeholders; the “Mex-hippies” of the 1960s. We especially
explore how key literary, historical, and essayistic writings have dealt with Mexico's past and present, with trauma and transformation. Readings include works by Carlos Fuentes, Sor Juana Inés de la Cruz, Octavio Paz, Juan Rulfo, and the indigenous Nican Mopohua on the Virgin of Guadalupe. All in English. No prerequisites.

Examines the narrative of detection, beginning with the great dramatic whodunit (and mystery of identity) Oedipus Rex. Literary texts which follow a trail of knowledge, whether to establish a fact (who killed Laius?) or reveal an identity (who is Oedipus?) follow in Sophocles' footsteps. We read Sophocles' intellectual children. Readings include: Hamlet, The Murders in the Rue Morgue, The Woman in White, and other classic novels and plays. We also analyse seminal films of the genre, including Laura and Vertigo. Will include the twentieth-century detective story, with particular attention to women writers and the genre of the female private eye.

COLT 0710Q. The Odyssey in Literature and Film.
Examines reincarnations of the Homeric figure of Odysseus in contemporary literatures and film as modernist figure, postcolonial subject, and existentialist hero. How is the Odysseus myth altered from culture to culture (Greece, Rome, Ireland, the Caribbean)? How is it re-visioned in different historical periods and from different perspectives (feminist, marxist, postcolonial) and genres (epic, poetry, the novel, film, drama)? Major authors include Homer, Virgil, Tennyson, Joyce, Kazantzakis, Cavafy, Seferis, Atwood, Walcott; criticism by Bakhtin, Edith Hall, Adorno, Derrida. Films include works by Angelopoulos, the Coen brothers; Singer's Usual Suspects, Mendes' James Bond offering Skyfall, and Kubrick's 2001: Space Odyssey.

Fall COLT0710CS01 17567 MWF 1:00-1:50(06) (V. Calotychos)

COLT 0810Q. Civilization and its Discontents.
Investigates the age-old tension between order and chaos as a central dynamic in the making and interpretation of literature. Texts will be drawn from drama, fiction and poetry from Antiquity to the present. Authors include Sophocles, Shakespeare, Racine, Beckett, Prevost, Bronte, Faulkner, Morrison, Blake, Whitman, Dickinson, and Rich.

COLT 1210. Introduction to the Theory of Literature.
An historical introduction to problems of literary theory from the classical to the postmodern. Issues to be examined include mimesis, rhetoric, hermeneutics, history, psychoanalysis, formalisms and ideological criticism (questions of race, gender, sexuality, postcolonialism). Primarily for advanced undergraduates. Lectures, discussions; several short papers.

Fall COLT1210 S01 16293 MWF 2:00-2:50(10) (S. Bernstein)

In East Asian Buddhist culture, the mirror is a symbol of the mind in both its intellectual and emotional aspects. These masterworks detail the lives and loves of Prince Genji, cynosure of the medieval Japanese court, and Jia BaoYu, the last hope of an influential Chinese clan during the reign of the Empress. We examine both works as well as the sources of Genji and literary aesthetics of the Tang dynasty.

Fall COLT1420B S01 16164 W 3:00-5:30 (D. Levy)

COLT 1420T. The Fiction of Relationship.
Explores the manifold ways in which narrative literature sheds light on the relationships that we have in life, both knowingly and unknowingly. The novel form, with its possibilities of multiple voices and perspectives, captures the interplay between self and other that marks all lives. Authors include Laclos, Melville, Brontë, Kafka, Woolf, Faulkner, Borges, Burroughs, Vesaas, Morrison, and Coetzee.

Fall COLT1420TS01 16163 TTh 10:30-11:50(13) (A. Weinstein)

COLT 1430H. Poetry, Art, and Beauty.
What does it mean to be beautiful in classical and European literature and the arts? How do poems and works of visual art embody beauty? How is the idea of beauty defined by thinkers from Plato to Benjamin and Danto? Works include Sappho, Plato, Aristotle, Catullus, Horace, Petrarch, Kant, Wordsworth, Baudelaire, Rilke, Benjamin, Stevens. Works of art considered range from the Lascaux caves through renaissance classical painters like Giotto and Raphael to contemporary installations.

COLT 1431B. Modern Arabic Poetry.
An advanced course with readings in modernist Arabic poetry, beginning with the so-called neo-classical poets and proceeding through Romanticism and Modernism, from Egypt to Lebanon, Palestine, Iraq, and beyond. We will examine such recurring themes as love, loss, and longing; war, exile, and homeland; cultural heritage (turath) and creative innovation (ibda‘); gender and genre. All readings in Arabic; at least three years Arabic language study (or equivalent) required for enrollment.

COLT 1610W. Whites, White Jews and Us: Radical Black, Arab & Jewish Thinkers.
Inspired by Houriya Bouteldja’s book White, Jews and Us, which we will read in class, we will read authors who are engaged with generations of (forced) displacement and concomitant fraught cartographies. The class will proceed along lines drawn by two questions: (a) what makes these texts radical and how does their radicalness opens paths of refusal, care and repair of and in shared worlds; (b) how do these authors engage with identities made and remade by displacement and catastrophe, and how imagination, fabulation, remembrance and reclamation of never completely lost worlds are mobilized to question these identities, borders and injustices they produce. We will read texts by Ella Shohat, Houriya Bouteldja, Saidiya Hartman, Susan Slymovic, Anarkata, Aliyyah Abdur-Rahman, Lital Levy and others.

Fall COLT1610WS01 17610 M 3:00-5:30 (A. Azoulay)

COLT 1710C. Literary Translation Workshop.
The primary focus of this course is the practice of literary translation as an art. Using the workshop format, each student will complete a project by the end of the semester. Examples and theoretical texts will illuminate the historical, ethical, cultural, political, and aesthetic values that underlie every translation, keeping an eye towards opening up the field beyond inherited practices to consider the contemporary implications of our choices, intentions, and purposes in translation. Open to all levels. Heritage speakers are welcome, collaboration is permitted, and an open spirited approach to this developing and fascinating practice is strongly recommended.

Fall COLT1710CS01 16266 Th 4:00-6:30 (E. Drumsa)

COLT 1813O. Adventures of the Avant-Garde.
In the early years of the twentieth century, a series of artistic movements rippled across the Western hemisphere, exploding conceptions of art and culture while reconfiguring international relations. Explores those movements, from their predecessors (Baudelaire, Rimbaud, Mallarmé), through overlapping -isms (Cubism, Futurism, Constructivism, Vorticism, Expressionism, Dada, Surrealism), to avatars in the Americas. In keeping with the avant-garde’s cross-pollinating spirit, we study texts from a variety of traditions, forms, and genres: from poetry through prose to manifestoes, from painting and photography to film, music, and dance, touching on questions of translation and translatability between languages, cultures, and art-forms. Enrollment limited to 25.

Fall COLT1813OS01 17568 MWF 12:00-12:50(15) (M. Clayton)

COLT 1813Q. Literature and Judgement.
There exists a close but complex relationship between the acts of making literature and making judgments. This course will explore some of these relationships and ask, for instance: how does judgment weigh upon the literary act? How do literary considerations bear on our making judgments? What criteria are called forth in both of these moments? Texts treated will be literary, critical-analytical, legal, and cinematic, and include such authors as Arendt, Benjamin, Derrida, Freud, Henry James, Kafka, Kant, Primo Levi, Nietzsche, Tolstoy and Verga.

COLT 1814S. The Balkans, Europe’s Other?: Literature, Film, History.
Introduces the modern Balkans through a critical examination of literary and visual, historiographic and political, narratives. The course considers the contestation over a shared historical past and interreligious geographic space through common and divergent master narratives, motifs, myths, and recurring discourses. It also examines the region’s aesthetic, religious, and political relation to Europe. Do the Balkans constitute a traumatized, “balkanized,” self-colonized, abject modernity at Europe’s edges, its inner alterity? Given the acclaim achieved by Balkan filmmakers since 1989, the course also asks how Balkan artists, caught in-between nationalism, Orientalism, Eurocentrism and globalization, assert agency and subjectivity and captivate our imaginations.
Fall COLT1814S S01 16294 T 4:00-6:30 (V. Calotyhos)

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

COLT 1880. Group Independent Study.
Section numbers vary by instructor. Please see the registration staff for the correct section number to use when registering for this course.

Special work or preparation of honors theses under the supervision of a member of the staff. Open to honors students and to others. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

COLT 2210. Introduction to the Theory of Literature.
An historical introduction to problems of literary theory from the classical to the postmodern. Issues to be examined include mimesis, rhetoric, hermeneutics, history, psychoanalysis, formalisms and ideological criticism (questions of race, gender, sexuality, postcolonialism).
Fall COLT2210 S01 16292 MWF 2:00-2:50(10) (S. Bernstein)

COLT 2450. Exchange Scholar Program.
Fall COLT2450 S01 15462 Arranged "To Be Arranged"

COLT 2650T. Foundations of Literary Theory (POBS 2600C).
Interested students must register for POBS 2600C.

COLT 2820L. Moderns and Primitives.
Major writers, artists, and theorists of European modernism put a new emphasis on the status of primitive society and archaic pre-history. We will consider the works of Durkheim, Eliot, Joyce, Picasso, and others with reference to the anthropology and ethnography of their period, and to subsequent post-colonial critique and controversy.
Fall COLT2820L S01 16161 W 12:00-2:30(06) (K. Haynes)

COLT 2822D. Literature and Politics in the Age of Revolution.
Explores the major ideas and practices that radically transformed culture and society in the early-modern period in Europe and in the Atlantic. We will explore the challenges to political, cultural and religious traditions by analyzing the major debates over the questions of equality, freedom, progress, religious toleration, and happiness. Special attention will be paid to new definitions of citizenship and political rights, the role of women in the public sphere, and the critique of slavery. We will conclude by devoting particular attention to debates surrounding the French and Haitian Revolutions. Texts will include novels, plays, philosophical essays and political pamphlets.
Fall COLT2822D S01 16128 Arranged "To Be Arranged" (D. Woos)

COLT 2822G. Vision and Visualization in Literature: The Rhetoric of Energaria (CLAS 2110K).
Interested students must register for CLAS 2110K.

COLT 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

COLT 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall COLT2990 S01 15463 Arranged "To Be Arranged"

Computer Science
CSCI 0020. The Digital World.
Removes the mystery surrounding computers and the ever-growing digital world. Introduces a range of topics and many aspects of multimedia, along with explanations of the underlying digital technology and its relevance to our society. Other topics include artificial intelligence, IT security, ethics and the economics of computing as well as the effects of its pervasiveness in today's world. Introductory programming and analytic skills are developed through HTML, Photoshop, Excel and Python assignments. CSCI 0020 is a good introduction to a wide range of CS topics that have broad relevance in our society. No prerequisites.

CSCI 0030. Introduction to Computation for the Humanities and Social Sciences.
Introduces students to the use of computation for solving problems in the social sciences and the humanities. We will investigate a series of real-world problems taken from the news, from books such as Freakonomics, and from current research. Topics covered include data gathering, analysis, and visualization; web-based interfaces; algorithms; and scripting. Enrollment limited to 20. Instructor permission required.
Fall CSCI0030 S01 17251 Arranged "To Be Arranged"

CSCI 0081. TA Apprenticeship: Full Credit.
Being an undergraduate TA is a learning experience: one not only gets a deeper understanding of the course material, but gains management and social skills that are invaluable for one's future. Students taking this course must first be selected as an undergraduate TA for a Computer Science course, a course the student has taken and done well in. Students will work with the course's instructor on a variety of course-related topics, including preparation of material and development of assignments. Whether CSCI 0081 or its half-credit version (CSCI 0082) is taken is up to the professor of the course being TA'd. Instructor permission required.
Fall CSCI0081 S01 16576 Arranged (K. Fisler)

CSCI 0082. TA Apprenticeship: Half Credit.
Being an undergraduate TA is a learning experience: one not only gets a deeper understanding of the course material, but gains management and social skills that are invaluable for one's future. Students taking this course must first be selected as an undergraduate TA for a Computer Science course, a course the student has taken and done well in. Students will work with the course's instructor on a variety of course-related topics, including preparation of material and development of assignments. Whether CSCI 0082 or its full-credit version (CSCI 0081) is taken is up to the professor of the course being TA'd. Instructor permission required.
Fall CSCI0082 S01 16577 Arranged (T. Doepner)

An introduction to computing and programming that focuses on understanding and manipulating data. Students will learn to write programs to process both tabular and structured data, to assess programs both experimentally and theoretically, to apply basic data science concepts, and to discuss big ideas around the communication and use of digital information. Designed for both concentrators and non-concentrators, this is the first in an eventual three-course introductory sequence leading into advanced CS courses. Programming assignments will be smaller scale than in CSCI 0150/0170, thus allowing students time to practice programming and discuss computational ideas in a broader context.
Fall CSCI0111 S01 16579 MWF 10:00-10:50(14) (K. Fisler)

Explores how organization of programs, data, and algorithms affects metrics such as time performance, space usage, social impacts, and data privacy. Students will learn how to choose among candidate data structures for a problem, how to write programs over several standard data structures, how to assess the quality of programs (from theoretical, practical, and social perspectives), and how to apply their skills to computational problems that could arise in a variety of fields. The course will teach object-oriented programming, in combination with basic functional and imperative programming concepts. The course is designed for both concentrators and non-concentrators. Prerequisite: CSCI 0111
Fall CSCI0112 S01 17520 MWF 1:00-1:50(06) (D. Woos)

CSCI 0160. Introduction to Algorithms and Data Structures.
Introduces fundamental techniques for problem solving by computer that are relevant to most areas of computer science, both theoretical and applied. Algorithms and data structures for sorting, searching, graph problems, and geometric problems are covered. Programming assignments conform with the object-oriented methodology introduced in CSCI 0150. Prerequisite: CSCI 0150 or written permission.

CSCI 0180. Computer Science: An Integrated Introduction.
A continuation of CSCI 0170. Students learn to program in Java while continuing to develop their algorithmic and analytic skills. Emphasis is placed on object-oriented design, imperative programming, and the
CSCI 0190. Accelerated Introduction to Computer Science. A one-semester introduction to CS covering programming integrated with core data structures, algorithms, and analysis techniques, similar to the two-course introductory sequences (CSCI 0150-0160 and CSCI 0170-0180). Students wishing to take CSCI 0190 must pass a sequence of online placement assignments. Though the placement process is most appropriate for students who have had some prior programming experience, it is self-contained so all are welcome to try learning the provided material and attempting placement. Placement information will be available by June 1st at http://cs.brown.edu/courses/csci0190/. Students who do not successfully pass the placement process won't be allowed to register.

Fall CSCI0190 S01 16583 Arranged (S. Krishnamurthi)

CSCI 0220. Introduction to Discrete Structures and Probability. Seeks to place on solid foundations the most common structures of computer science, to illustrate proof techniques, to provide the backdrops for an introductory course in computational theory, and to introduce basic concepts of probability theory. Introduces Boolean algebras, logic, set theory, elements of algebraic structures, graph theory, combinatorics, and probability. No prerequisites.

CSCI 0320. Introduction to Software Engineering. Techniques for designing, building, and maintaining large, scalable, and reusable systems. We will cover advanced programming techniques using Java and Javascript. Course assignments will familiarize students with software testing, relational databases, concurrency techniques such as threads, and software engineering tools like git, profilers, and debuggers. A major component of the course will be a group software project of your own design. Prerequisite: CSCI 0160, CSCI 0180 or CSCI 0190; CSCI 0220 is recommended.

Fall CSCI0320 S01 16584 MWF 2:00-2:50(10) (T. Doepner)
Fall CSCI0320 S02 18536 Arranged (T. Doepner)

CSCI 1010. Theory of Computation. The course introduces basic models of computation including languages, finite-state automata and Turing machines. Proves fundamental limits on computation (incomputability, the halting problem). Provides the tools to compare the hardness of computational problems (reductions). Introduces computational complexity classes (P, NP, PSPACE and others). Prerequisite: CSCI 0220 or 1450.

Fall CSCI1010 S01 17249 TTh 10:30-11:50(13) (L. De Stefani)

CSCI 1230. Introduction to Computer Graphics. Fundamental concepts in 2D and 3D computer graphics, e.g., 2D raster graphics techniques, simple image processing, and user interface design. Focuses on geometric transformations, and 3D modeling, viewing and rendering. A sequence of assignments in C++ culminates in a simple geometric modeler and ray tracer. Prerequisite: CSCI 0160, CSCI 0180, or CSCI 0190. Some knowledge of basic linear algebra is helpful but not required. Strong object-oriented programming ability (e.g., in C++, Java or Python) is required.

Fall CSCI1230 S01 16589 Arranged (J. Hughes)

CSCI 1234. Computer Graphics Lab. CSCI 1234 is a half-credit course intended to be taken concurrently with CSCI 1230 and provides students with a greater understanding of the material by having them extend each of 1230's assignments to greater depth.

Fall CSCI1234 S01 16763 Arranged (J. Hughes)

CSCI 1250. Introduction to Computer Animation. Introduction to 3D computer animation production including story writing, production planning, modeling, shading, animation, lighting, and compositing. The first part of the course leads students through progressive exercises that build on each other to learn basic skills in 2D and 3D animation. At each step, student work is evaluated for expressiveness, technical correctness and aesthetic qualities. Students then work in groups creating a polished short animation. Emphasis on in-class critique of ongoing work which is essential to the cycle of visually evaluating work in progress, determining improvements, and implementing them for further evaluation.

Please see course website for application procedure.

Fall CSCI1250 S01 16588 MW 12:00-1:50(15) (B. Meier)

CSCI 1270. Database Management Systems. Introduction to database structure, organization, languages, and implementation. Relational model, query languages, query processing, query optimization, normalization, file structures, concurrency control and recovery algorithms, and distributed databases. Coverage of modern applications such as the Web, but with emphasis on Database Management Systems internals. Prerequisites: CSCI 0160, CSCI 0180, or CSCI 0190. One of CSCI 0330 or CSCI 0320 is strongly recommended.

Fall CSCI1270 S01 16586 TTh 2:30-3:50(12) (S. Zdonik)

CSCI 1280. Intermediate 3D Computer Animation. Continues 1250 with an in-depth exploration of technical and artistic aspects of 3D computer animation including more sophisticated shading and lighting methods and character modeling, rigging, animation, and dynamics. After a series of individual exercises, students pursue an independent topic and then, working alone or in pairs, create a polished demonstration. Emphasis is in-class critique of ongoing work. Prerequisite: CSCI 1250. Students may contact the instructor in December for permission.

CSCI 1290. Computational Photography. Describes the convergence of computer graphics and computer vision with photography. Its goal is to overcome the limitations of traditional photography using computational techniques to enhance the way we capture, manipulate, and interact with visual media. Topics covered: cameras, human visual perception, image processing and manipulation, image based lighting and rendering, high dynamic range, single view reconstruction, photo quality assessment, non photorealistic rendering, the use of Internet-scale data, and more. Students are encouraged to capture and process their own data. Prerequisites: previous programming experience, basic linear algebra, calculus, and probability; previous knowledge of computer graphics or computer vision. Strongly recommended: CSCI 1230, CSCI 1430, ENGN 1610.

Fall CSCI1290 S01 17344 Arranged (J. Tompkin)

CSCI 1300. User Interfaces and User Experience. Have you ever walked into a door thinking that you were supposed to pull instead of push? Have you ever been stuck on a website, not sure how to proceed next? Learn when to use different interfaces, how to model and represent user interaction, how to elicit requirements and feedback from users, as well as the principles of user experience design, methods for designing and prototyping interfaces, and user interface evaluation. Students interested in both learning the process behind building an effective interface and gaining hands-on experience designing a user interface should take this course. There will be assignments, readings, and studio, where students will have the opportunity to work alongside TAs and interact with industry guests as they learn critical tools for interface and web design. Website: http://cs.brown.edu/courses/csci1300/

Fall CSCI1300 S01 16795 TTh 1:00-2:20(08) (J. Huang)

CSCI 1320. Creating Modern Web & Mobile Applications. This course covers all aspects of web application development, including initial concept, user-centric design, development methodologies, front and back end development, databases, security, testing, load testing, accessibility, and deployment. There will be a substantial team project. The course is designed for students with a programming background (equiv CSCI 0320/CSCI 0330) who want to learn how to build web applications, and for students with a background in web design, including
HTML and Javascript, who are interested in learning how to design techniques to incorporate the technologies needed in modern web applications. Project teams will consist of students with both backgrounds.

**CSCI 1330. Computer Systems**
High-level computer architecture and systems programming. The course covers the organization of computer systems (in terms of storage units, caches, processors, and I/O controllers) and teaches students assembly-language programming and C-language programming. Extensive programming exercises introduce students to systems-level programming on Linux systems, as well as to multi-threaded programming with POSIX threads. Students will be introduced to the fundamentals of operating systems. Enrollment limited to Master's students only.

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**CSCI 1380. Distributed Computer Systems**
Explores the fundamental principles and practice underlying networked information systems, first we cover basic distributed computing mechanisms (e.g., naming, replication, security, etc.) and enabling middleware technologies. We then discuss how these mechanisms and technologies fit together to realize distributed databases and file systems, web-based and mobile information systems. Prerequisite: CSCI 0320 or CSCI 0330.

**CSCI 1410. Artificial Intelligence.**
Practical approaches to designing intelligent systems. Topics include search and optimization, uncertainty, learning, and decision making. Application areas include natural language processing, machine vision, machine learning, and robotics. Prerequisites: CSCI 0160, CSCI 0180 or CSCI 0190; and one of CSCI0220 or CSCI1450 or APMA1650 or APMA1655.

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<td>CSCI1410</td>
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**CSCI 1420. Machine Learning.**
How can artificial systems learn from examples and discover information buried in data? We explore the theory and practice of statistical machine learning, focusing on computational methods for supervised and unsupervised learning. Specific topics include empirical risk minimization, probably approximately correct learning, kernel methods, neural networks, maximum likelihood estimation, the expectation maximization algorithm, and principal component analysis. This course also aims to expose students to relevant ethical and societal considerations related to machine learning that may arise in practice. Please contact the instructor for information about the waitlist.

**CSCI 1430. Computer Vision.**
How can we program computers to understand the visual world? This course treats vision as inference from noisy and uncertain data and emphasizes probabilistic and statistical approaches. Topics may include perception of 3D scene structure from stereo, motion, and shading; segmentation and grouping; texture analysis; learning, object recognition; tracking and motion estimation. Strongly recommended: basic linear algebra, calculus, and probability.

**CSCI 1450. Probability for Computing and Data Analysis.**
Probability and statistics have become indispensable tools in computer science. Probabilistic methods and statistical reasoning play major roles in machine learning, cryptography, network security, communication protocols, web search engines, robotics, program verification, and more. This course introduces the basic concepts of probability and statistics, focusing on topics that are most useful in computer science applications. Topics include: modeling and solution in sample space, random variables, simple random processes and their probability distributions, Markov processes, limit theorems, and basic elements of Bayesian and frequentist statistical inference. Basic programming experience required for homework assignments.

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**CSCI 1460. Computational Linguistics.**
The application of computational methods to problems in natural-language processing. In particular we examine techniques due to recent advances in deep learning: word embeddings, recurrent neural networks (e.g., LSTMs), sequence-to-sequence models, and generative adversarial networks.

**CSCI 1470. Deep Learning.**
Deep learning is the name for a particular version of neural networks—a version that emphasizes multiple layers of networks. Deep learning, plus the specialized techniques that it has inspired (e.g. convolutional features and word embeddings) have lead to rapid improvements in many applications such as computer vision, machine translation, and computer Go. This course intends to give students a practical understanding of deep learning as applied in these and other areas. It also teaches the Tensorflow programming language for the expression of deep learning algorithms. (The primary API for Tensorflow is from Python.)

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**CSCI 1500. Probabilistic Methods in Computer Science.**
Randomization and probabilistic techniques play an important role in modern computer science, with applications ranging from combinatorial optimization and machine learning to communications networks and secure protocols. This course introduces the most fundamental probabilistic techniques used in computer science applications, in particular in randomized algorithms, probabilistic analysis of algorithms and machine learning.

Prerequisite: Basic background in probability theory course such as CSCI 1450.

**CSCI 1570. Design and Analysis of Algorithms.**
A single algorithmic improvement can have a greater impact on our ability to solve a problem than ten years of incremental improvements in CPU speed. We study techniques for designing and analyzing algorithms. Typical problem areas addressed include hashing, searching, dynamic programming, graph algorithms, network flow, and optimization algorithms including linear programming. Prerequisites: CSCI 0160, CSCI 0180, or CSCI 0190, and one of CSCI 0220, CSCI 1010, CSCI 1450, MATH 0750, MATH 1010, MATH 1530.

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<td>CSCI1570</td>
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<td>17250 TTh 2:30-3:50(12)</td>
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**CSCI 1620. Computer Systems Security Lab.**
CSCI 1620 is a half-credit laboratory course intended to be taken concurrently with CSCI 1660 and provides students with a deeper understanding of the material by doing additional assignments, which include extensions of the 1660's assignments. Instructor permission required.

**CSCI 1650. Software Security and Exploitation.**
Covers software exploitation techniques and state-of-the-art mechanisms for protecting (vulnerable) software. It begins with a summary of prevalent software defects, typically found in applications written in memory unsafe languages, like C/C++, and proceeds with studying traditional and modern exploitation techniques, ranging from classical code-injection and code-reuse up to the newest goodides (just-in-time code reuse). For the most part, it focuses on defenses against certain vulnerability classes and exploitation methods. Students will learn about the boundaries and effectiveness of virtualization, stack and heap protections, and address space randomization, and analyze advanced exploitation techniques and countermeasures.

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**CSCI 1660. Introduction to Computer Systems Security.**
This course teaches principles of computer security from an applied viewpoint and provides hands-on experience on security threats and countermeasures. Topics include code execution vulnerabilities (buffer overflow, sandboxing, mobile code), malware (trojans, viruses, and worms), access control (users, roles, policies), cryptosystems (hashing, signatures, certificates), network security (firewalls, TLS, intrusion detection, VPN), and human and social issues. Prerequisites: one of CSCI 0160 or CSCI 0180 or CSCI 0190; and CSCI 0330.

**CSCI 1670. Operating Systems.**
Covers not just the principles of operating systems but the intricacies of how they work. Topics include multithreaded programming, managing threads and interrupts, managing storage, processor scheduling, operating-system structure, virtualization, security, and the design of file systems (both local and distributed). Extensive examples are taken from
actual systems, including Linux and Windows. Students are expected to complete both problem sets and programming assignments (in C). Prerequisite: CSCI 0330.

CSCI 1690. Operating Systems Laboratory
Half-credit course intended to be taken with CSCI 1670. Students individually write a simple operating system in C. Serves to reinforce the concepts learned in 1670 and provides valuable experience in systems programming. Corequisite: CSCI 1670.

CSCI 1730. Design and Implementation of Programming Languages
Explores the principles of modern programming languages by implementation. Examines linguistic features, especially control operators such as first-class functions, exceptions, and continuations. Studies data and their types, including polymorphism, type inference, and type soundness. Examines compiler and run-time system topics: continuation-passing style and garbage collection. Prerequisite: CSCI 0160, CSCI 0180 or CSCI 0190. Preferred: CSCI 0220, either CSCI 0320 or CSCI 0330, and CSCI 0510.

CSCI 1800. Cybersecurity and International Relations
The global Internet shortens distances, makes businesses more efficient and facilitates greater social interaction. At the same time, it exposes vital national resources to exploitation and makes it easier for the international criminal element to prey on innocent Internet users. Cybersecurity is concerned with making the Internet a more secure and trustworthy environment. In this course we study this topic from the technological and policy points of view. The goal is to facilitate communication across the divide that normally characterizes the technological and policy communities.

CSCI 1805. Computers, Freedom and Privacy
Who is the Big Brother that we most fear? Is it the NSA -- or is it Google and Facebook? Rapidly changing social mores and the growing problem of cybersecurity have all contributed to a sense that privacy is dead. Laws protecting privacy and civil liberties are stuck in the analog age, while the capabilities for mass digital surveillance continue to advance rapidly. This course will examine a variety of informational privacy and technology issues. A major theme: the historical and contemporary struggle to bring surveillance under democratic control to protect against abuses of privacy, civil liberties and human rights.

CSCI 1810. Computational Molecular Biology
High-throughput experimental approaches now allow molecular biologists to make large-scale measurements of DNA, RNA, and protein, the three fundamental molecules of the cell. The resulting datasets are often too large for manual analysis and demand computational techniques. This course introduces algorithms for sequence comparison and alignment; molecular evolution and phylogenetics; DNA/RNA sequencing and assembly; recognition of genes and regulatory elements; and RNA and protein structure. The course demonstrates how to model biological problems in terms of computer science.

Prerequisites: CSCI 0160, CSCI 0180 or CSCI 0190, or consent of instructor.

CSCI 1870. Cybersecurity Ethics
This timely, topical course offers a comprehensive examination of ethical questions in cybersecurity. These issues pervade numerous, diverse aspects of the economy and society in the Information Age, from human rights to international trade. Students will learn about these topics, beginning first with acquaintance with the dominant ethical frameworks of the 20th and 21st centuries, then employing these frameworks to understand, analyze, and develop solutions for leading ethical problems in cybersecurity. The things that you learn in this course will stay with you and inform your personal and professional lives.

CSCI 1950N. 2D Game Engines
2D Game Engines covers core techniques used in the development of the software that drives computer games and other interactive software. Projects involve building different varieties of 2D game engines as well as games that require use of the features implemented in the engines. Topics include high-level engine design, vector and raster graphics, animation, collision detection, physics, content management, and game AI. Prerequisite: CSCI 0160, 0180, or 0190. This course has also been offered as DISP CSCI1971. Students interested in an override should email the instructor. Within their override request, students should include a brief statement (three sentences max) on why they wish to take the course. Priority will be given to both seniors and juniors.

CSCI 1950U. Topics in 3D Game Engine Development
Covers core techniques in 3D game development with an emphasis on an engine architecture. Students independently develop their own engines using C++, OpenGL, and the Qt framework, then work in groups to create a polished game. Topics include: spatial subdivision, player representation, collision detection and response, game networking, GPUs, and OpenGL. Prerequisites: CSCI 1230 and one of CSCI 0320 or CSCI 1950N. Enrollment limited to 25.

CSCI 1950Y. Logic for Systems
The course will focus on proving properties about systems and programs. We will study the distinction between programs and specifications, and check for whether the former obey the latter. We will work with tools that have extensive automation such as model constructors, model checkers, and proof assistants. Problems and projects will apply to real-world systems. Prerequisite: CSCI 0160, CSCI 0180, or CSCI 0190. Preferred but not required: CSCI 0220 and CSCI 0510, or instructor's permission.

CSCI 1951A. Data Science
Mastering big data requires skills spanning a variety of disciplines: distributed systems over statistics, machine learning, and a deep understanding of a complex ecosystem of tools and platforms. Data Science refers to the intersection of these skills and how to transform data into actionable knowledge. This course provides an overview of techniques and tools involved and how they work together: SQL and NoSQL solutions for massive data management, basic algorithms for data mining and machine learning, information retrieval techniques, and visualization methods.

Prerequisites: CSCI 0160, CSCI 0180, or CSCI 0190. One of CSCI 0330 or CSCI 0320 strongly recommended.

CSCI 1951C. Designing Humanity Centered Robots
Offered by Brown’s Computer Science department under the auspices of the Humanity Centered Robotics Initiative. It is focused on the iterative design process and how it can be used to develop robots for solving tasks that help people. It will expose students to a suite of fabrication and prototyping technologies sufficient for creating a functioning robotic system.

https://www.youtube.com/watch?v=DBvIsJ_b78

The course has two tracks, one intended for CS concentrators, and one intended for non-concentrators with previous design experience. The non-concentrator track cannot be used toward fulfilling a Computer Science concentration requirement.

CSCI 1951I. CS for Social Change
Working in a studio environment to iteratively design, build, and test technical projects in partnership with different social change organizations, students will be placed in small teams to collaboratively work on projects that will range from developing a chatbot to aid community engagement to conducting geospatial data analytics. We will also reflect on our positionality and ethics in engaging in social impact work and what it practically means to leverage technology to create social change on an everyday basis. Enrollment limited to 12. Entry to this course is through application only: https://docs.google.com/forms/d/1wmCbmB6dpOlOFCjHE50IHgxAOO8gCE38m1dD71JtUw/edit

CSCI 1951R. Introduction to Robotics
Each student will design and program a small quad-rotor helicopter. We will provide each student with their own robot for the duration of the course. The course will cover PID controllers for stable flight, localization with a camera, mapping, and autonomous planning. At the end of the course, the aim is for students to understand the basic concepts of a mobile robot and aerial vehicle. Enrollment by instructor permission.
CSCI 1951T. Surveying VR Data Visualization Software for Research.
In a collaborative group effort, this course will survey out, install, test, and critically evaluate VR software that supports data visualization for researchers. We will target several specific types of data, including volumetric data, and remote sensing data. We will investigate the capabilities of software for head-mounted displays (HMDs), big-metal displays like caves and the yurt, and, as a baseline, desktop displays. Software evaluation will include web research, hands-on case studies, and surveying. Results will be documented in a courses wiki.

Fall CSCI1951T S01 16886 TTh 9:00-10:20(02) (S. Tellex)

CSCI 1951U. Software Engineering of Large Systems.
This course is teaches the software engineering techniques used to create moderate to large sized programs. This includes design methodologies that scale and are geared toward larger, long-lifetime systems with multiple designers. It includes tools and techniques that assist the programmer and help manage programmer teams.

Fall CSCI1951U S01 16886 W 3:00-5:30 (A. van Dam)

CSCI 1951V. Hypertext/Hypermedia Seminar: The Web Was Not the Beginning and the Web Is Not the End.
A "hypertext" system is for creating, linking, exploring, annotating, and searching for information. Designed 30-years ago, the World Wide Web is a hypertext system gone global, but the Web represents only a small part of past visions. Still, it will explore hypertext's history through hands-on use of systems from the 1970s onward, identifying features still not in common use. They will study the architecture, design, and features of hypertext systems, examining topics such as permanence, collaboration, searching, content design patterns, and societal impact. A final project will explore what hypertext systems might look like in the 2020s. Prerequisites: an introductory CS sequence or equivalent experience

Fall CSCI1951V S01 16973 W 3:00-5:30 (A. van Dam)

A huge quantity of data is worth little unless we can extract insights from it. Yet, the large amounts mean that classic algorithms (running in linear, quadratic or even more time) can be infeasible in practice. We must instead turn to new algorithmic approaches and paradigms, which allow us to answer valuable questions about our data in runtime that is still feasible even when the data set is Facebook-sized.

Surprisingly, to answer many computational and statistical questions, sometimes there is no need to read/store every piece of data! This course focuses on this exciting "sublinear" algorithmic regime. We will study practical algorithms, making clever use of randomness with strong theoretical guarantees
Prerequisites: (CS22 or equivalent); (CS145 or APMA1650/1655 or equivalent); (CS157 or CS155). Mathematical maturity is essential: this is a theory course with proofs. Recommended: CS155
Fall CSCI1951WS01 18537 TTh 2:30-3:50(12) (C. Lee)

Independent study in various branches of Computer Science. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Fall CSCI2450 S01 15464 Arranged 'To Be Arranged'

CSCI 2390. Privacy-Conscious Computer Systems.
We will examine research papers on distributed system design, privacy-preserving, and secure computing techniques, and discuss how to apply these ideas in practice. The goal is to understand if, and how we can better protect the sensitive data we entrust to computer systems, both against leaks and against unauthorized or unethical use. We will look at web services, datacenter systems, distributed communication systems, and machine learning systems. During class, you will present and discuss papers, finish a set of hands-on assignments, work on a research project, and present your project at the end of the semester.

Fall CSCI2390 S01 17379 TTh 2:30-3:50(12) (M. Schwarzkopf)

CSCI 2440. Computation in Economics and Games.
This course examines topics in game theory and mechanism design from a computer scientist's perspective. Through the lens of computation, the focus is the design and analysis of systems utilized by self-interested agents. Students will investigate how the potential for strategic agent behavior can/should influence system design, and the ramifications of conflicts of interest between system designers and participating agents. Emphasis on computational tractability is paramount, so that simple designs are often preferred to optimal. Students will learn to analyze competing designs using the tools of theoretical computer science, and empirical tools, such as empirical game-theoretic analysis. Application areas include computational advertising, wireless spectrum, and prediction markets.

CSCI 2450. Exchange Scholar Program.
Fall CSCI2450 S01 Arranged 'To Be Arranged'

Deep learning is the name for a particular version of neural networks--a version that emphasizes multiple layers of networks. Deep learning, plus the specialized techniques that it has inspired (e.g. convolutional features and word embeddings) have lead to rapid improvements in many applications such as computer vision, machine translation, and computer Go. This course intends to give students a practical understanding of deep learning as applied in these and other areas. It also teaches the Tensorflow programming language for the expression of deep learning algorithms. A final project will implement an advanced piece of work in one of these areas. Pre Requisites: A basic programming course: (CSCI 0150, 0170 or 0190) A linear algebra course: (CSCI 0530, MATH 0520 or 0540) A stats / probability course: (CSCI 0220, 1450, 0450, MATH 1610, APMA 1650 or 1655)
Fall CSCI2470 S01 16598 Arranged (D. Ritchie)

Advanced topics in applications of probabilistic methods in design and analysis of algorithms, in particular to randomized algorithms and probabilistic analysis of algorithms. Topics include the Markov chains
Monte Carlo method, martingales, entropy as a measure for information and randomness, and more. Prerequisite: CSCI 1450. Recommended but not required: CSCI 1570.

CSCI 2820. Advanced Algorithms in Computational Biology and Medical Bioinformatics.
Devoted to computational problems and methods in the emerging field of Medical Bioinformatics where genomics, computational biology and bioinformatics impact medical research. We will present challenging problems and solutions in three areas: Disease Associations, Protein Folding and Immunogenomics. This course is open to graduate students and advanced undergraduates with Computational or Life Science backgrounds. Prior background in Biology is not required.

CSCI 2890. Comprehensive Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

CSCI 2950K. Special Topics in Computational Linguistics.
Every year will cover a different topic in computational linguistics, from a statistical point of view, including parsing, machine translation, conference, summarization, etc. Prerequisites: CSCI 1460 or permission of the instructor.

CSCI 2951E. Topics in Computer Systems Security.
This course explores advanced topics and highlights current research in computer security from a systems perspective. Topics include vulnerabilities and defenses for automotive, computing, medical, and industrial control devices, intrusion detection, botnets, secure network protocols, web spam, tracking of web users, JavaScript sandboxing, attacks and defenses for web applications, and security and privacy issues in cloud computing. Research papers and industry reports will be presented and discussed. Also, hands-on experiments and system demonstrations will be performed. CSCI 1660 or equivalent background is essential. Enrollment limited to 12. Instructor permission required.

CSCI 2951K. Topics in Collaborative Robotics.
Practical approaches to designing intelligent systems. Topics include search and optimization, uncertainty, learning, and decision making. Application areas include natural language processing, machine vision, machine learning, and robotics. Prerequisite: CSCI 1410, 1420, 1460, 1480, or 1950F; or instructor permission.

CSCI 2951O. Foundations of Prescriptive Analytics.
We are undoubtedly in the middle of an Analytics Revolution that enabled turning huge amounts data into insights, and insights into predictions about the future. At its final frontiers, Prescriptive Analytics is aimed at identifying the best possible action to take given the constraints and the objective. To that end, this course provides students with a comprehensive overview of the theory and practice of how to apply Prescriptive Analytics through optimization technology. A wide variety of state-of-the-art techniques are studied including: Boolean Satisfiability, Constraint Programming, Linear Programming, Integer Programming, Local Search Meta-Heuristics, and Large-Scale Optimization. Pre-Requisites: One of CSCI 0320 or CSCI 0330 and recommended: one of CSCI 0530, CSCI 1570, MATH 0520 or MATH 0540.

This course investigates the state-of-the-art in software exploitation and defense. Specifically, the course is structured as a seminar where students present research papers to their peers. We will begin with a summary of prevalent software defects, typically found in applications written in memory unsafe languages, and proceed to surveying what we are up against: traditional and modern exploitation techniques, ranging from classical code injection and code reuse up to the newest goodies (JIT-ROP, Blind ROP). For the bulk part, we will focus on the latest advances in protection mechanisms, mitigation techniques, and tools against modern vulnerability classes and exploitation methods.

CSCI 2952C. Learning with Limited Labeled Data.
As machine learning is deployed more widely, researchers and practitioners keep running into a fundamental problem: how do we get enough labeled data? This seminar course will survey research on learning when only limited labeled data is available. Topics covered include weak supervision, semi-supervised learning, active learning, transfer learning, and few-shot learning. Students will lead discussions on classic and recent research papers, and work in teams on final research projects.

Previous experience in machine learning is required through CSCI 1420 or equivalent research experience.

Fall CSCI2952C S01 16950 TTh 1:00-2:20(08) (S. Bach)

CSCI 2952F. Distributed Systems at Scale: Microservices Management.
This course investigates and explores an emerging paradigm for enabling distributed systems and applications at scale. Microservices. In particular, this course builds on the foundations provided by the initial distributed systems offering (i.e., CSCI 0138) and explores how these concepts are used to realize, manage, and orchestrate microservices. Pre-req: CSCI 1380 For more information, please see http://cs.brown.edu/courses/info/csci2952-f/

Fall CSCI2952F S01 17549 MW 3:00-4:20(10) (T. Benson)

CSCI 2952G. Deep Learning in Genomics.
Deep learning models have achieved impressive performance in fields like computer vision and NLP. Given an adequate amount of data, these models can extract meaningful representations to perform accurate predictions. The collection of vast quantities of biological data naturally leads to the question -- can deep learning help us understand genomes? In this seminar-style class, we will cover the recent research literature trying to answer this question. We will learn how state-of-the-art models like CNNs, RNNs, GCNs, GANs, etc. have been applied to solve significant problems in genomics and what unique challenges are presented by the data in this field.

Fall CSCI2952G S01 16919 TTh 1:00-2:20(08) (R. Singh)

CSCI 2952J. Topics in Computing with Emerging Technologies.
In the past, computer system performance was driven by improvements in silicon fabrication technology. However, a number of promising candidates for new basic technologies have emerged recently, including single-molecule organic switches and non-volatile memory structures. This course will consider how these new basic devices will affect our past assumptions about computing from both hardware and software perspectives. Class will include a mix of lectures and discussion on assigned reading of recent publications. Students will be responsible for leading and participating in these discussions. A course project will also be required. Prerequisites: some knowledge of computer architecture is helpful, but not required.

Fall CSCI2952J S01 17529 MW 3:00-4:20(10) (R. Bahar)

CSCI 2952K. Topics in 3D Computer Vision and Deep Learning.
We live in a 3D world where all objects span 3 dimensions (length, width, and height). Cameras that image the world project 3D information to a 2D plane. How can we recover the 3D world back from 2D images? In this course we will learn about computer vision and deep learning techniques to recover 3D information of the world from images. We will study classical computer vision techniques but focus on cutting-edge deep learning methods. If you always wondered about the algorithms behind self-driving cars and AR face filter apps on your phone, then this course is for you.

Fall CSCI2952K S01 18022 TTh 1:00-2:20(08) (S. Sridhar)

CSCI 2952V. Algorithms for the People.
Computer science has transformed every aspect of society, including communication, transportation, commerce, finance, and health. The revolution enabled by computing has been extraordinarily valuable. The largest tech companies generate almost a trillion dollars a year and employ millions of people. But technology does not affect everyone in the same way. In this seminar, we will examine how new technologies, ranging from facial recognition to drones, are affecting marginalized communities.

Fall CSCI2952V S01 18547 TTh 1:00-2:20(13) (S. Kamara)

CSCI 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.
CSCI 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full-time basis.

Fall CSCI2990 S01 15466 Arranged ‘To Be Arranged’

CSCI XLIST. Courses of Interest to Concentrators in Computer Science.

Data Science

DATA 0080. Data, Ethics and Society.
A course on the social, political, and philosophical issues raised by the theory and practice of data science. Explores how data science is transforming not only our sense of science and scientific knowledge, but our sense of ourselves and our communities and our commitments concerning human affairs and institutions generally. Students will examine the field of data science in light of perspectives provided by the philosophy of science and technology, the sociology of knowledge, and science studies, and explore the consequences of data science for life in the first half of the 21st century. Fulfills requirement for Certificate in Data Fluency

DATA 0200. Data Science Fluency.
As data science becomes more visible, are you curious about its unique amalgamation of computer programming, statistics, and visualizing or storytelling? Are you wondering how these areas fit together and what a data scientist does? This course offers all students regardless of background the opportunity for hands-on data science experience, following a data science process from an initial research question, through data analysis, to the storytelling of the data. Along the way, you will learn about the ethical considerations of working with data, and become more aware of societal impacts of data science. Course does not count toward CS concentration requirements.

Fall DATA0200 S01 16731 TTh 9:00-10:20(02) (L. Clark)

An introduction to the mathematical methods of data science through a combination of computational exploration, visualization, and theory. Students will learn scientific computing basics, topics in numerical linear algebra, mathematical probability (probability spaces, expectation, conditioning, common distributions, law of large numbers and the central limit theorem), statistics (point estimation, confidence intervals, hypothesis testing, maximum likelihood estimation, density estimation, bootstrapping, and cross-validation), and machine learning (regression, classification, and dimensionality reduction, including neural networks, principal component analysis, and unsupervised learning).

Fall DATA1010 S01 17038 MWF 11:00-12:50 (S. Watson)

DATA 1030. Hands-on Data Science.
Develops all aspects of the data science pipeline: data acquisition and cleaning, handling missing data, data storage, exploratory data analysis, visualization, feature engineering, modeling, interpretation, presentation in the context of real-world datasets. Fundamental considerations for data analysis are emphasized (the bias-variance tradeoff, training, validation, testing). Classical models and techniques for classification and regression are included (linear regression, ridge and lasso regression, logistic regression, support vector machines, decision trees, ensemble methods). Uses the Python data science ecosystem. Prerequisites: A course equivalent to CSCI 0050, CSCI 0150 or CSCI 0170 are strongly recommended.

Fall DATA1030 S01 16733 TTh 10:30-11:50(13) ‘To Be Arranged’

DATA 1050. Data Engineering.
Provides an introduction to computer science and programming for data science. Coverage includes data structures, algorithms, analysis of algorithms, algorithmic complexity, programming using test-driven design, code organization, and version control. Additional topics include SQL, NoSQL, and graph databases, distributed computing, and web technologies.

Fall DATA1050 S01 17834 TTh 1:00-2:20(08) (D. Potter)

DATA 1150. Data Science Fellows.
Data science is growing fast, with tools, approaches, and results evolving rapidly. This course is for students with some familiarity with data science tools and skills, seeking to apply these skills and teach others how to implement and interpret data science. Working in conjunction with a faculty sponsor, this course teaches students communication skills, how to determine the needs (requirements) for a project, and how to teach data science to peers. These valuable agile skills will be an incredible advantage moving forward in your professional development. Experience and familiarity with data science strategies and/or tools (for example, at least one area of coding, statistics, or visualizations) are required for this course, along with an interest in developing skills around designing teaching and learning activities around data science. This course is only available to students working on a curriculum development project supported by an UTRA or SPRINT award. Students must submit an interest form (https://forms.gle/FPhVGBuy84qTRT7q9) and concurrently request an override in C@B.

A modern introduction to inferential methods for regression analysis and statistical learning, with an emphasis on application in practical settings in the context of learning relationships from observed data. Topics will include basics of linear regression, variable selection and dimension reduction, and approaches to nonlinear regression. Extensions to other data structures such as longitudinal data and the fundamentals of causal inference will also be introduced.

DATA 2040. Deep Learning and Special Topics in Data Science.
A hands-on introduction to neural networks, reinforcement learning, and related topics. Students will learn the theory of neural networks, including common optimization methods, activation and loss functions, regularization methods, and architectures. Topics include model interpretability, connections to other machine learning models, and computational considerations. Students will analyze a variety of real-world problems and data types, including image and natural language data.

DATA 2050. Data Science Practicum.
The capstone experience is a hands-on thesis project that entails an in-depth study of a current problem in data science. Students will synthesize their knowledge of probability and statistics, machine learning, and data and computational science. A faculty member from one of the four core DSI departments (Applied Mathematics, Biostatistics, Computer Science, Mathematics) will oversee the capstone course. Students may collaborate with an additional faculty member, postdoc, or industry partner on projects. DATA 1010 and DATA 1030 are recommended pre-requisites.

Fall DATA2050 S01 16735 TTh 4:00-5:20 (D. Potter)

DATA 2080. Data and Society.
A course on the social, political, and philosophical issues raised by the theory and practice of data science. Explores how data science is transforming not only our sense of science and scientific knowledge, but our sense of ourselves and our communities and our commitments concerning human affairs and institutions generally. Students will examine the field of data science in light of perspectives provided by the philosophy of science and technology, the sociology of knowledge, and science studies, and explore the consequences of data science for life in the first half of the 21st century.

Early Cultures

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Required of seniors in the honors program. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

East Asian Studies

Chinese

CHIN 0100. Basic Chinese.
A year-long introduction to Standard Chinese (Mandarin). Speaking, reading, writing, and grammar. Five classroom meetings weekly. This is the first half of a year-long course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade submitted at the end of course work in CHIN 0200 covers the entire year and is recorded as the final grade for both semesters.
CHIN 0200. Basic Chinese.
A year-long introduction to Standard Chinese (Mandarin). Speaking, reading, writing, and grammar. Five classroom meetings weekly. This is the second half of a year-long course. Students must have taken CHIN 0100 to receive credit for this course. The final grade for this course will become the final grade for CHIN 0100. If CHIN 0100 was taken for credit then this course must be taken for credit; if taken as an audit, this course must also be taken as an audit. Exceptions to this policy must be approved by both the academic department and the Committee on Academic Standing.

CHIN 0300. Intermediate Chinese.
An intermediate course in Standard Chinese designed to further communicative competence and to develop reading and writing skills. Five classroom meetings weekly. Prerequisite: CHIN 0200 or permission of instructor.

This course is designed to enhance listening, speaking, reading, and writing skills for Chinese heritage students who have some prior knowledge of Chinese. Five classroom meetings weekly. Placement interview required.

CHIN 0400. Intermediate Chinese.
An intermediate course in Standard Chinese designed to further communicative competence and to develop reading and writing skills. Five classroom meetings weekly. Prerequisite: CHIN 0300 or permission of instructor.

CHIN 0450. Advanced Chinese for Heritage Learners.
This course is primarily designed for Chinese heritage students who have successfully completed CHIN 0350. If you have not taken CHIN 0350, please contact the instructor for a proficiency evaluation. Upon completing this course, you can take CHIN 0700 or equivalent, i.e. courses that have a prerequisite of CHIN 0600. This is an advanced-level course offering comprehensive work on all four language skills, with a focus on developing your ability to use sophisticated grammatical structures, vocabulary, and improving your reading and speaking skills. Materials used in this course will include a textbook, supplementary articles, and video clips.

CHIN 0500. Advanced Modern Chinese I.
An advanced course designed to enable students to read authentic materials. Students enhance their listening, speaking, reading, and writing skills; improve their narrative and descriptive abilities; and learn to express abstract ideas both orally and in writing. Five classroom meetings weekly. Prerequisite: CHIN 0250 or CHIN 0400 or permission of instructor.

CHIN 0600. Advanced Modern Chinese I.
An advanced course designed to enable students to read authentic materials. Students enhance their listening, speaking, reading, and writing skills; improve their narrative and descriptive abilities; and learn to express abstract ideas both orally and in writing. Five classroom meetings weekly. Prerequisite: CHIN 0500 or permission of instructor.

CHIN 0700. Advanced Modern Chinese II.
This course is designed to enhance the Chinese proficiency of those who have taken Advanced Modern Chinese I (CHIN 0600) or the equivalent. All four language skills are emphasized through selected authentic materials. At the end of the year, students should be able to express their ideas with sophistication and nuance. Drills on complex sentence patterns will be conducted when necessary. Prerequisite: CHIN 0600 or permission of instructor.

CHIN 0800. Advanced Modern Chinese II.
See Advanced Modern Chinese II (CHIN 0700) for course description. Prerequisite: CHIN 0700 or permission of instructor.

CHIN 0920D. Business Chinese.
Business Chinese focuses on practical language skills that are most useful in business interactions in Chinese-speaking communities. Classroom activities are largely based on authentic documents and correspondence as well as a textbook. Through intensive practice in the listening, speaking, reading and writing of the Chinese language for business purposes, this course aims at enhancing students’ linguistic knowledge in a business context. Classes are conducted in Chinese. Prerequisite: CHIN 0800 or instructor permission. Enrollment limited to 18.

CHIN 0920H. Chinese Language and Culture.
This course is designed for advanced learners of Chinese to enhance their language proficiency, as well as to grasp essential skills to observe and appreciate Chinese culture from the perspective of language, especially through Chinese radicals, idioms, proverbs, taboos, verses, vernacular language and internet language. The teaching methods in this course include lecture, case studies, and heuristic approach etc. After taking this course, students are expected to have much deeper understanding of Chinese language and culture and be able to use the language in a near native and artistic way.

CHIN 1010. Stories from the Chinese Empire: Scholars, Demons and Swindlers.
This bilingual course introduces the culture and society of late imperial China by reading short stories, novels, prose essays between 1368 and 1911. To maintain students’ language skills, the lecture is primary in mandarin aided by English explanation. Students can choose to complete the assignments in either English or Chinese. The course explores the interwoven spectacular fantasy and societal reality of the imperial China. A chronological exposure to different cultural practice and social structures is organized under three rubrics, namely, scholar-official as social elite; merchants and courtesans as mobile agents; and criminals and demons as outcast.

CHIN 1040. Modern Chinese Literature.
Introduces students to the most representative writers in 20th century China. Emphasizes textual and historical analyses. Major issues include Westernization, nationalism, revolution, class, gender, and literary innovations. Designated primarily as a literature course, rather than language class, and conducted entirely in Mandarin Chinese. Prerequisite: CHIN 0800. Instructor permission required.

CHIN 1910. Independent Study.
Reading materials for research in Chinese. Sections numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

CHIN 2450. Exchange Scholar Program.
Fall CHIN2450 S01 15456 Arranged 'To Be Arranged'

East Asian Studies
EAST 6533. Beyond Gangnam Style: Seoul, Dislocation, and the Search for Place.
Seoul has become a celebrated cultural hub both within Asia and globally. However, underneath the glitter of modernity visible in the urban sprawl of Seoul’s “Gangnam Style” are forgotten stories, stratified claims, and a turbulent history covering 35 years of Japanese rule, a war, and the ongoing presence of 28,500 American troops. This course will take an interdisciplinary approach to Seoul incorporating history, urban culture, literature and visual media, and engage key concepts informing the burgeoning field of Korean studies. Attention will be given to contestations over space, IT infrastructure, architectural spaces, and the emergence of new subjectivities.

EAST 6534. Patriots, Communists, and Traitors in Modern Korea.
Korean history and politics is polarized by labels of "patriot," "traitor," "right wing," and "communist." Considering global capitalism and its complicity
with colonialism, this course will examine Korea following the 1917 Bolshevik Revolution and 1919 post-Wilsonian moments, and understand how these international events changed domestic politics. Through close readings of key historical documents, we will uncover the colonial origins of Korean Communism and radicalism, which both still hold great influence on the popular imagination and effect contemporary society in the two Koreas in complicated ways.

Fall EAST0534 S01 17632 TTh 1:00-2:20(08) (E. Choi)

EAST 0620. Literature, Science, and Technology in China.
This course explores relations between Chinese science, technical know-how, and literary writings in early modern and contemporary China. The course encourages students to re-define science and technology in the context of China’s changing Confucian education system, booming market economy, and the multiethnic empire and explores the impact of imperial legacy in scientific imagination in contemporary China. By drawing on materials from local museums as well as latest Chinese science fictions, we will investigate the ways in which knowledge about medicine, handicrafts, and foreign lands transformed the form and content of novels and belle-lettres.

EAST 1100. Korean Culture and Film.
This course aims to introduce and explore various aspects of Korean history, culture and society. Students are expected to develop a comprehensive understanding of Korean culture by examining contemporary films that pertain to issues such as national identity, history, international relations, religion, Korean life style, and family life. Enrollment limited to 20.

Korean films are often identifiable within two distinct tropes – the beautiful, tranquil Orient and a violent, frenetic hyper-modernity. Koreans, however, grapple with identifying themselves and their modern experiences differently beyond how the international community and the “West” sees them – as the exotic “East.” Seeking to understand and complicate this dichotomy, we will explore how Korea has struggled to hone and complicate national identity (their critique, their futurities) through film, and examine how Korea has been struggling since the 1990s to overcome the national in the face of globalization and cosmopolitanism to address the local and the liminal.

Fall EAST1292 S01 17403 T 4:00-6:30 (E. Choi)

EAST 1910. Independent Study.
Sections numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EAST 1930. Reading and Writing of the Honors Thesis.
Prior admission to honors candidacy required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EAST 1940. Reading and Writing of the Honors Thesis.
Prior admission to honors candidacy required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EAST 1940A. Crafting Early Modern China: Handicraft, Witchcraft and Statecraft.
This course examines how Chinese cultural industry was shaped by sociopolitical institutions and religious practice between 1400 and 1900 CE. The course highlights the concept of craft, broadly understood as the ways of making artifacts and building social community by using environmental resources and through micro-political negotiations in everyday life. The course aims to equip students in ways to decipher the political, religious and gendered significance embedded in cultural products, including literature and decorative arts. We will explore artifacts from the following categories: literary illustration, painting and calligraphy, seals, ceramics, furniture, and textiles. Prerequisites: None.

Fall EAST1940A S01 15801 Th 4:00-6:30 (K. Chen)

EAST 1950B. Chinese Women, Gender and Feminism from Historical and Transnational Perspectives.
This seminar course is designed to critically re-evaluate (re)presentations of Chinese women, gender, and feminism in historical, literary, and academic discourses. It examines a diverse body of texts produced through different historical periods and in different geopolitical locations. It emphasizes gender as both a historical construct(s) among competing discourses and as a material process of individual embodiment and disembodiment. The goal of the course is to help advanced students understand Chinese history from a distinctly gendered perspective, to recognize women’s roles in history and writing, and to develop a reflective, cross-cultural approach to gender, politics, and the self.

Fall EAST1950B S01 15802 M 3:00-5:30 (L. Wang)

This seminar/workshop discusses a broad range of narrative arts produced over the past 100 years in Japan, and practices the art of translating them. Drawing rigor from the field of linguistics and translation theory, we shall make central to our effort of analyzing Japanese cultural productions an attentiveness to the historicity of language and a self-consciousness of our roles as cultural interpreters. While the course will focus on mid-20th century Japanese short fiction, we will also work on poetry, music, manga, animation, and film, depending on the interests of enrolled students. Pre-requisites: JAPN 0600 or equivalent. Instructor permission required.

EAST 1990. Senior Reading and Research: Selected Topics.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EAST 2450. Exchange Scholar Program.
Further practice of patterns and structures of the language. Readings are introduced on aspects of Japanese culture and society to develop reading and writing skills, enhance vocabulary, and provide points of departure for conversation in Japanese. Prerequisite: JAPN 0200 or equivalent. Instructor permission required.

JAPANESE

JAPN 0100. Basic Japanese.
Introduction to Japanese language. Emphasizes the attainment of good spoken control of Japanese and develops a foundation of literacy. No prerequisites. This is the first half of a year-long course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade submitted at the end of the course work in JAPN 0200 covers the entire year and is recorded as the final grade for both semesters. The East Asian Studies department wishes to provide language instruction to all interested students. If you are unable to register for this course due to enrollment limits but are dedicated to learning Japanese, please contact the instructor via email.

Fall JAPN0100 S01 15783 MWF 9:00-9:50(02) (H. Tajima)
Fall JAPN0100 S01 15783 TTh 9:00-10:20(02) (H. Tajima)
Fall JAPN0100 S01 15784 TTh 10:00-10:50(13) (H. Tajima)
Fall JAPN0100 S02 15784 MWF 10:00-10:50(13) (H. Tajima)
Fall JAPN0100 S02 15784 TTh 10:30-11:50(13) (H. Tajima)

JAPN 0200. Basic Japanese.
Introduction to Japanese language. Emphasizes the attainment of good spoken control of Japanese and develops a foundation of literacy. This is the second half of a year-long course. Students must have taken JAPN 0100 to receive credit for this course. The final grade for this course will become the final grade for JAPN 0100. If JAPN 0100 was taken for credit then this course must be taken for credit; if taken as an audit, this course must also be taken as an audit. Exceptions to this policy must be approved by both the academic department and the Committee on Academic Standing. The East Asian Studies department wishes to provide language instruction to all interested students. If you are unable to register for this course due to enrollment limits but are dedicated to learning Japanese, please contact the instructor via email.

Further practice of patterns and structures of the language. Readings are introduced on aspects of Japanese culture and society to develop reading and writing skills, enhance vocabulary, and provide points of departure for conversation in Japanese. Prerequisite: JAPN 0200 or equivalent. The East Asian Studies department wishes to provide language instruction to
all interested students. If you are unable to register for this course due to enrollment limits but are dedicated to learning Japanese, please contact the instructor via email.

Fall  JAPN0300  S01  15787  MWTThF11:00-11:50(16)  (N. McPherson)
Fall  JAPN0300  S02  15788  MWTThF12:00-12:50(15)  (N. McPherson)


JAPN 0500. Advanced Japanese I. Continued practice in reading, writing, and speaking. Emphasizes the development of reading proficiency and speaking in cultural contexts. Students read actual articles and selections from Japanese newspapers. Course includes translation, writing and discussion in Japanese. Films and video tapes are shown as supplementary materials. Prerequisite: JAPN 0400 or equivalent.

Fall  JAPN0500  S01  15790  MWF 10:00-10:50(14)  (S. Hiramaatsu)
Fall  JAPN0500  S01  15790  TTh 12:00-12:50(14)  (S. Hiramaatsu)
Fall  JAPN0500  S03  17957  MWTThF1:00-1:50(14)  (S. Hiramaatsu)


JAPN 0700. Advanced Japanese II. Reading of articles from Japan’s press with discussion in Japanese. Focuses on explanations and drills on the fine points in grammar and vocabulary as well as on the practice of writing in various styles. Movies and video tapes are used as supplementary materials. Prerequisite: JAPN 0600 or equivalent.

Fall  JAPN0700  S01  15792  MWF 2:00-2:50(10)  (A. Borgmann)

JAPN 0800. Advanced Japanese III. See Advanced Japanese II (JAPN 0700) for course description.

JAPN 0920A. Business Japanese. Designed to teach post-advanced level Japanese language, with the focus on effective oral and written communication in business situations, this course emphasizes vocabulary building in the areas of business and economics, use of formal expressions, business writing, and conversation and presentation skills, as well as familiarizing students with Japanese corporate culture, protocol, and interpersonal relationships. Prerequisite: JAPN 0700 or equivalent. Enrollment limited to 20. Instructor permission required.

Fall  JAPN0920A  S01  17631  TTh 2:30-3:50(12)  (K. Yamashita)

JAPN 1910. Independent Study. Reading materials for research in Japanese. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Korean

KREA 0100. Korean. Begins with an introduction to the Korean writing system (Hangul) and focuses on building communicative competence in modern Korean in the four language modalities (listening, speaking, reading, writing). Provides a foundation for later work in spoken and written Korean. Six classroom hours per week. No prerequisite. Enrollment limited to 18. This is the first half of a year-long course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade submitted at the end of the course work in KREA 0200 covers the entire year and is recorded as the final grade for both semesters.

Fall  KREA0100  S01  15794  TTh 9:00-9:50(14)  (C. Park)
Fall  KREA0100  S01  15794  MWF 10:00-10:50(14)  (C. Park)
Fall  KREA0100  S01  15795  MWTThF12:00-12:50(15)  (C. Park)

KREA 0200. Korean. Begins with an introduction to the Korean writing system (Hangul) and focuses on building communicative competence in modern Korean in the four language modalities (listening, speaking, reading, writing). Provides a foundation for later work in spoken and written Korean. Six classroom hours per week. Enrollment limited to 18. This is the second half of a year-long course. Students must have taken KREA 0100 to receive credit for this course. The final grade for this course will become the final grade for KREA 0100. If KREA 0100 was taken for credit then this course must be taken for credit; if taken as an audit, this course must also be taken as an audit. Exceptions to this policy must be approved by both the academic department and the Committee on Academic Standing.

KREA 0300. Intermediate Korean. An intermediate course in Korean designed to further communicative competence in spoken Korean and to provide additional reading practice in stylistically higher level materials that are progressively integrated into the given dialogues. Discussions on various aspects of Korean culture and society. Five classroom hours per week. Prerequisite: KREA 0200 or instructor permission.

Fall  KREA0300  S01  15797  MWTThF11:00-11:50(16)  (H. Ha)

KREA 0400. Intermediate Korean. See Intermediate Korean (KREA 0300) for course description. Prerequisite: KREA 0100-0200 or equivalent.

KREA 0500. Advanced Korean. Aims to help students develop an advanced level of communicative competence, with special focus on enhancing their reading comprehension, essay writing, and discourse (discussion and presentation) skills. Authentic reading materials from a variety of sources will be used to introduce various topics and issues pertaining to Korean society and culture, thus students’ cultural understanding will also be enhanced. Prerequisite: KREA 0400 or equivalent or permission of instructor.

Fall  KREA0500  S01  15798  MWF 12:00-12:50(15)  (H. Wang)

KREA 0600. Advanced Korean. See Advanced Korean (KREA 0500) for course description. Prerequisite: KREA 0500 or equivalent or permission of instructor.

KREA 1910. Independent Study. Reading materials for research in Korean. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Earth, Environmental and Planetary Sciences

EEPS 0010. Face of the Earth. Study of Earth's surface (e.g., mountains, rivers, shorelines) and processes which have created and modify it (e.g., glaciation, floods, volcanism, plate tectonics, earthquakes). The goals are to increase appreciation and enjoyment of our natural surroundings and provide a better understanding of environmental problems, natural resources, land use, and geologic hazards. Four labs, plus a field trip. For nonscience concentrators (science concentrators should take EEPS 0220). Students MUST register for both components of this course (the lecture and one of the labs) during the SAME registration session. Enrollment limited to 100.

EEPS 0050. Mars, Moon, and the Earth. Space exploration has revealed an astonishing array of surface features on the planets and their satellites. Why are atmospheres on the planets different from Earth’s atmosphere? Do other planets represent our past or future environment? Is there life on other planets? The planets and their histories are compared to gain insight and a new perspective on planet Earth.

EEPS 0070. Introduction to Oceanography. Examines the ocean's role in Earth's global environment, emphasizing the dynamical interaction of the ocean with the atmosphere, biosphere, cryosphere, and lithosphere. Focus on physical/chemical/biological systems' interconnections needed to understand natural and anthropogenic variability on various time and space scales, from El Niño to global warming. Three lectures, written exercises on oceanographic problems; two field trips to study estuarine and coastal processes.

EEPS 0230. Geochemistry: Earth and Planetary Materials and Processes. This course is an introduction to the formation of minerals and rocks, and the physico-chemical processes acting during planetary evolution. Topics include: Earth formation and differentiation, determination of age and origin of volcanic, crustal and mantle rocks using their elemental
compositions and radiogenic and stable isotopes. Weekly laboratory. Intended for science concentrators. Lab times TBD. Prerequisites: no prerequisites.

EEPS 0240. Earth: Evolution of a Habitable Planet

Introduces Earth's surface environment evolution - climate, chemistry, and physical makeup. Uses Earth's carbon cycle to understand solar, tectonic, and biological cycles' interactions. Examines the origin of the sedimentary record, dating of the geological record, chemistry and life on early Earth, and the nature of feedbacks that maintain the "habitable" range on Earth. Two field trips; five laboratories arranged. Prerequisite: EEPS 0220 or 0230, or instructor permission.

EEPS 0250. Computational Approaches to Modelling and Quantitative Analysis in Natural Sciences: An Introduction

Application of numerical analysis to mathematical modelling in the natural sciences including topics such as ground water and glacier flow, earthquakes, climate models, phase equilibrium, and population dynamics. Numerical methods will include the solution of linear algebraic systems of equations, numerical integration, solution of differential equations, time series analysis, statistical data analysis tools. Development of computer programming skills in the Matlab programming environment. Suggested prerequisites: MATH 0090, 0100; PHYS 0030, 0040, or 0050, 0060.

EEPS 0810. Planetary Geology

This introductory level course will examine the evolution of our Solar System and the geology of planetary bodies, including Mercury, Venus, the Moon, Mars, asteroids, and the moons of Jupiter and Saturn. We will discuss the origin of the Solar System from a geological perspective and explore how scientists combine observations from extraterrestrial samples such as meteorites with data returned by satellites and rovers to develop and test hypotheses related to planetary evolution. Emphasis will be on comparing geologic processes on these bodies to well-understood processes on Earth, results from past, current, and upcoming planetary missions, and the future of human and robotic exploration of space.

EEPS 0830. Water in Our World

This course will focus on understanding natural and societal dimensions of the water cycle. The coming century will see substantial pressure on global water resources owing to increasing human demand, alteration of river systems, and climate change. The first half of the course introduces fundamental concepts in physical hydrological science, and the second explores human modifications and environmental problems associated with a perturbed water cycle. The topical sequence of the class will progress first through different components of the water cycle (e.g. precipitation, evaporation, run-off), followed by different ways in which humans use and depend upon freshwater resources.

EEPS 0850. Weather and Climate

Weather phenomena occur on short time scales, and form the basis for understanding climate, the study of changes over longer time scales. This course aims to provide an understanding of the processes that drive weather patterns, the general circulation of the atmosphere, and climate on Earth. Topics include the structure and composition of the atmosphere, sources of energy that drive atmospheric processes, weather forecasting, the hydrological cycle, forces that create severe weather, the influence of humans on the atmosphere, and factors that influence climate, climate variability and climate change. Recommend courses or equivalent: MATH 0090, MATH 0100, PHYS 0050.

EEPS 1130. Ocean Biogeochemical Cycles

A quantitative treatment of the cycling of biologically important elements in the world ocean. Special attention paid to the carbon system in the ocean and the role that organisms, in conjunction with ocean circulation, play in regulating the carbon dioxide content of the atmosphere through exchange with the surface ocean. For science concentrators. Offered alternate years. Prerequisite: CHEM 0330 or equivalent, or instructor permission.

EEPS 1150. Limnology: The Study of Lakes

This course will provide an interdisciplinary overview of the physics, chemistry, biology, and geology of lakes. Areas of emphasis will include the origin of lake basins, water circulation patterns, heat and water budgets, biogeochemical processes, lake ecosystems, and the stratigraphic record of lakes. We will also discuss human and climatic impacts on lakes. Prerequisites: EEPS 0220 and 0240, or instructor permission. Enrollment limited to 20.

EEPS 1240. Stratigraphy and Sedimentation

Introduction to depositional environments and processes responsible for formation of sedimentary rocks. Major sedimentary environments in the Recent are discussed; general models are proposed, and stratigraphic sequences in older sediments are examined in the light of these models. The Phanerzoic stratigraphic record is examined from the perspective of Earth system history. Laboratory arranged. Prerequisites: EEPS 0220 or 0240, or instructor permission. EEPS 0310, 1410 are also recommended.

EEPS 1310. Global Water Cycle

The goal of this class is to understand the physical principles and processes of the global water cycle. Topics include the climatic importance of water, circulation of atmospheric water vapor, formation of rain and snow, availability of soil water, plant-water relations, mass balance of glaciers, and the atmospheric and oceanic cycles of water. Additional goals: become familiar with the current research literature, practice clear and concise science writing, and to use simple programming in Python to plot and analyze actual data sets.

Students are expected to have taken at least one geology-related course. Programming experience recommended, but not necessary.

EEPS 1320. Introduction to Geographic Information Systems for Environmental Applications

An introduction to basic geographic information system (GIS) concepts, and the utilization and application of geospatial data for analysis. Topics will include data structures and management, coordinate systems and projections, data creation, obtaining spatial data from outside sources, georeferencing and address-matching, model building and batch geoprocessing, and performing fundamental spatial analysis techniques such as overlay, extraction, and interpolation, viewsheds, and hot spot analysis among others. Concepts are presented via online videos (Canvas) and put into practice through weekly hands-on laboratory exercises utilizing the GIS software product ArcGIS 10.x and ArcGIS Pro (ESRI, Inc.). Two presentations by each student are required - a case study, and an original research project employing the methods learned. A public poster session on the original research project culminates the term. If unable to pre-register, a wait list will be used to fill openings on a first come, first serve basis. S/N/C.

EEPS 1330. Global Environmental Remote Sensing

Introduction to physical principles of remote sensing across electromagnetic spectrum and application to the study of Earth's systems (oceans, atmosphere, and land). Topics: interaction of light with materials, imaging principles and interpretation, methods of data analysis. Laboratory work in digital image analysis, classification, and multi-temporal studies. One field trip to Block Island. Recommended preparation courses: MATH 0090, 0100; PHYS 0060; and background courses in natural sciences.

EEPS 1370. Environmental Geochemistry

The course will examine the biogeochemical cycling, fate and transport of chemicals in the atmospheric and aquatic environments. Topics such as chemical weathering, natural water pollution and remediation, acid deposition, global warming and air pollution will be examined through natural ecosystem examples from rivers, lakes, estuaries, and oceans. Field trips and laboratory arranged. Prerequisites: CHEM 0100 or 0330, or instructor permission.

EEPS 1410. Mineralogy

Introduction to mineralogical processes on Earth's surface and its interior. Topics include crystallography, crystal chemistry, nucleation, crystal growth, biomineralization, environmental mineralogy, and mantle mineralogy. Laboratory study devoted to optical identification of rock-forming minerals. Prerequisites: EEPS 0230, CHEM 0100 or 0330, or equivalent.
Fall EEPS1410 S01 16809 Arranged (R. Cooper)

EEPS 1420. Petrology.
Introduction to the origin and evolution of igneous rocks. Topics include: physical properties of magma, thermodynamics and phase equilibria, igneous rocks and their classification, magmatic processes, trace elements and isotopes, basalts and layered intrusions, survey of lunar and planetary petrology. Prerequisites: EEPS 1410, or instructor permission.

EEPS 1430. Principles of Planetary Climate.
This course provides the physical building blocks for understanding planetary climate. Topics include thermodynamics applied to planetary atmosphere, basic radiative transfer, energy balance in the atmosphere, and climate variability. In-class exercises and homework problems are designed to strengthen the understanding of basic concepts and to improve problem-solving skills.

Fall EEPS1430 S01 16823 TTh 2:30-3:50(12) (J. Lee)

EEPS 1450. Structural Geology.
Introduction to the geometry, kinematics and mechanics of rocks deformed by brittle fracture or faulting and ductile solid state flow, on scales from microscopic to mountain ranges. The emphasis is on using concepts to interpret the formation, strain history and rheology of deformed rocks in terms of the operative grain-scale processes, material properties and environmental conditions. Weekly 2 hour lab involving hands-on experience closely related to class topics. Two field trips. Prerequisites: EEPS 0220 or instructor permission.

EEPS 1520. Ocean Circulation and Climate.
Examines physical characteristics, processes, and dynamics of the global ocean to understand circulation patterns and how they relate to ocean biology, chemistry, climate change. Assignments address ocean's role in the climate system; ocean observations and models; the origin, distribution, and dynamics of large-scale ocean circulation and water masses; energy and freshwater budgets; and variability of the coupled system on seasonal to centennial timescales e.g. El Niño. Intended for geological and physical sciences undergraduate and graduate students with quantitative skills and an interest in oceans, climate, paleoclimate. Pre-requisites: EEPS 0250, EEPS 0350, PHYS 0720, or APMA 0180. Offered alternate years.

EEPS 1650. Earthquake Seismology.
Topics include: location of earthquakes in space and time; measures of size and intensity of shaking; body waves, surface waves, and free oscillations; structure of the interior of the Earth from wave propagation; earthquake faulting and relationship to tectonic processes. Recommended course: EEPS 0161. Offered in alternate years.

Fall EEPS1650 S01 18533 Arranged (K. Fischer)

EEPS 1690. Introduction to Methods in Data Analysis.
This class will be an overview of different ways one can quantitatively analyze data. Topics will include linear regression, least squares inversion, principal component analysis, and Bayesian methods. Emphasis will be on both a theoretical understanding of these methods and on practical applications to geophysical and earth science problems. Exercises will include using MATLAB to analyze data.

Fall EEPS1690 S01 17185 Arranged (V. Tsai)

The course will explore and expose students to the fundamental physics necessary to understand how planetary bodies evolve. The evolution of planetary bodies will be discussed on the basis of geological and geophysical evidence derived from exploration of the Solar System. This course will study the physical processes responsible for and that occur as a consequence of differentiation and deformation of planetary bodies. Includes the study of physical processes responsible for volcanism and deformation on the surface as well as the state and structure of the interior of planets.

Fall EEPS1810 S01 17186 TTh 10:30-11:50(13) (A. Evans)

The shapes of plants and animals, of mountains and shorelines arise because nature dissipates energy as rapidly as possible. These morphological patterns allow description of the energy "landscape" that produced them. Societies and economies show temporal and spatial patterns as well; does the "flow rate" of ideas and of money cause these patterns? We will explore just how "entropy rules." Enrollment limited to 16. Instructor permission required.

EEPS 1960Z. Physical Volcanology.

One semester is required for seniors in Sc.B. and honors program. Course work includes preparation of a thesis. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Enrollment is restricted to undergraduates only.

Strategies and the physical principles behind the quantitative extraction of geophysical and biophysical properties from remotely sensed data. Emphasis on radiative transfer theory and modeling of spectra and spectral mixtures from optical constants. Advanced methods of digital image processing. Methods of integrating remotely sensed data into a GIS framework will be introduced. Recommended preparation course: EEPS 1330 or 1710; MATH 0100; PHYS 0600.

Fall EEPS2330 S01 16814 Arranged (R. Milliken)

EEPS 2350. Quaternary Climatology Seminar.
Discussion of current problems in paleoclimatology and global climate change. Students analyze the primary literature, and do original analyses of their own on published data. Topics include: theories of ice ages, millennial-scale climate variability, the influence of greenhouse gases and radiative forcing on climate, and historical and future climate changes. Prerequisites: graduate student status; or EEPS 0240, 0310, and 1240; or instructor permission.

Fall EEPS2350 S01 17552 W 2:00-4:30 (J. Russell)

Emphasizes kinetic theories and their geological applications. Topics include: rate laws of chemical reaction, rates of chemical weathering; fundamentals of diffusion, nucleation, crystal growth, and dissolution; transport theory. Recommended prerequisite: EEPS 2460 or equivalent.

Fall EEPS2410 S01 16811 Arranged (Y. Liang)

EEPS 2450. Exchange Scholar Program.

EEPS 2840. Asteroids and Meteorites.
Compositional and petrographic characteristics of meteorites are examined along with the physical and compositional diversity of asteroids and other small bodies of the solar system. Possible links between specific types of asteroids and meteorite groups will be evaluated in the context of early solar system evolution. Data from spacecraft encounters with asteroids will be critically reviewed.

EEPS 2910X. Topics in Geophysics.
The course will be focused on geophysical studies of the Earth's crust, lithosphere, and asthenosphere. Through reading and discussion of historical and recent scientific papers we will consider a range of topics such as: interactions between the solid Earth and ice sheets; using geophysical observations to infer rheology; the nature of the lithosphere-asthenosphere boundary; and recent advances in geophysical methodologies.

Fall EEPS2910X S01 18546 MW 10:30-11:50 (C. Dalton)

EEPS 2920E. Introduction to Organic Geochemistry.
Mainly literature critiques and seminars, supplemented by introductory lectures. Topics include organic biomarkers, analytical methodologies, natural macromolecules, stable isotope ratios of biomarkers, application of organic geochemistry in studies of climatic and environmental change, fossil fuel exploration, and applied environmental research.

EEPS 2980. Research in Geological Sciences.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Enrollment is restricted to graduate students only.

EEPS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Fall EEPS2990 S01 15713 Arranged 'To Be Arranged'
### Economics

**ECON 0110. Principles of Economics.**
Extensive coverage of economic issues, institutions, and terminology, plus an introduction to economic analysis and its application to current social problems. Required for all economics concentrators. Prerequisite for ECON 1110, 1130, 1210 and 1620. Serves as a general course for students who will take no other economics courses and want a broad introduction to the discipline. Weekly one-hour conference required (conferences are not held during the summer session).

Fall ECON0110 S01 15968 MWF 9:00-9:50(01) (R. Friedberg)

**ECON 0170. Essential Mathematics for Economics.**
This course teaches the mathematical skills useful for upper level Economics classes. Emphasis is on acquisition of tools, problem solving, intuition, and applications rather than proofs.

This course satisfies the mathematics requirement for the Economics concentration, but does not serve as a prerequisite for upper level courses in Math, Applied Math, or other departments. Students planning further courses in Math, or MATH 1000 or MATH 1070 (which also satisfy the Economics concentration requirement) instead. Ideally, ECON 0170 should be taken before ECON 1110, or at least simultaneously.

**ECON 0200. 20th Century Political Economy.**
This course covers major debates in the 20th century political economy, starting with the Bolshevik Revolution and the Treatise of Versailles. We examine the Great Depression, the New Deal, and Postwar economic planning in the US and UK. We then turn to consider important periods in the second half of the 20th century, including Indian Economic Planning, Bretton Woods, and inflation in the 1970s. The course ends with a consideration of trade, trade deficits, sovereign debt crises, and austerity. The aim is to develop an understanding of both sides of key debates in political economy.

Fall ECON0710 S01 16172 MW 6:00-7:30 (F. Sciuto)
Fall ECON0710 S02 16173 TTh 6:00-7:30 (T. Lonardo)

**ECON 0200. 20th Century Political Economy.**
This course covers major debates in the 20th century political economy, starting with the Bolshevik Revolution and the Treatise of Versailles. We examine the Great Depression, the New Deal, and Postwar economic planning in the US and UK. We then turn to consider important periods in the second half of the 20th century, including Indian Economic Planning, Bretton Woods, and inflation in the 1970s. The course ends with a consideration of trade, trade deficits, sovereign debt crises, and austerity. The aim is to develop an understanding of both sides of key debates in political economy.

Fall ECON0110 S01 17578 MWF 10:00-10:50(14) (G. De Clippel)

**ECON 1100. Intermediate Microeconomics.**
Tools for use in microeconomic analysis, with some public policy applications. Theory of consumer demand, theories of the firm, market behavior, welfare economics, and general equilibrium.

Fall ECON1100 S01 16174 Arranged (T. Mekonnen)
Fall ECON1100 S02 16175 MWF 10:00-10:50(14) (P. Dali Bo)

**ECON 1130. Intermediate Microeconomics (Mathematical).**
Microeconomic theory: Theories of the consumer and firm, competitive equilibrium, factor markets, imperfect competition, game theory, welfare economics, general equilibrium. May not be taken in addition to ECON 1110. The instructor(s) of this course utilize override codes to grant access for registration restrictions rather than the request/wait list feature in C@B. Please reach out to the instructor directly for an override.

**ECON 1200. History of Economic Thought.**
This course covers the history of modern (20th century) economics and economic thinking from the marginal revolution through the first half of the 20th century. The aim will be to develop an understanding of the origin and evolution of central concepts in economic theory, including subjective utility, marginal analysis, competitive markets, examine methodological disputes over positivism and formalism, and the development of general competitive equilibrium. We will consider the emergence of certain subfields in modern economics, and end with a discussion of the relevance of these ideas for economics in the 21st century.

Fall ECON1200 S01 16879 TTh 2:30-3:50(12) (E. Skarbek)

**ECON 1210. Intermediate Macroeconomics.**
The economy as a whole: Level and growth of national income, inflation, unemployment, role of government policy.

Fall ECON1210 S01 16179 MWF 10:00-10:50(14) (M. Lancastre)
Fall ECON1210 S02 16179 MWF 1:00-1:50(06) (M. Lancastre)

**ECON 1225. Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies.**
The course is concerned with macroeconomic policy in the US, with special focus on the recent economic crisis. The main objective of the course is to introduce students to the type of models and methods used in recent research in macroeconomics both in the scholarly literature but also in the practice of central banks and major policy institutions. Events of the financial crisis and the economic recession of 2007-2009 will serve to illustrate the challenges confronted by macroeconomic analysis.

**ECON 1255. Unemployment: Models and Policies.**
This course will cover research topics related to unemployment, focusing on the models used to describe unemployment and the policies used to tackle unemployment. It will address the following questions: Why does unemployment exist? Why does unemployment vary across countries? Why does unemployment vary over time? What is the socially optimal level of unemployment? How should unemployment insurance, monetary policy, and fiscal policy respond to an increase in unemployment during a recession?

Fall ECON1255 S01 17678 Th 4:00-5:30 (P. Michailait)

**ECON 1301. Economics of Education I.**
This course teaches students how to use microeconomics to analyze a broad array of education policy issues. The departure of this course from ECON 1110 is the emphasis on studying microeconomics in applied settings, and in particular, using microeconomic concepts to think about, analyze, and solve policy questions in education.

**ECON 1305. Economics of Education: Research.**
This course will cover academic research in the Economics of Education. Topics include production of student achievement, measuring student achievement, funding of public education, and school choice and school vouchers.

Fall ECON1305 S01 17397 W 3:00-5:30 (J. Hastings)

**ECON 1310. Labor Economics.**
Labor supply, human capital, income inequality, discrimination, immigration, unemployment.

Fall ECON1310 S01 16280 TTh 1:00-2:20(08) (K. Chay)

**ECON 1330. Environmental Economics and Policy.**
This course equips students with theoretical and empirical tools to analyze environmental issues from the perspective of economics. First, we review when and why the markets fail, competing policy solutions (e.g., cap-and-trade), and cost-benefit analysis. Second, we survey methods to quantitatively estimate the benefits of environmental regulations, including revealed and stated preference methods, a primer on climate-economic modeling, and a real-world application in a class research project. Third, we study the costs of environmental regulations. We conclude with advanced policy considerations (e.g., trans-boundary pollutants), private market solutions/corporate social responsibility, and select special topics (e.g., resources and economic development).

**ECON 1430. The Economics of Social Policy.**
This course will cover research topics in the economics of social policy. The course will focus on understanding the context for key social policies in health, education, social welfare and other areas as well as understanding the methods that economists use to generate causal impacts of these policies.

**ECON 1440. The Economic Analysis of Political Behavior.**
Slow economic growth, controversial policy, and over a decade of continuous war have led many to question the extent to which government is a force for the common good. Blame is often assigned to specific politicians or ideological perspectives. Public choice economics instead analyzes the incentive structure within which political decisions take place, seeking to uncover the forces guiding the behavior of voters, legislators, judges, and other political agents. This course will examine the insights
and limitations of the public choice perspective in the context of electoral politics, legislation, bureaucracy and regulation, and constitutional rules.

Positive and normative study of the organizations that comprise and the institutional structures that characterize a modern mixed market economy. Theoretical efficiency and potential limitations of private enterprises and markets including (a) why some market actors are organizations (e.g., companies), (b) effort elicits in problems in organizations, (c) the problem of cooperation in traditional versus behavioral economics, and (d) alternative kinds of organization (including proprietorships, corporations, nonprofits, government agencies). Roles of government, and problems of government failure, including the collective action problem of democracy. State-market balance and contemporary controversies over the economic system in light of the 2008 financial crisis.

Fall ECON1450 S01 17613 MWF 3:00-5:30 (D. D’Amico)

ECON 1460. Industrial Organization (Mathematical).
A study of industry structure and firm conduct and its economic/antitrust implications. Theoretical and empirical examinations of strategic firm interactions in oligopolistic markets, dominant firm behaviors, and entry deterrence by incumbents. Also economics of innovation: research and development activities and government patent policies.

Fall ECON1460 S01 17491 MWF 10:30-11:50(15) (L. Putterman)

Bargaining theory is emerging as an important area within the general rubric of game theory. Emphasis is on providing a relatively elementary version of the theory in order to make it accessible to a large number of students. Covers introductory concepts in game theory, strategic and axiomatic theories of bargaining and their connections, applications to competitive markets, strikes, etc.

Fall ECON1470 S01 16183 TTh 10:30-11:50(13) (J. Fanning)

ECON 1510. Economic Development.
This course is an introduction to development economics and related policy questions. It discusses the measurement of poverty and inequality; growth; population change; health and education; resource allocation and gender; land and agriculture; and credit, insurance, and savings. The course provides a theoretical framework for the economic analysis of specific problems associated with developing economies, and introduces empirical methods used to evaluate policies aimed at solving these problems. By the end of the class, students will be able to discuss some of the “hot topics” in development, like microfinance, family planning, or the problem of “missing women” in South-East Asia.

Fall ECON1510 S01 16184 MWF 12:00-12:50(15) (A. Weisbrod)

ECON 1530. Health, Hunger and the Household in Developing Countries.
Microeconomic analysis of household behavior in low income societies emphasizing the economic determinants of health and nutrition and the evaluation of policy. The relationship among health, nutrition, fertility, savings, schooling, labor productivity, wage determination, and gender-based inequality. Emphasizes theoretically-based empirical research.

Fall ECON1530 S01 16279 M 3:00-5:30 (A. Foster)

ECON 1540. International Trade.

Fall ECON1540 S01 16479 M 3:00-5:30 (J. Blaum)

ECON 1560. Economic Growth.
A theoretical and empirical examination of economic growth and income differences among countries. Focuses on both the historical experience of countries that are currently rich and the process of catch-up among poor countries. Topics include population growth, accumulation of physical and human capital, technological change, natural resources, income distribution, geography, government, and culture.

Fall ECON1560 S01 17482 TTh 2:30-3:50(12) (D. Well)

ECON 1570. The Economics of Latin Americans.
This course introduces students to the economic study of Latin Americans (both in the US and abroad). Topics include the determinants of economic development, institutions and growth, imperialism, conflict, immigration and discrimination.

Fall ECON1570 S01 16971 TTh 9:00-10:20(02) (P. Dal Bo)

ECON 1590. The Economy of China since 1949.
This course examines the organization, structure, and performance of the economy of China. Emphasis is placed on the changing economic system including the roles of planning and markets and government economic strategy and policies. The pre-reform period (1949-78) receives attention especially as it influences developments in the market-oriented reform period since 1978. Topics include rural and urban development, industrialization and structural change, rural-urban migration, income inequality and growth, the role of international trade and investment. Both analytical and descriptive methods are used.

Fall ECON1590 S01 16217 TTh 9:00-10:20(02) (B. Knight)

ECON 1620. Introduction to Econometrics.

Fall ECON1620 S01 16225 TTh 10:30-11:50(13) (N. Thakral)

ECON 1630. Mathematical Econometrics I.
Advanced introduction to econometrics with applications in finance and economics. How to formulate and test economic questions of interest. The multivariate linear regression model is treated in detail, including tests of the model's underlying assumptions. Other topics include: asymptotic analysis, instrumental variable estimation, and likelihood analysis. Convergence concepts and matrix algebra are used extensively.

Fall ECON1630 S01 16225 TTh 10:30-11:50(13) (A. Norets)

ECON 1660. Big Data.
The spread of information technology has lead to the generation of vast amounts of data on human behavior. This course explores ways to use this data to better understand the societies in which we live. The course weaves together methods from machine learning (OLS, LASSO, trees) and economics (reduced form causal inference, economic theory, structural modeling) to answer real world questions in a sequence of projects. We will use these projects as a backdrop to weigh the importance of causality, precision, and computational efficiency. Knowledge of basic econometrics and programming is assumed.

Fall ECON1660 S02 17508 T 4:00-6:30 (D. Bjorkgren)

ECON 1710. Investments I.
The function and operation of asset markets; the determinants of the prices of stocks, bonds, options, and futures; the relationships between risk, return, and investment management; the capital asset pricing model, normative portfolio management, and market efficiency.

Fall ECON1710 S01 16233 MWF 11:00-11:50(16) (S. Kuo)
Fall ECON1710 S02 16234 MWF 1:00-1:50(06) (S. Kuo)

ECON 1720. Corporate Finance.
a study of theories of decision-making within corporations, with empirical evidence as background. Topics include capital budgeting, risk, securities issuance, capital structure, dividend policy, compensation policy, mergers and acquisitions, leveraged buyouts and corporate restructuring.

Fall ECON1720 S01 16235 MWF 9:00-9:50(01) (B. Gibbs)

ECON 1730. Venture Capital, Private Equity, and Entrepreneurship.
This course will use a combination of lectures and case discussions to prepare students to make decisions, both as entrepreneurs and venture
ECON 1750. Investments II.
Individual securities: forwards, futures, options and basic derivatives, pricing conditions. Financial markets: main empirical features, equity premium and risk-free rate puzzles, consumption based asset pricing models, stock market participation, international diversification, and topics in behavioral finance.

ECON 1760. Financial Institutions.
This course analyzes the role of financial institutions in allocating resources, managing risk, and exerting corporate governance over firms. After studying interest rate determination, the risk and term structure of interest rates, derivatives, and the role of central banks, it takes an international perspective in examining the emergence, operation, and regulation of financial institutions, especially banks.

ECON 1780. Advanced Topics in Corporate Finance.
This advanced, case-based seminar is focused on delving deeply into several key pillars of corporate finance: valuation, financing, cash management, and, importantly, business ethics. We will build upon concepts presented in earlier finance courses, in particular, ECON 1710 and ECON 1720, and will use MBA-level cases to explore in much greater detail several concepts introduced in these classes. This course is rigorous - we will be analyzing at least one case each week and qualitative and quantitative case write-ups will be required throughout the semester, as well as a comprehensive final project. We will have guest speakers throughout the semester.

ECON 1805. Experimental Economics.
There is a growing literature on experimental economics, which sheds light on whether the predictions of economic theory materialize in controlled, laboratory settings. We will start by studying the methodology of experimental economics. We then examine a range of classic and more recent topics that have been taken to the laboratory. Topics of interest will include fairness, bargaining, behavior in games and the impact of repeated interactions, rationality of decision-making, and the impact of communication, among others.

ECON 1820. Theory of Behavioral Economics.
This course provides a formal introduction to behavioral economics, focusing mostly on individual decision making. For different choice domains, we start by analyzing the behavior implied by benchmark models used by economists (e.g. rational choice, expected utility, exponential discounting). Experimental and empirical evidence is then used to highlight some limitations of these models, and to motivate new models that have been introduced to account for these violations. We will cover, for instance, models of limited attention, non-expected utility, and hyperbolic discounting.

ECON 1850. Theory of Economic Growth.
Analysis of the fundamental elements that determine economic growth. It examines the role of technological progress, population growth, income inequality, and government policy in the determination of (a) the pattern of economic development within a country, and (b) sustainable differences in per capita income and growth rates across countries.

ECON 1870. Game Theory and Applications to Economics.

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Techniques of mathematical analysis useful in economic theory and econometrics. Linear algebra, constrained maximization, difference and differential equations, calculus of variations.

This course introduces students to basic concepts in software engineering and scientific computing as preparation for conducting frontier research in all fields of economics. Topics in software engineering will include version control, automation, abstraction, parallel processing, and object-oriented programming. Topics in scientific computing and numerical methods will include programming basics, floating-point arithmetic, numerical differentiation and integration, equation-solving, and numerical optimization. Coding will be in Python and applications will focus on topics likely to arise in economics research. Key concepts will be introduced in interactive lectures and reinforced in in-class group work and at-home assignments.

ECON 2030. Introduction to Econometrics I.
The probabilistic and statistical inference of functions in econometrics.

ECON 2040. Econometric Methods.
Applications of mathematical statistics in economics. The nature of economic observations, cross-section and time series analysis, the analysis of variance and regression analysis, problems of estimation.

ECON 2050. Microeconomics I.
Decision theory: consumer's and producer's theory; general competitive equilibrium and welfare economics: the Arrow-Debreu-McKenzie model; social choice and implementation.

ECON 2060. Microeconomics II.
Economics of imperfect information: expected utility, risk and risk aversion, optimization under uncertainty, moral hazard, and self-selection problems. Economics of imperfect competition: monopoly; price discrimination; monopolistic competition; market structure in single shot, repeated and stage games; and vertical differentiation.

ECON 2070. Macroeconomics I.
Consumption and saving, under both certainty and uncertainty; theory of economic growth; real business cycles; investment; and asset pricing.

ECON 2080. Macroeconomics II.
Money, inflation, economic fluctuations and nominal rigidities, monetary and fiscal policy, investment, unemployment, and search and coordination failure.

ECON 2180. Game Theory.

ECON 2200. Political Economy I.
This first course in political economy provides theoretical and empirical coverage of the application of economic analysis to political behavior and institutions. This course is designed for students wishing to specialize in political economy but may also be useful for students specializing in related areas, such as development economics and macroeconomics. After starting with a basic overview of candidates and voters, we then turn to specific topics in the areas of electoral systems, legislatures and legislative bargaining, the role of the media, local public finance, and fiscal federalism.

ECON 2270. Political Economy II.
This is the second course in the political economy sequence. It continues the theoretical and empirical coverage of the economic analysis to political behavior and institutions. This course is designed for students wishing to
specialize in political economy. A variety of topics will be covered paying special attention to the formation of skills necessary to become a producer of research and moving away from being just a consumer.

**ECON 2310. Labor Economics.**
This course teaches core topics in labor economics including labor supply, labor demand, simple search models, and a series of additional selected topics. The primary focus will be on linking theoretical models to tests in the empirical literature. We will typically cover papers and topics in detail, rather than survey the literature. When required, we also cover tools in applied econometrics.

| Fall ECON2310 S01 17511 F 9:00-11:20(14) | (M. Pecenco) |

**ECON 2330. Topics in Labor Economics.**
The course introduces students to procedures used to extract evidence from data and to perform rigorous causal inference in order to evaluate public policy on issues such as schooling, the return to education and returns on late intervention programs. Econometric methods, such as Instrumental Variable, Matching, Control Functions, Self Selection Models and Discrete Choice as well as Panel Data Methods, are discussed in detail.

**ECON 2360. Economics of Health and Population.**
This course is designed to do the following three things: 1) build on your knowledge of the methodological problems and approaches in applied microeconomics with applications from the health economics literature; 2) survey the major topics in Health Economics, and 3) better prepare you to write an empirical microeconomics thesis. By the end of this course you should understand how to draw credible inference using non-experimental data and be able to contribute to public policy debates regarding health and medical care in the US.

**ECON 2450. Exchange Scholar Program.**

| Fall ECON2450 S01 15468 Arranged To Be Arranged | Fall ECON2450 S02 15469 Arranged To Be Arranged |

**ECON 2470. Industrial Organization.**
The focus of this course will be on empirical models for understanding the interactions between firms and consumers in imperfectly competitive markets. Lectures and problem sets will teach canonical models and methods; class discussion will focus on applications of these methods, especially applications outside of traditional areas of industrial organization. Students who take this class will be prepared to conduct research in industrial organization or to "export" methods from industrial organization to other areas of applied microeconomics.

| Fall ECON2470 S01 16505 T 1:00-3:20(08) | (J. Shapiro) |

**ECON 2480. Public Economics.**
Theoretical and empirical analysis of the role of government in private economies. Topics include welfare economics, public goods, externalities, income redistribution, tax revenues, public choice, and fiscal federalism.

**ECON 2485. Public Economics I.**
This course covers core issues in the design of optimal government policies, and the empirical analysis of those policies in the world. In addition, this course will familiarize students with the basic empirical methods and theoretical models in applied microeconomics. Emphasis is placed on connecting theory to data to inform economic policy. Specific topics include efficiency costs and incidence of taxation, income and corporate taxation, optimal tax theory, tax expenditures and tax-based transfer programs, welfare analysis in behavioral models, and social security and retirement policy.

| Fall ECON2485 S01 16916 TTh 9:00-10:20(02) | (J. Friedman) |

**ECON 2510. Economic Development I.**
This course covers issues related to labor, land, and natural resource markets in developing countries, in partial and general equilibrium settings. Topics covered include: The agricultural household model, under complete and incomplete market assumptions; household and individual labor supply, migration, self-employment, and the informal sector; rental market frictions and sharecropping arrangements; and environmental externalities (e.g., pollution, water usage, etc.), and sustainable development.

**ECON 2520. Economic Development II.**
This course deals with the economic analysis of institutions, with a particular focus on community-based institutions in developing countries.

Institutions covered in this course includes cooperatives, ROSCAS, networks, marriage and the family.

**ECON 2530. Behavioral and Experimental Economics.**
An introduction to the methodology of experimental economics with an emphasis on experiments designed to illuminate problems in organizational design and emergence of institutions, and experiments investigating the operation of social and social-psychological elements of preference such as altruism, inequality aversion, reciprocity, trust, concern for relative standing, envy, and willingness to punish norm violators. Experiments studied will include ones based on the prisoners' dilemma, dictator game, ultimatum game, and especially the voluntary contribution mechanism (public goods game) and the trust game. Junior and seniors in the APMA-Economics, Math-Economics and CS-Economics may enroll with instructor's permission.

**ECON 2600. Bayesian and Structural Econometrics.**
This course will cover a number of topics in Bayesian econometrics and estimation of structural dynamic discrete choice models. The Bayesian econometrics part of the course will start with introductory textbook material (Geweke, 2005, Contemporary Bayesian Econometrics and Statistics, denoted by G). A list of 11 topics with corresponding readings is given below. Topics 1-5 will be covered. If time permits, a subset of topics 6-11 determined by interests of the course participants will be covered as well. Readings marked with asterisk * are not required.

**ECON 2630. Econometric Theory.**
Standard and generalized linear models, simultaneous equations, maximum likelihood, Bayesian inference, panel data, nonlinear models, asymptotic theory, discrete choice, and limited dependent variable models.

**ECON 2640. Microeconomic Slack.**
This course will cover research topics related to macroeconomic slack, both on the labor market (unemployment) and on the product market (idleness). It will address the following questions: Why does slack exist at the macroeconomic level? Why does slack vary over time? And how is this related to price flexibility or rigidity? What is the socially optimal level of slack? How should monetary policy respond to fluctuations in slack over the business cycle? How should fiscal policy respond to fluctuations in slack over the business cycle? What happens to slack at the zero lower bound?

| Fall ECON2640 S01 17396 M 3:00-5:30 | (S. Schennach) |

**ECON 2680. Comparative Development.**
This course will explore the origins of the vast inequality in income per capita across countries, regions and ethnic groups. It will analyze the determinants of growth over the course of human history and will examine the role of deeply-rooted geographical, institutional, cultural, and genetic factors in the observed pattern of uneven development across the globe.

**ECON 2840. Empirical Analysis of Economic Growth.**
Examines economic growth, focusing on the effects of technological change, fertility, income inequality, and government policy. ECON 2830 is strongly recommended.

| Fall ECON2840 S01 17483 M 10:30-11:50(16) | (D. Weil) |

**ECON 2860. Comparative Development.**
Weighing the shadow of history on contemporary economic performance occupies an increasing part of the agenda among growth and development economists. This course will focus on recent contributions in the literature of the historical determinants of comparative development paying particular attention on how to integrate the use of Geographic Information Systems (GIS) in the research inquiry. The goal is to get you thinking about the big historical processes that have shaped the modern world. We will go over background concepts, critically review recent works and talk about new research designs, like that of spatial regression discontinuity.
ECON 2890C. Topics in Macro and Monetary Economics.
This is a graduate class that covers selected topics at the intersection of macroeconomics and monetary economics, for students in the second year of the PhD and above. The leading theme of the class is the current economic crisis and how it can be modeled. The syllabus is evolving.

ECON 2890D. Topics in Macroeconomics, Development and Trade.
This is a graduate class that covers selected topics at the intersection of macroeconomics, economic development and trade, for students in the second year of the PhD and above. The leading theme of the class is the determinants of the observed cross-country differences in income per capita and growth rates, with a focus on the long run. We start by reviewing theories where factor markets function perfectly and only aggregates matter. We then move to non-aggregative theories, placing special emphasis on theories of financial frictions. We spend some time studying the stochastic growth model with partially uninsurable idiosyncratic risk.

Fall ECON2890D S01 17024 MW 1:00-2:20(06) (J. Blaum)

ECON 2980. Reading and Research.
Individual research projects. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ECON 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full-time basis.

Fall ECON2990 S01 15470 Arranged "To Be Arranged"

Education
This course examines the purpose, structure, and challenges of the American educational system as well as the experiences of the diverse learners and teachers within the system. It also explores how educational institutions have served to create social mobility and opportunity, but also to perpetuate inequality across race, class, gender, and other axes of difference. The course requires no prior knowledge.

Fall EDUC0300 S01 16014 MWF 11:00-11:50(16) (A. Flores)

EDUC 0410A. New Faces, New Challenges: Immigrant Students in U.S. Schools.
What challenges do immigrant students face in adapting to a new system of education? By comparing and contrasting the perspectives education stakeholders--students, teachers, administrators, and parents--this course examines a number of key contributions to the study of the immigrant experience in education, as well as a selection of memoirs and films about the pathways these newcomers take in navigating school and transforming their developing identities. Enrollment limited to 19 first year students.

EDUC 0750. Evidence and Method in Education Research.
Understanding evidence is critical to engaging as citizens and leaders the 21st century. This is particularly true in education research, policy, and practice. Recent years have seen an explosion of empirical education research, requirements that policies be evidence-based, and rapid expansion of the use of evidence in school settings. This course will introduce students to a range of methods used to generate evidence in education. It is a required course in the Education concentration.

EDUC 0800. Introduction to Human Development and Education.
Introduces students to the study of human development and education from infancy through young adulthood. This course provides a broad overview of scientific and theoretical understanding of how children develop and how research is generated in the field. Major topics include biological foundations, cognition, language, emotion, social skills, and moral understanding based on developmental theories and empirical research. We will attend to variations in cultural, ethnic, gender, socioeconomic, and other forms of human diversity in social contexts (e.g., family and schools) and how the person-context fit may influence children’s developmental trajectories. The course also covers educational contexts, processes, and outcomes.

Fall EDUC0800 S01 16012 MWF 10:00-10:50(14) (J. Li)

EDUC 1010. The Craft of Teaching.
What is the “craft of teaching”? A wide variety of texts are used to investigate the complexity of teaching and learning. Considering current problems as well as reform initiatives, we examine teaching and learning in America from the perspectives of history, public policy, critical theory, sociology, and the arts. Weekly journals and reading critiques; final portfolio presented to the class.

Fall EDUC1010 S01 16018 Th 2:30-3:50(12) (I. Gil)

EDUC 1045. Sociology of Higher Education.
American higher education has often been characterized as the great equalizer and, thus, as one of the foundational pillars of the American Dream. In this course students will develop a sociological understanding of higher education, primarily in the United States. Using both theory and empirical evidence, we will explore issues relating to the impact of social factors on higher education. Particular attention will be paid to the role that higher education plays in promoting social mobility as well as social reproduction. Throughout we will ponder what policies might best fulfill the promise of higher education in the U.S.

Fall EDUC1045 S01 16010 MWF 9:00-9:50(01) (D. Rangel)

EDUC 1060. Politics and Public Education.
Who exercises power in public education? This course examines the key institutions (e.g. school districts, states, Congress, and the courts) and actors (e.g. parents, teachers, interest groups, and the general public) shaping American K-12 education in order to understand recent policy trends and their consequences for students. Major policies discussed include school finance, textbook adoption, school accountability, and school choice. Particular attention is given to the federal No Child Left Behind Act of 2001 and debates over its reauthorization. Previous coursework in American politics or public policy is suggested but not required.

Fall EDUC1060 S01 16016 Th 1:00-2:20(08) (C. Thomas)

EDUC 1090. Adolescent Literature.
What are teens and tweens reading? What should they read? Do books that adults view as “trashy” ruin kids’ literary sensibilities? Provide access to the wider world of academic discourse? How can reading adolescent literature provide adolescents with a path toward holding a reader identity?

This course will present a general overview of the historical, socio-cultural, academic, and political issues that provide context for the availability of adolescent literature today. It presents a strong introduction to contemporary texts that interest adolescents inside and outside of the classroom. Particular attention is paid to issues of reading engagement for aspiring adolescent readers, issues of access to literacy through adolescent literature, ways that adolescent literature can be paired with the classics, and issues of censorship in American public school classrooms and public libraries. Students in this course will walk away with an understanding of the challenges of adolescent literature in today’s debates and the background in choosing, reading, and analyzing the literature itself. Written assignments include weekly reading responses, an annotated bibliography, and a short, 3-5 page paper. There is a substantial amount of independent self-selected reading as well as one collaborative group project with a presentation.

Fall EDUC1090 S02 17753 Th 4:00-6:30 (L. Snyder)

This course provides an introduction to applied statistics for conducting quantitative research in the social sciences, with a focus on education policy. Students will become acquainted with the fundamentals of probability, descriptive and summary statistics, tabular and graphical methods for displaying data, statistical inference, analytic methods for exploring relationships with both categorical and continuous measures, and multivariate regression. Concepts and methods are taught using real-world examples with multiple opportunities for students to apply these methods in practice. The course uses the statistical software program, STATA.

Fall EDUC1110 S01 17532 Th 2:30-3:50(12) (P. De Gabbert)

EDUC 1130. Economics of Education I.
How do we attract good teachers to public schools? What are the economic returns to early-childhood intervention programs? These are
EDUC 1215. Race Making and the US University
In his groundbreaking book “Ebony and Ivy” author Craig Steven Wilder takes a historical approach to uncover the intricate relationship between slavery, race, and the founding of the earliest universities in the US. Knowing that the foundations of many universities in the US are rooted in ties to the TransAtlantic slave trade and/or land dispossession from Indigenous People, we cannot be surprised when the remnants of this racist past show up in the present day within the walls of colleges and universities. Fall EDUC1215 S01 18304 TTh 9:00-10:20(02) (N. Truesdell)

Teachers are critical for transforming schools and changing trajectories of students’ lives; our experiences as students and research underscores their importance in changing students’ academic trajectories. We tend to think of teachers as doing their work alone, but they are part of a greater education ecosystem. In this course, we will examine the constraints - those imposed by principals, district policy, and state and federal law - under which teachers work. What can policy makers consider as they work to improve the experience students have in the classroom, especially as we ensure that our most vulnerable students have the most effective teachers?

Fall EDUC1225 S01 17828 TTh 10:30-11:50(13) (E. Qazilbash)

Both an individual and a collective perspective on adolescence are used to provide an understanding of how this life stage is differently experienced by youth cross-culturally. Readings include theoretical and empirical papers from such areas as psychology, sociology, anthropology, and education.

Fall EDUC1270 S01 17755 MWF 1:00-1:50(06) (A. Flores)

EDUC 1380. Language and Education Policy in Multilingual Contexts.
Children who are assessed in a language different from that spoken at home demonstrate lower learning outcomes than their peers. This course explores how multilingual countries and communities design and implement language policies, and the major factors at play when increasing the number of languages used in a school system, via three main learning objectives: develop foundational concepts related to language in education policies, apply them critically to specific contexts, and develop research and writing skills necessary for policy and practice work. Students will explore systems around the world, with attention to the policy cycle from design to implementation.

EDUC 1430. Social Psychology of Race, Class, and Gender.
Focuses on the social construction of race, class, and gender and how this construction influences an individual's perception of self and other individuals. Topics include identity development, achievement, motivation, and sociopolitical development. Enrollment limited to 30.

EDUC 1650. Policy Implementation in Education.
This course provides an “analytical foundation” for students interested in public policy implementation, with particular emphasis on education. Drawing on social science research, the course examines strengths and limitations of several frameworks, including the “policy typology” school of thought, the rational actor paradigm, the institutional analysis, the bargain model, the organizational-bureaucratic model, and the “consumer choice” perspective. Enrollment limited to 20.

Fall EDUC1650 S01 17504 W 3:00-5:30 (J. Collins)

EDUC 1900. Senior Seminar.
Required of and reserved for seniors of the Education Studies Concentration as a culminating experience of your Concentration. Our foundational and methodological courses introduced you to the basic themes and research in the field, and upper-level courses typically focused on particular topics in greater depth. Your decision to be an Education Studies concentrator was likely related to one or more of the central themes of the field of education (e.g., human development, education policy and history, culture, race/ethnicity, gender, social justice, etc.). We hope to build on these learning experiences, broadening and deepening your learning across different areas of education.

Fall EDUC1900 S01 16019 MWF 2:00-2:50(10) (J. Li)

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EDUC 1990. Independent Reading and Research.
Supervised reading and/or research for education concentrators who are preparing an honors thesis. Written permission from the honors advisor required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Supervised reading and/or research for education concentrators who are preparing an honors thesis. Written permission from the honors advisor required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EDUC 2360. Policy Analysis and Program Evaluation for Education.
Formal education policymaking requires reliable information about the causal effects of government programs and other factors shaping educational outcomes. This course offers an overview of education policy analysis with an emphasis on econometric strategies for measuring program impacts. It aims to make students critical consumers of policy evaluations and to equip them with tools to conduct their own research. Topics covered include the political context for policy research, social experiments, alternative strategies for making causal inferences, and cost-benefit analysis. Prerequisites: EDUC 1110, POLS 1600, SOC 1100, or written permission of the instructor.

Fall EDUC2360 S01 15858 TTh 4:00-5:20 (M. Kraft)

EDUC 2367. Strategic Management of School Organizations.
This course will develop a range of professional, leadership, and management skills, build knowledge and understanding about how organizations work, and offer a place for critical reflection about the internship experience. It will employ case studies of organizations and reforms and draw from the experience of practitioners from the field.

Fall EDUC2367 S01 17604 W 3:00-5:30 (E. Qazilbash)

EDUC 2380. UEP Internship Seminar.
Students in the Urban Education Policy master's program participate in year-long internships in organizations that focus on urban education policy. Each student works with his or her site supervisor to develop a job description for the internship that allows the student to learn from and contribute to the work of the host organization. This corresponding seminar will explore identity in leadership and study what leadership practices, skills, competencies and dispositions are required to succeed at social change work, both at the internship site and in educational organizations where students may work in after Brown.

EDUC 2385. Education Inequality and Community Assets: Contexts and Change.
Designed for graduate students in the Urban Education Policy A.M. and the Master of Arts in Teaching programs, this course focuses on understanding the dynamic social, cultural, and community conditions shaping America’s diverse classrooms. We do so through reading and engaging in anthropolological and sociological scholarship on issues like immigrant students, hidden scripts of gender and sexuality in secondary schools, social class and tracking, and ethno-racial discrepancies in discipline. By reading works focused on close observation of students, teachers, and families, students will learn to identify, describe, and evaluate how socio-cultural and socio-economic factors impact learning, student outcomes, and teaching.

Fall EDUC2385 S01 15857 M 3:00-5:30 (C. Thomas)

EDUC 2450. Exchange Scholar Program.

EDUC 2515. Learning Theory and Special Populations.
This course will provide MAT students with an understanding of factors and responsibilities as you work collaboratively with students, professionals, and parents to establish appropriate educational supports student success and achievement. We will explore the various categories of human exceptionality and their variations; review the main laws and policies that inform your work with exceptional students; study
Individualized Education Programs and 504 plans and their implications for instruction; study the Universal Design for Learning (UDL) framework for differentiation; discuss different models for collaborations with school professionals and parents; and access research and resources that support your work with these students.

Fall EDUC2515 S01 15946  W  3:00-5:30 (J. Paella)

EDUC 2520A. Educational Theory and Practice in Teaching English II. This course is designed to accompany MAT students' one-semester fall practicum teaching placement. This field-based course uses the Rhode Island Professional Teaching Standards and the aligned rubric of Danielson's Framework for Teaching as a guiding standard as well as a central assessment mechanism. ETP II integrates theory and practice with standards-based instruction for the culturally relevant classroom. Students will bring their experiences and questions about teaching and learning directly from teaching and/or observations at field sites so the class can address those questions using discussion, research and inquiry. Artifacts of instruction, practice, and assessment will be examined and analyzed.

Fall EDUC2520S01 15941 Th 1:00-2:20(08) (L. Snyder)

EDUC 2520B. Educational Theory and Practice in Teaching Social Studies II. This course provides opportunities for social studies MAT students to meet the Rhode Island Professional Teacher Standards (RIPTS) and the National Council of the Social Studies Preservice teacher standards. In this particular semester, the objectives are to be able to develop standards-based lesson plans and activities for your students that are culturally responsive in social studies based on your knowledge of students and how they learn; use an evaluation framework to distinguish curriculum quality; and successfully revise curriculum as necessary in order to align with the RI GSEs and meet the needs of your students in a culturally responsive way.

Fall EDUC2520ES01 15943 Th 1:00-2:20(08) (J. Paella)

EDUC 2520C. Educational Theory and Practice for Science II. This course provides opportunities for science MATs to meet the Rhode Island Professional Teacher Standards (RIPTS) and the National Science Teacher Association Preservice science teacher standards. In this particular semester, the objectives are to be able to develop standards-based lesson plans and activities for your students that are culturally responsive in science based on your knowledge of students and how they learn; use an evaluation framework to distinguish curriculum quality; and successfully revise curriculum as necessary in order to meet the needs of your students in a culturally responsive way.

Fall EDUC2520C01 15944 Th 1:00-2:20(08) (D. Silva Pimentel)

EDUC 2520D. Educational Theory and Practice in Teaching Mathematics II. This course is designed to provide a space for math MAT candidates in their fall placement to develop their pedagogical content knowledge of culturally responsive teaching as it pertains specifically to teaching mathematics in middle and high school levels. Continuing from our summer work, this course delves more deeply into thinking about what it means to be culturally responsive in particular aspects of curriculum and instruction.

Fall EDUC2520ES01 15945 Th 1:00-2:20(08) (I. Gil)

EDUC 2525. Instructional Design, Planning, and Integrating Technology. In this course, students enrolled in the MAT program will build on the knowledge of instructional design that they developed in the summer. MAT candidates will delve more deeply into the Universal by Design (UbD) design process and consider its relationship to the Sheltered Instruction Observation Protocol (SIOP) Model. Additionally, students will work with the Technology, Pedagogy and Content Knowledge (TPACK) Model which will support their ability to deliberately integrate developmentally appropriate technology into their plans in order to positively impact student learning.

Fall EDUC2525 S01 15940 T 1:00-2:20(08) (L. Snyder)

EDUC 2530A. Educational Theory and Practice III: English. This course is designed to accompany the English MAT spring semester student teaching placement, with an aim to connect research with an experience, workshop, or record of practice to help students understand, implement, question and revise the practice in their own classrooms. Particular areas of focus include independent teaching in the linguistically and culturally diverse high school English classroom; practices for setting up the heterogeneous high school English classroom; classroom management; diagnostic assessment of student learning; understanding your position as a teacher and the context of your school; creating a professional learning community; and methods of teaching English with technology.

EDUC 2530B. Educational Theory and Practice in Teaching Social Studies III. This course is a continuation of Educational Theory and Practice 1 and 2, designed to provide a space for social studies MAT candidates in their spring student teaching placement to develop their pedagogical content knowledge of culturally responsive teaching as it pertains specifically to teaching social studies in middle and high school levels. Building on the work we did in the summer and the fall, this course delves more deeply into thinking about what it means to be culturally responsive in particular aspects of curriculum and instruction.

EDUC 2530C. Educational Theory and Practice in Teaching Science III. This course is a continuation of Educational Theory and Practice 1 and 2. It is designed to provide a space for candidates in their spring student teaching placement to develop their pedagogical content knowledge of culturally responsive teaching as it pertains specifically to teaching science in middle and high school levels. Continuing from the work done in the summer and the fall, this course delves more deeply into thinking about what it means to be culturally responsive in developing science assessments and in approaching discourse, modeling and mathematical representations.

EDUC 2530D. Educational Theory and Practice in Teaching Mathematics III. This course is a continuation of Educational Theory and Practice 1 and 2. It is designed to provide a space for math MAT candidates in their spring student teaching placement to develop their pedagogical content knowledge of culturally responsive teaching as it pertains specifically to teaching mathematics in middle and high school levels. Continuing from the work we did in the summer and the fall, this course delves more deeply into thinking about what it means to be culturally responsive in curriculum and instruction, particularly in approaches to discourse, assessment, and interdisciplinary connections.

EDUC 2535. Teaching Literacy and Language to Emerging Bilinguals Across the Disciplines I. This half of a year-long course prepares preservice teachers in the MAT program to teach emerging bilingual students/English learners through sheltered instruction in the mainstream classroom and meet students' linguistic, academic, and socio-emotional needs. New teachers must learn how to understand and include the experiences of linguistically diverse and multilingual students in their teaching. Additionally, preservice teachers must learn the nature of language acquisition and how specialized instruction can support this development. Through analysis of case studies, participants will also learn to plan and deliver high quality instruction that is differentiated to meet the needs of English learners.

Fall EDUC2535 S01 17113  W  3:30-5:30 "To Be Arranged"

EDUC 2545. Teaching Literacy and Language to Emerging Bilinguals Across the Disciplines II. This second half of a year-long course prepares preservice teachers in the MAT program to teach emerging bilingual students/English learners through sheltered instruction in the mainstream classroom and meet students' linguistic, academic, and socio-emotional needs. New teachers must learn how to understand and include the experiences of linguistically diverse and multilingual students in their teaching. Additionally, preservice teachers must learn the nature of language acquisition and how specialized instruction can support this development. Through analysis of case studies, participants will also learn to plan and deliver high quality instruction that is differentiated to meet the needs of English learners.
EDUC 2555. Assessment and Using Data to Support Student Learning.
This course will provide a space for enrolled MAT degree candidates to learn theories related to assessment that are closely tied to their student teaching practical experience and also establish effective ways to measure their impact on student learning. The course will prepare students to explain concepts related to assessment; design formative and summative assessment systems through the UDL Framework; analyze the results of assessment tasks/data and utilize them to inform instructional decisions; and evaluate current and future trends in educational assessment.

EDUC 2565. Practicum and Seminar I.
This clinical experience and seminar, held off-campus at student teaching sites, provides the practical component of the MAT fall semester that will allow MAT students to merge theory and practice. The main goals for this semester are for practicum students to familiarize themselves with their school context, students and community; develop an understanding of how school context and learning about students inform planning curriculum; be aware of the policies and initiatives you are responsible for in the role of a teacher; form professional relationships with your colleagues, students, and families; and begin instructing in a co-teaching model.

EDUC 2575. Student Teaching and Seminar.
This off-campus student teaching clinical experience and seminar, held at student teaching sites, provides the practical component of MAT students' winter and spring semester that will allow students to merge theory and practice and gain proficiency in the domains outlined by the Framework for Teachers. This will be accomplished by taking on the full responsibilities of a teacher for selected secondary classes in your placement school with the guidance of your mentor teacher and your supervisor as well as attending meetings and other programs teachers are required to attend for your placement site.

EDUC 2980. Studies in Education.
Independent study; must be arranged in advance. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EDUC 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full-time basis.

EDUC XLIST. Courses of Interest to Concentrators in Egyptology and Assyriology.

EGYPT 1310. Introduction to Classical Hieroglyphic Egyptian Writing and Language (Middle Egyptian I).
Much of this two-semester sequence is spent learning the signs, vocabulary, and grammar of one of the oldest languages known. By the end of this introductory year, students read authentic texts of biographical, historical, and literary significance. The cornerstone course in the Department of Egyptology—essential for any serious work in this field and particularly recommended for students in archaeology, history, classics, and religious studies. No prerequisites.

EGYPT 1320. Selections from Middle Egyptian Hieroglyphic Texts.
Readings from the various genres of classical Egyptian literature, including stories and other literary texts, historical inscriptions, and religious compositions. Students will be expected to translate and discuss assigned texts. Prerequisite: EGYPT 1310, 1320.

EGYPT 1420. Ancient Egyptian Religion and Magic.
An overview of ancient Egyptian religion from both a synchronic and diachronic perspective. Examines such topics as the Egyptian pantheon, cosmology, cosmogony, religious anthropology, personal religion, magic, and funerary beliefs. Introduces the different genres of Egyptian religious texts in translation. Also treats the archaeological evidence which contributes to our understanding of Egyptian religion, including temple and tomb architecture and decoration. Midterm and final exams; one research paper.

EGYPT 1910. Senior Seminar.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EGYPT 1920. Senior Seminar.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.
EGYT 2300. Readings in Ancient Egyptian.
Advanced readings in ancient Egyptian texts in the original script and language. Readings will be selected from a particular genre, historical period, or site. This course is intended primarily for graduate students and may be repeated for credit. A reading knowledge of ancient Egyptian is required. A reading knowledge of both German and French is strongly recommended but not required.

EGYT 2410. Late Egyptian.
Introduction to the grammar of the third historical phase of ancient Egyptian and readings from its various genres, including literary texts, letters, historical inscriptions, and tomb-robbing papyri. Students will be expected to translate and discuss assigned texts. Prerequisites: EGYT 1310, 1320.
Fall EGYT2410 S01 17241 MWF 11:00-11:50(16) (L. Depuydt)

EGYT 2610. Introduction to Demotic.
Begins with discussions and exercises in the grammar and peculiar script of this late stage of the Egyptian language, followed by readings of actual ancient texts, including The Instructions of Onkhsheshonky, The Petition of Petiese, and The Story of Setne Khaemwas. Knowledge of Demotic remains essential for a proper understanding of Egypt during the Saite, Persian, Ptolemaic, and Roman periods. Open to undergraduates with consent of instructor. Prerequisites: EGYT 2410 or 2210.
Fall EGYT2610 S01 17242 MWF 1:00-1:50(06) (L. Depuydt)

EGYT 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall EGYT2970 S01 15472 Arranged 'To Be Arranged'

EGYT 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

EGYT 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall EGYT2990 S01 15473 Arranged 'To Be Arranged'

EGYT XLIST. Courses of Interest to Concentrators in Egyptology and Assyriology.

Engineering

This course will address the impact that technology has on society, the central role of technology on many political issues, and the need for all educated individuals to understand basic technology and reach an informed opinion on a particular topic of national or international interest. The course will begin with a brief history of technology.

ENGN 0030. Introduction to Engineering.
ENGN 0030 introduces students to the engineering profession and the important role engineers play in society. The course content begins with engineering design, followed by the analysis of static structures. Topics also include Computer Aided Design, basic Matlab programming, professional ethics, and social responsibility. Students complete group training modules and design projects in the Brown Design Workshop, led by an undergraduate mentor. ENGN 0030 provides the foundation for further study in engineering. It should be taken by students considering concentrating in engineering, interested in the entrepreneurship curriculum, and curious about engineering and design. Students should be enrolled in MATH 0100 or higher.
Fall ENGN0030 M01 16510 MWF 12:00-1:50 (K. Haberstroh)
Fall ENGN0030 S01 15853 T 12:00-1:20(08) (D. Pacifici)

ENGN 0032. Introduction to Engineering: Design.
This course is an introduction to the engineering profession with an emphasis on design. It is a project-based class which consists of three major design projects. Working in small groups, students leverage the design process and engineering discipline to present solutions to three design briefs. In weekly studio sessions, students will learn different tools associated with engineering and design. ENGN 0032 provides the foundation for further study in engineering. This class is designed for students who have a strong interest in design or are unsure of their interest in engineering. Students should also enroll in MATH 0100 or higher.
Fall ENGN0032 S01 17570 MWF 1:00-1:50(06) (M. Donohue)

ENGN 0040. Dynamics and Vibrations.
A broad introduction to Newtonian dynamics of particles and rigid bodies with applications to engineering design. Concepts include kinematics and dynamics of particles and rigid bodies; conservation laws; vibrations of single degree of freedom systems; and use of MATLAB to solve equations of motion and optimize engineering designs. Examples of applications are taken from all engineering disciplines. Lectures, recitation, and team design projects, including use of Brown Design Workshop. Prerequisite: ENGN 0030. Corequisite: MATH 0200 or MATH 0180.

ENGN 0120A. Crossing the Consumer Chasm by Design.
Technologies have shaped human life since tools were sticks and flints to today's hydrocarbon powered, silicon managed era. Some spread throughout society; bread, cell phones, airlines, but most never do; personal jet packs, Apple Newton, freeze dried ice cream.
Space Tourism, the Segway, electric cars: Can we predict which ones will cross the chasm to broad application? Can we help them to by combining design, engineering, marketing, communications, education, art, and business strategies?
Student teams identify potential new products, conceptualize, package, and define their business mode. By plotting their course across the chasm, we confront the cross-disciplinary barriers to realizing benefits from technology.
Enrollment limited to 18 first year students. Instructor permission required.

ENGN 0120B. Crossing the Space Chasm Through Engineering Design.
Five decades of human activity in space has provided the world community with benefits including instant global communications and positioning, human and robotic exploration of the moon, planets and sun, and a perspective of earth which continues to inform and influence our relationship with our environment.
Unlike other technical revolutions of the 20th century space has not transitioned to a commercial, consumer market commodity. Rather its users and applications remain primarily large and institutional.
To experience the challenges of engineering design and of changing an industrial paradigm, we will work in one or several groups to identify a use of space, and a plan for its implementation, that could help transition space from its status as a niche technology. Through the process of design, we will confront the technical, economic, societal and political barriers to obtaining increased benefits from technologies in general, and space in particular, and to making new technologies beneficial to a wider range of users. Enrollment limited to 18 first year students. Instructor permission required.

ENGN 0130. The Engineer's Burden: Why Changing the World is Difficult.
We will examine the assertion that most of the changes that have improved people's lives are essentially technological and then we will look at the difficulties in creating sustainable and beneficial change. Topics of interest include unintended consequences, failure to consider local culture, and engineering ethics. Many, but not all, of the examples will have a third world context. The engineering focus will be on infrastructure—housing, water and sanitation, transportation, and also mobile devices as used in health care and banking.
Fall ENGN0130 S01 16320 MWF 11:00-11:50(16) (B. Hazeltine)

Mechanical behavior of materials and analysis of stress and deformation in engineering structures and continuous media. Topics include concepts of stress and strain; the elastic, plastic, and time-dependent response of materials; principles of structural analysis and application to simple bar structures, beam theory, instability and buckling, torsion of shafts; general three-dimensional states of stress; Mohr's circle; stress concentrations. Lectures, recitations, and laboratory. Prerequisite: ENGN 0030.
Fall ENGN0310 S01 16285 MWF 9:00-9:50(01) (P. Guduru)
ENGN 0410. Materials Science.
Relationship between the structure of matter and its engineering properties. Topics: primary and secondary bonding; crystal structure; atomic transport in solids; defects in crystals; mechanical behavior of materials; phase diagrams and their utilization; heat treatment of metals and alloys; electrical and optical properties of materials; strengthening mechanisms in solids and relationships between microstructure and properties. Lectures, recitations, laboratory.
Fall ENGN0410 S01 16269 TTh 9:00-10:20(02) (E. Chason)
Fall ENGN0410 S01 16269 M 3:00-3:50(02) (E. Chason)

This course presents a broad introduction to environmental engineering, and will help students to explore environmental engineering as an academic major and as career option. The course covers topics in environmental engineering: chemistry fundamentals, mass balance, air pollution, water pollution, sustainable solid waste management and global atmospheric change. The course is essential for the environmental engineering students who are planning to take more advanced courses in environmental engineering. This course is also for the students in other engineering disciplines and sciences, who are interested in environmental constraints on technology development and practice, which have become increasingly important in many fields.
Fall ENGN0490 S01 16529 MWF 1:00-2:00(08) (K. Pennell)

ENGN 0510. Electricity and Magnetism.
Fundamental laws of electricity and magnetism and their role in engineering applications. Concepts of charge, current, potential, electric field, magnetic field, Resistance, capacitance, and inductance. Electric and magnetic properties of materials. Electromagnetic wave propagation. Lectures, recitation, and laboratory. Prerequisites: ENGN 0030 or PHYS 0070; ENGN 0040 or PHYS 0160 (previously 0080); MATH 0180 or 0200; and APMA 0330 or 0350 (may be taken concurrently).
Fall ENGN0510 S01 16521 MWF 10:00-10:50(14) (D. Mittelman)

ENGN 0520. Electrical Circuits and Signals.
An introduction to electrical circuits and signals. Emphasizes the analysis and design of systems described by ordinary linear differential equations. The frequency domain is introduced early and stressed throughout. Other topics include circuit theorems, power transfer, transient analysis, Fourier series, Laplace transform, a brief intro to diodes and transistors, and a little control theory. There is a lecture on engineering ethics. Laboratories apply concepts to real problems in audio and controls. Lectures, recitation, and laboratory. Prerequisite: MATH 0180 or MATH 0200, courses may be taken concurrent to ENGN 0520.

ENGN 0720. Thermodynamics.
An introduction to macroscopic thermodynamics and some of its engineering applications. Presents basic concepts related to equilibrium and the zeroth, first and second laws for both closed and open systems. Examples include analysis of engines, turbines, and other engineering applications. Concepts of charge, current, potential, electric field, magnetic field, Resistance, capacitance, and inductance. Electric and magnetic properties of materials. Electromagnetic wave propagation. Lectures, recitation, and laboratory. Prerequisites: ENGN 0030 or PHYS 0070; ENGN 0040 or PHYS 0160 (previously 0080); MATH 0180 or 0200; and APMA 0330 or 0350 (may be taken concurrently).
Fall ENGN0720 S01 16539 M 3:00-3:50(02) (A. Tripathi)

ENGN 0900. Managerial Decision Making.
Ways of making effective decisions in managerial situations, especially situations with a significant technological component; decision analysis; time value of money; competitive situations; forecasting; planning and scheduling; manufacturing strategy; corporate culture. Lectures and discussions. Prerequisite: ENGN 0090 or MATH 0100.

ENGN 0930A. Appropriate Technology.
Our goal for this course is that you leave it with the ability to think and act rationally and concretely on issues of technology and the human condition. We will provide background on useful technologies (e.g. wind, solar, hydro), techniques to fabricate them, and an opportunity to explore the obstacles to their implementation.

ENGN 0930C. DesignStudio.
DESIGNSTUDIO is a course open to students interested in learning through making. Working in a studio environment, we will iteratively design, build, and test projects, as we imaginatively frame design problems, and develop novel strategies for addressing those problems. We will explore design thinking, creative collaboration, exploratory play, ideation, iteration, woodworking, prototyping, CNC milling and laser cutting – in addition to other strategies that enhance our creative processes - as we establish a technical and conceptual foundation for the design and fabrication of objects and experiences. Enrollment limited to 16. Instructor permission required.

ENGN 0930L. Biomedical Engineering Design and Innovation.
This course is an incubator for innovative ideas in biomedical design. Students across all disciplines are invited to collaborate with biomedical engineers to enhance the development of design solutions that address clinical and public health concerns. Students will form teams with their peers and a clinical advisor, identify and define a design project to meet a clinical need, and engage in the design process throughout the semester. Engineering concentrators should register for ENGN1930L.
Fall ENGN0930L S01 16308 MW 8:30-9:50(01) (A. Tripathi)

ENGN 1000. Projects In Engineering Design I.
Fall semester projects in design for concentrators in electrical, materials, and mechanical engineering. Students work in teams on projects that are defined through discussions with the instructor. An assembled product or detailed design description is the goal of the semester's effort. Students may elect to combine ENGN 1000 with ENGN 1001 to work on a year-long project with permission of the instructor. Students electing to pursue this option must take ENGN 1000 and ENGN 1001 in the same academic year, and must submit a project proposal no later than October 1. Instructor permission required.
Fall ENGN1000 S01 16539 M 3:00-5:30 (J. Fontaine)

ENGN 1001. Projects in Engineering Design II.
Spring semester projects in design for concentrators in electrical, materials, and mechanical engineering. Students work in teams on projects defined through discussions with instructor. An assembled product or detailed design description is the goal of semester's effort. Students may elect to combine ENGN 1000 with ENGN 1001 to work on a year-long project with permission of the instructor. Students electing to pursue this option must take ENGN 1000 and ENGN 1001 in the same academic year and must have submitted a project proposal by October 1 of the previous Fall semester. Instructor permission required.

Entrepreneurship is innovation in practice: transforming ideas into opportunities, and, through a deliberate process, opportunities into commercial realities. These entrepreneurial activities can take place in two contexts: the creation of new organizations; and within existing organizations. This course will present an entrepreneurial framework for these entrepreneurial processes, supported by case studies that illustrate essential elements. Successful entrepreneurs and expert practitioners will be introduced who will highlight practical approaches to entrepreneurial success. Enrollment limited to 35.
ENGN 1100. Transport and Biotransport Processes.
Aim: To develop a fundamental understanding of mass transport in chemical and biological systems. The course includes: mechanism of transport, biochemical interactions and separations; mass transport in reacting systems; absorption; membrane and transvascular transport; electrophoretic separations; pharmacokinetics and drug transport; equilibrium stage processes; distillation and extraction. Other features: design concepts; modern experimental and computing techniques; laboratory exercises. Prerequisite: Junior level or higher standing.

ENGN 1120. Reaction Kinetics and Reactor Design.
Mechanisms, driving forces, and rate expressions of homogeneous and heterogeneous chemical and biochemical systems. Kinetics described from the potential energy surface to reaction networks. Basic concepts in reactor design and idealized reactor models. Chemostats and enzymatic reactors. Optimization. Temperature and energy effects in reactors. Catalysts and coupled transport effects. Prerequisite: ENGN 0720 or equivalent. Offered in alternate years.

ENGN 1140. Chemical Process Design.
Chemical process synthesis, flow charting, and evaluation of design alternatives. Process equipment sizing as determined by rate phenomena, economics, and thermodynamic limitations. Introduction to optimization theory. Applications of these principles to case studies. Prerequisites or Corequisites: ENGN 1110, 1120, 1130.

ENGN 1210. Biomechanics.
Important foundations of continuum biomechanics, properties and behavior of biomaterials, three-dimensional concepts of strains and stress, linear isotropic elasticity, anisotropic response, yield, fracture, fatigue, nonlinear elastic and viscoelastic response of biological materials/structures and biomedical implants will be taught. Students will learn physical basis, theory, modeling and applications of each of these topics with relevance to biomedical engineering. Muscle biomechanics, biomechanics of walking and running and response of soft tissue and bone will be discussed. Prerequisite: APMA 0330 or equivalent. Lectures and laboratory.

ENGN 1220. Neuroengineering.
Course Goals: To develop an advanced understanding of how signals are generated and propagated in neurons and neuronal circuits, and how this knowledge can be harnessed to design devices to assist people with neurologic disease or injury. Fundamental topics in neuronal and neural signal generation, recording methods, and stimulation methods. Clinical/Translational topics include multiple clinically available and emerging neurotechnologies. Prerequisites: NEUR 0101 and ENGN 0510; or instructor permission, which may be provided after discussion with course faculty.

ENGN 1230. Instrumentation Design.

ENGN 1300. Structural Analysis.
Classical and modern methods of analysis for statically indeterminate structures. Development of computer programs for the analysis of civil, mechanical, and aerospace structures from the matrix formulation of the classical structural theory, through the direct stiffness formulation, to production-type structural analysis programs. Introduction to Finite Element Methods (FEM) and Isogometric Analysis (IGA). Prerequisite: ENGN 0310.

ENGN 1340. Water Supply and Treatment Systems - Technology and Sustainability.
This course provides a comprehensive overview of engineering approaches how to protect water quality. Class begins with brief introduction to hydrological cycle. More in detail groundwater flows (Darcy eq.-n) and flows into wells are examined. Principles of hydraulics are presented. Open channel and river flows, flood routing and preventing are presented. Freshwater and wastewater treatment technologies, together with advanced water treatment processes evaluated. Course ends with the visit to a local wastewater treatment plant. Prerequisites: CHEM 0330 and ENGN 0040. Recommended ENGN 0810.

A unified study of the dynamics of particles, rigid bodies, and deformable continua. Generalized coordinates and Lagrange's equations; variational principles; stability of equilibrium; vibrations of discrete systems and of elastic continua, and wave propagation. Prerequisites: ENGN 0040, APMA 0340, or equivalent.

ENGN 1410. Physical Chemistry of Solids.
Application of physical chemistry and solid state chemistry to the structure and properties of engineering solids as used in solid state devices, ceramics, and metallurgy. Equilibrium and free energy of heterogeneous systems, thermodynamics of solutions, chemical kinetics, diffusion, catalysis and corrosion, solid state transformations. Case studies taken from industrial practice. Prerequisites: ENGN 0410, 0720.

This course introduces the basic principles and formulations that describe kinetic processes in materials science and engineering. These are divided into the following principle types of mechanisms: solid state diffusion, reactions at surfaces and interfaces, and phase transformations. The final section of the course applies these principles to several relevant materials processing systems. Prerequisites: ENGN 0410, 0720, 1410 or equivalent.

Begins with basic concepts of mechanical properties common to all materials, with some emphasis on dislocation theory. Particular attention is given to the relationship between mechanical properties and microstructures. The different types of mechanical tests that are used in each of these fields are analyzed. Lectures plus laboratories. Prerequisite: ENGN 0410.

Focus on fundamental properties, processing, and characterization of electronic materials for microelectronic, large area, and thin film device applications. Processing Si into modern integrated circuits, e.g., VLSI, USL1, will be described in terms of materials science of unit processes (oxidation, lithography, diffusion, ion implantation, thin film deposition) used in device fabrication. Review relationship between properties of different materials classes (metals, semiconductors, insulators) and band structure. Concepts used to explain the operation of a p-n junction and simple MOS structures. Laboratory will focus on depositing materials via vapor phase synthesis methods and measuring fundamental electronic properties of materials using transport measurements.

ENGN 1490. Biomaterials.
Biomaterials science, the study of the application of materials to problems in biology and medicine, is characterized by medical needs, basic research, and advanced technological development. Topics covered in this course include materials used in bone and joint replacement, the cardiovascular system, artificial organs, skin and nerve regeneration, implantable electrodes and electronic devices, drug delivery, and ophthalmology.

ENGN 1510. Nanoengineering and Nanomedicine.
Students in this course will develop a fundamental understanding of nanoengineering and its applications in medicine. We will discuss nanomaterials synthesis, fabrication, and characterization. Medical applications of these materials will include drug delivery, imaging and diagnostics, and tissue engineering approaches. Nanotoxicology will also be discussed. Research methods in nanoeengineering and nanomedicine will be emphasized (i.e., critical analysis of scientific literature, effective oral and written communication). Students will also have the opportunity to gain an introduction to several nanoeengineering research tools available.
on campus. This course is for engineering and science graduate students and advanced upper-level engineering undergraduates.

ENGN 1560. Optics.
A first course on electromagnetic waves and photonics. Topics to be covered include basic wave phenomena with an emphasis on geometric optics, the interaction of light with matter, scattering, and interference and diffraction effects. Also covered will be a selected number of more advanced topics including laser physics, nonlinear optics, transmission lines, and antennas.

ENGN 1570. Linear System Analysis.
Analysis of discrete and continuous electrical signals and systems in both time and frequency domains. Modulation, sampling, spectral analysis, analog and digital filtering, Fourier, Laplace and z-transforms, the state-space approach, stability of linear systems. Prerequisite: ENGN 0520. Fall ENGN1570 S01 16533 MWF 10:00-10:50(14) (P. Felzenszwalb)

ENGN 1580. Communication Systems.
We will learn basic communication and information theory, but with examples drawn from a variety of areas not normally considered communication. Basic knowledge of Laplace/Fourier transforms and frequency domain is essential (ENGN 0520 or equivalent required). Linear Systems (ENGN 1570), Probability (APMA 1650 or MATH 1610), Linear Algebra (MATH 0520 or 0540) and E&M (ENGN 0510) are helpful but not required. Analog modulation, digitization, signal space, digital modulation and noise, information theory, selected topics in modern communication/ information network theory and applications to biology and physics as time and interest permit. Depending on preparation, we may also pursue final projects.

ENGN 1590. Introduction to Semiconductors and Semiconductor Electronics.
An introduction to the physics of fundamental electronic processes that underlie the operation of semiconductor devices on a microscopic scale. Basic electronic properties of semiconductors and effects at interfaces heterogeneous media, such as pn junctions and hetero-structure barriers and quantum wells. These junctions, barriers and wells are used as building blocks for devices, focusing on bipolar and field-effect transistors. Modern trends in micro- and opto-electronic devices are discussed. A brief fabrication lab will introduce pn junction fabrication technology. Prerequisites: ENGN 0410 and 0510.

This course will cover digital design and implementation concepts required for successful tape-out of integrated circuits. The first part covers the fundamentals of Very Large-Scale Integration (VLSI) design, including transistor analysis, standard cell layout, and cell characterization techniques. The second part covers use of design automation tools to complete a full design to tape-out. In the second part, hardware design using Verilog will be first discussed, and then will follow with the use of techniques and tools: logic synthesis, circuit timing and power, and placement and routing. The class will feature a number of labs and a large design project.

Fall ENGN1600 S01 16534 MWF 12:00-12:50(15) (S. Reda)

ENGN 1610. Image Understanding.
Image processing is a technology experiencing explosive growth; it is central to medical image analysis and transmission, industrial inspection, image enhancement, indexing into pictorial and video databases, e.g., WWW, and to robotic vision, face recognition, and image compression. This senior-level undergraduate course covers theoretical underpinnings of this field and includes a series of practical MATLAB image processing projects. ENGN 1570 is recommended but not required.

Elementary device physics and circuit characteristics of semiconductor diodes, bipolar junction transistors (BJTs), and field effect transistors (FETs). Analysis and design of practical circuits using discrete semiconductor devices. Constraint on and techniques for linear integrated circuit (IC) design and the use of linear ICs as circuit building blocks. Laboratory. Prerequisites: ENGN 0510, 0520 or equivalent.

ENGN 1630. Digital Electronics Systems Design.
Fundamentals of digital logic design including: Boolean algebra, gates, truth tables, logic families, flip-flops, finite state machines, memory, and timing. More advanced topics include A-D conversion, binary arithmetic, CPU organization, programmable logic (CPLDs and FPGAs), and VHDL. Extensive laboratory requirement. Not open to first year students; permission required for sophomores. Fall ENGN1630 S01 16535 MW 3:00-4:20(10) (F. Lawalla)

This course introduces the main concepts and techniques for designing computing systems. Topics covered include assembly language, instruction set design, pipelining, superscalar and VLIW processor design, memory subsystem design, and I/O interfacing. Laboratory topics include programmable logic devices, hardware definition languages, and implementation of a bootable version of the pipelined MIPS processor. Laboratory emphasizes design optimizations with respect to speed and design area. Prerequisite: ENGN 1630 or passing of a quiz on basic digital logic concepts, or instructor permission.

ENGN 1690. Photonics Devices and Sensors.
Science and engineering principles of photonics and optoelectronic devices that provide foundation to a broad range of technologies from lasers to detectors, from cameras to computer displays, from solar cells to molecular sensing, from internet to quantum cryptography, and to new lighting sources for illuminations in the city and in biomedical treatments. Topical content: Light as waves in media, on surfaces, and through micro and nanostructures; interference and waveguiding; light generation by spontaneous emission, stimulated emissions, photodetection, infrared and near vision, LED, lasers, optical amplifiers and modulators, etc. Prerequisite: ENGN 0510 or equivalent. Fall ENGN1690 S01 16536 TTh 1:00-2:20(08) (J. Xu)

Advanced fluid mechanics focusing on the physics, concepts, theories, and models of aerodynamics, turbomachinery, and space propulsion. Topics will focus on airfoil and wing theory; laminar and turbulent boundary layers; sub- and supersonic aerodynamics. Introduction to rocket propulsion and advanced space propulsion. Lectures, labs, computation and design projects. Prerequisites: ENGN 0720 and ENGN 0810. Fall ENGN1700 S01 16537 MWF 9:00-9:50(01) (K. Reuber)

Steady 1D and 2D heat conduction with heat generation. Transient heat conduction. Forced convection, heat convection during external and internal flows. Natural convection. Heat Exchangers. Thermal radiation, Kirchoff's law, the perfect emitter, radiation intensity and surface emissive power, real surface radiation; view factors for black and gray surfaces. Diffusion mass transfer. Lectures and labs. Prerequisite: ENGN 0810.

ENGN 1735. Vibration of Mechanical Systems.
This course will focus on the vibration characteristics of mechanical systems. Topics will include: analysis of free and forced single degree-of-freedom linear oscillators, vibration control and isolation, multiple degree-of-freedom and continuous systems, and introduction to nonlinear oscillations. Relevant analytical and numerical methods useful for modeling and analysis of vibrating systems will be discussed throughout. Students will be expected to do some numerical calculations on a computer.

Fall ENGN1735 S01 17620 MWF 9:00-9:50(02) (D. Harris)

ENGN 1740. Computer Aided Visualization and Design.
Provides instruction in the application of computers to the design methods in engineering. Hands-on experience in use of CAD/CAE software packages for geometric modeling, visualization, and drafting. Emphasis on applications to solids and structural problems. Independent design projects are carried out. Course counts as an ABET upper-level design course for mechanical and civil engineering concentrators. Prerequisite: ENGN 0310.

Continuum mechanics of solids and its application to the mechanical response of machine and structural elements. Tensor descriptions of deformation and internal forces in solids; field equations. Elastic and elastic-plastic material models; failure criteria. Analytical techniques and energy methods for elastic solids; implementing the finite element method for elastic solids. Beam and plate theory. Stress waves and vibrations in solids. Use of commercial finite element software. Prerequisite: ENGN 0310, APMA 0330.

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ENGN 1760. Design of Space Systems.
Working in design groups, students conceive a space mission and design all of the elements necessary for its execution including launch and orbit / trajectory, space and ground systems, including analysis of structure, thermal, radio link, power and mass budgets, attitude control and dynamics. Each group builds a hardware project to demonstrate a core element of their mission design. Prerequisites: Engineering core curriculum or equivalent.

Numerical analysis techniques related to solving systems of linear algebraic equations, matrix eigenvalue problems, nonlinear equations, polynomial approximation and interpolation, numerical integration and differentiation, ordinary and partial differential equations. Programming in Matlab. Pre-req: ENGN0040, CSCI 0040 or equivalent programming ability. APMA 0330, APMA 0340 or equivalent.

Aims to give students a deeper and more thorough grounding in principles and applications of fluid mechanics. Topics include review of dimensional analysis and conservation principles; viscous flows with application to microfluidics; lubrication analysis for bearing design; laminar boundary layers; wave motion; and interfacial phenomena (e.g., drops and bubbles). Lectures, assignments, computational projects, and laboratory. Prerequisites: ENGN 0810.

ENGN 1930B. Biomedical Optics.
Biomedical optics is a rapidly growing field with applications in medicine, biology, and neuroscience. The course covers principles and applications of wave optics for biomedical imaging. The principles include refraction, reflection, scattering, diffraction and interference. The applications include Michelson interferometry and optical coherence tomography (OCT). OCT is the emerging technology for 3D imaging, considered by the American Institute for Medical and Biological Engineering (AIMBE) as the latest innovation milestone in the history of biomedical engineering. Throughout the course, we will also learn various numerical analysis techniques with working examples in MATLAB. Prerequisites: Undergraduate level ENGN 0510 Minimum Grade of S.

ENGN 1930L. Biomedical Engineering Design and Innovation.
This course is the culmination "capstone" of the biomedical engineering educational experience. The primary objective of this course is to recall and enhance design principles introduced through the engineering core curriculum and to apply this systematic set of design skills to biomedical engineering projects. Students will form teams with their peers and a clinical advisor, identify and define a design project to meet a clinical need, and engage in the design process through the course of the semester. For seniors only. Non-engineering concentrators should register for ENGN 0930L.

ENGN 1930U. Renewable Energy Technologies.
Renewable Energy Technology examines energy conversion, transport, and storage with the goal of devising courses of action that transform the current state of energy use into one that relies more fully on renewable resources and efficient processes. The course will give priority to photovoltaics, wind, and hydro conversion technologies and to the electrical grid for energy transport. From year-to-year other topics will be explored based on the wishes of the participants. Research, discussion, projects, and presentations will be the primary learning methods. The engineering core and thermodynamics are suggested preparation for this course.

ENGN 1931A. Photovoltaics Engineering.
This seminar course will provide an overview of the operation, design, characterization, and manufacturing of photovoltaic solar cells and panels. The course will span a range from the fundamental physics of solar cell operation to highly applied, industrially relevant engineering topics. Recommended prerequisites: Good knowledge of basic physics and electromagnetism concepts; proficiency in ENGN 0510 or PHYS 0470; This course is designed for undergraduate and graduate students in Physics, Chemistry and Engineering interested in the field of alternative energy with a focus in photovoltaics. Enrollment limited to 20.

ENGN 1931F. Introduction to Power Engineering.
An introduction to the generation, distribution and use of electrical energy in three-phase balanced systems. Topics include: properties of magnetic fields and materials; magnetic reluctance circuits; phasors and the properties of balanced three-phase voltage and current lines; generators; transformers and transmission lines; induction motors; brushless DC motors; power semiconductor switches; and the properties of solar photovoltaic sources and microinverters. Laboratory project. Prerequisites: ENGN 0510 and 0520.

ENGN 1931J. Social Impact of Emerging Technologies – The Role of Scientists and Engineers.
The role of engineering sciences in an ever-changing technology-driven world. Students will develop basic working knowledge of selected contemporary technologies that help identify and forecast future prospects while discerning future disruptions. Emphasis on the importance of ethical and social responsibilities that technologists must shoulder in answering societal challenges and contributing to policy making and corporate leadership. How do we create beneficial technologies yet anticipate their potential social costs, such as workforce automation or overdependence on the internet? Will we give up brains as our last private space? Who will control the data / technology ecosystem that influences our decisions? Fall ENGN1931J S01 16541 Th 4:00-5:30 (A. Numnikko)

ENGN 1931L. Biomedical Engineering Design and Innovation II.
This course is part two of the culmination “Capstone” of the biomedical engineering educational experience. The primary objective of this course is to recall and enhance design principles introduced through the engineering core curriculum and to apply this systematic set of engineering design skills to biomedical engineering projects. Student teams formed in the previous semester will continue develop a design project based on an unmet clinical need with a clinical advisor, gaining hands-on process experience and generating innovative solutions. For seniors only. Non-engineering concentrators should register for ENGN 0931L.

This course explores all the energy forms, but will focus on energy sources from which the majority of “useful” energy originates at the present time. Basic heat transfer problems related to energy efficiency are presented. Rankine and Brayton power cycles are introduced. Cycle modifications supporting energy efficiency are explored. Carbon footprint calculations are illustrated. Traditional and cutting-edge technologies for carbon capture and storage presented. Emissions such as SOx, NOx, and PM and their capture technologies investigated. The Earth climate model examined. The course features three 1-page long scientific summary writings and the tour to the Manchester Street Power Station. Fall ENGN1931F S01 16297 TTh 10:30-11:50(13) (I. Kulaots)

ENGN 1931Q. Entrepreneurial Management in Adversity.
Companies get into trouble all the time -- making wrong products for the market, failing to meet sales quotas. This course examines actions a company must take in adverse conditions. There is never enough time to hire consultants, do research, hire new employees. Top Management must make decisions, often with insufficient data and alternative 'suboptimal' options. Primary objectives are to understand analysis and rapid action when faced with adversity; identify the cause of adversity, building solutions to prevent recurrence or give management the skills to solve problems; and develop recommendations and action plans to 'sell' to the Board of Directors.

ENGN 1931R. The Chemistry of Environmental Pollution.
This course examines fundamental chemical aspects of pollutants and methods used to address pollution. We will consider pollution in air, water and soil media, and how pollution arises. Basic aspects of pollutant chemical partitioning will be explored. Examples of site investigation and the chemical tools used for that purpose will be discussed, along with risk assessment. Different ways of cleaning up contaminated sites will be examined, along with considering how mitigation and natural processes might represent solutions to the particular pollution situation. Prerequisites are (MATH 0100, 0170, 0180, 0200, 0350 or 0190) and (CHEM 0100 or 0330).

Brown University
ENGN 1931T. Entrepreneurship Practicum: Starting, Running, and Scaling Ventures.

Starting and running a venture is one of the most rewarding and frustrating endeavors a manager faces. While good ideas abound, the hallmark of the entrepreneur is the ability to translate ideas into action. This course is experiential, project-based, and designed to help entrepreneurs turn ideas into real ventures. Students should have already identified a problem whose solution may serve as the basis for a venture. Some may have embarked upon venture-building already. This course will help them work in a structured way, with supportive mentorship and content, to make significant progress on the venture and increase chances for success.

Fall ENGN1931TS01 16546 TTh 2:30-3:50(12) (J. Clark)

ENGN 1931W. Selling & Sales Leadership in the Entrepreneurial Environment.

Is there any skill more important to entrepreneurs than sales? Startups only have two problems: sales and all else. The entrepreneur starts with a product or service and must convince an embryonic team to join a firm before there is a product, financing or customers; and convince customers the idea is sound, doable, and profitable; and convince customers to rely on a company with no track record. Sales skills are essential. Entrepreneurs sell an intangible and must make it feel immensely tangible. Until company/product become tangible, sales responsibility never stops. Entrepreneurs are key sales figures and face of the company.

Fall ENGN1931WS01 18562 TTh 1:00-2:20(08) (H. Anderson)

ENGN 1931Y. Control Systems Engineering.

Control Systems is an Engineering discipline that applies control theory to analyze and design systems with desired response behavior. The objective of this course is to introduce the student to the topic of feedback control design with applications on many diverse systems. The course will cover the fundamentals of classical control theory such as modeling, simulation, stability, controller design and digital implementation. It will also address basic aspects of space-state and modern control theory. The course is open to all Engineering majors and will make use of existing simulation packages such as Matlab/Simulink.


Independent Study in Engineering. Instructor permission required after submitting online proposal (https://docs.google.com/a/brown.edu/forms/d/e/1FAIpQLSeXzgX19sKcq7x79ca65jzr4MD_NqFY7e70hnnISB8YaY707MhQA/viewform). Section numbers vary depending on concentration. Please check Banner for the correct section number and CRN to use when registering for this course.


Independent Study in Engineering. Instructor permission required after submitting online proposal (https://docs.google.com/a/brown.edu/forms/d/e/1FAIpQLSeXzgX19sKcq7x79ca65jzr4MD_NqFY7e70hnnISB8YaY707MhQA/viewform). Section numbers vary depending on concentration. Please check Banner for the correct section number and CRN to use when registering for this course.


This course focuses on numerical solutions of common problems encountered in engineering and physical sciences, and provides both theoretical underpinnings and practical use of such methods, relying on physical problems from engineering and physical sciences wherever possible. This course covers: 1) Matrix operations, including linear algebra, eigenvalue problems, vector calculus, etc. 2) Solving physical equations numerically: converting physical governing equations into numerically solvable problems to user-defined accuracy, focusing primarily on numerical integration methodologies. 3) Advanced numerical methods: introductions to Bayesian statistics (via Markov chain / Monte Carlo), machine learning (simple regression / classification algorithms), principle component analysis, and design of experiments.


The primary objective of the course is to train students on tools, skills, and behaviors required for effective management of complex engineering, research, and business development projects. Although the course will be framed in the context of early-stage technology companies, the skills and principles will be applicable to businesses of any size and maturity. The course is organized around three actionable themes: project management, team management, and decision making.

Fall ENGN2125 S01 16967 M 3:00-6:00 "To Be Arranged"

ENGN 2150. Technology Entrepreneurship and Commercialization I.

ENGN 2150 and the spring ENGN 2160 form a sequence that develops the skills for technology-based entrepreneurship. It teaches creation of viable, high-growth-potential ventures from emerging science and technology. It is from emerging S&T that a high percentage of new jobs are created, both by existing large companies and through the formation of new companies. You will examine S&T for new opportunities, create novel product or service concepts from these sources and determine whether these concepts truly represent new business opportunities. Pedagogy is a combination of lectures and "experiential learning", with work undertaken as a two-semester project. Enrollment limited to 30 graduate students in the IMEE program.

Fall ENGN2150 S01 16328 W 3:00-6:00 (J. Harry)

ENGN 2160. Technology Entrepreneurship and Commercialization II.

ENGN 2160 and the prerequisite fall course 2150 form a course sequence that develops the knowledge of, and embeds the skills for, technology-based entrepreneurship. While 2150 has helped you to examine science and technology sources, and create a portfolio of opportunities from these, this course continues by developing selected opportunities into a compelling business case for the creation of a high growth potential new venture. Once again, learning is by a combination of lectures and "experiential learning", with work undertaken as a guided two-semester project. Prerequisite: ENGN 2150. Enrollment limited to 30 graduate students in the IMEE program.

ENGN 2180. Globalization Immersion Experience and Entrepreneurship Laboratory.

In this course, students will gain a better understanding of the political, social and cultural dynamics that influence entrepreneurial enterprises in different world regions. Meetings will be arranged with high technology companies and their venture arms, academic incubators, investment professionals, legal professionals, government officials, entrepreneurs, and other university faculty and students. The semester becomes a global entrepreneurship and innovation "laboratory" where students experience and take part in guest lectures from experts working in other countries. Classroom discussions, student presentations, papers and readings will be used to focus and further understand the globalization dynamic and its relationship to entrepreneurship. Prerequisite: ENGN 2110. Enrollment limited to graduate students in the PRIME program.

ENGN 2210. Continuum Mechanics.


Fall ENGN2210 S01 16322 MW 8:30-9:50(01) (H. Kesari)


Fall ENGN2340 S01 16547 MW 4:00-5:15(10) (Y. Bazilevs)

ENGN 2370B. Topics in Solid and Structural Mechanics.

Devoted to one or more advanced topics in solid and structural mechanics not covered in detail by the regular courses, such as: numerical methods in solid mechanics, theory of optimal design, shell structures and instability, or other topics of interest to the staff or visitors.
ENGN 2380. Fracture Mechanics.

ENGN 2410. Thermodynamics of Materials.

ENGN 2420. Kinetic Processes and Mechanisms in Materials Science.
Continuum and atomistic descriptions of diffusion in solids. Reactions involving surfaces and interfaces, including evaporation, adsorption, grain growth, and coarsening. Phase transformation kinetics, including nucleation, growth, solidification, spinodal decomposition, and martensitic transformations. Analysis of systems with multiple kinetic mechanisms (typical examples include oxidation, crystal growth, and sintering).
Prerequisite: background in basic thermodynamics. Recommended: ENGN 1410 or 2410 or equivalent.

ENGN 2430. Deformation Behavior of Materials.
This course examines the fundamentals of elastic and plastic deformation of crystals. Topics include: Linear elasticity as it applies to isotropic and anisotropic materials; Hooke's law is reduced for various levels of symmetry from triclinic to cubic symmetry; Various yield criteria and their relevance; Plasticity mechanisms through an introduction to dislocation theory. A description of dislocation core structure and Peierls stress, quantifying stress fields, energies, line tension and force on a dislocation and between dislocations. Dislocation motion, their dissociation, interaction, intersections and consequences. In the context of the above topics, we rationalize the mechanical behavior of single and polycrystals.

ENGN 2450. Exchange Scholar Program.
Fall ENGN2450 S01 15477 Arranged 'To Be Arranged'

ENGN 2502. 3D Photography.
In 3D Photography, cameras and lights are used to capture the shape and appearance of 3D objects represented as graphical models for applications such as computer animation, game development, electronic commerce, heritage preservation, reverse engineering, and virtual reality. This course covers 3D capture techniques and systems, surface representations and data structures, as well as methods to smooth, denoise, edit, compress, transmit, simplify, and optimize very large polygonal models. Instructor permission required.

This course covers fundamental topics in pattern recognition and machine learning. We will consider applications in computer vision, signal processing, speech recognition and information retrieval. Topics include: decision theory, parametric and non-parametric learning, dimensionality reduction, graphical models, exact and approximate inference, semi-supervised learning, generalization bounds and support vector machines. Prerequisites: basic probability, linear algebra, calculus and some programming experience.

An introduction to the basics of linear, shift invariant systems and signals and doing real processing of signal on a digital computer. Quantization and sampling issues are introduced. Discrete time and DFT properties, fast DFT algorithms, and spectral analysis are discussed. IIR and FIR digital filter design is a focus; stochastic and deterministic signals are introduced. MATLAB exercises are a significant part of the course.

ENGN 2560. Computer Vision.
An interdisciplinary exploration of the fundamentals of engineering computer vision systems (e.g., medical imaging, satellite photo interpretation, industrial inspection, robotics, etc.). Classical machine vision paradigms in relation to perceptual theories, physiology of the visual context, and mathematical frameworks. Selections from Gestalt psychology, Gibsonian approach primate visual pathways, edge-detection, segmentation, orientation-selectivity, relaxation-labeling, shading, texture, stereo, shape, object-recognition.

ENGN 2735. Vibration of Mechanical Systems.
This course will focus on the vibration characteristics of mechanical systems. Topics will include: analysis of free and forced single degree-of-freedom linear oscillators, vibration control and isolation, multiple degree-of-freedom and continuous systems, and introduction to nonlinear oscillations. Relevant analytical and numerical methods useful for modeling and analysis of vibrating systems will be discussed throughout. Students will be expected to do some numerical calculations on a computer.

ENGN 2770. Atomistic Reaction Engineering.
Topics include electronic structure calculations, molecular dynamics, potential energy surfaces, thermodynamic connections, scaling and free-energy relations, surface reactivity, rate theory, electrocatalytic concepts, and applications of machine-learning to atomistic calculations. Students will have flexibility to pursue research directions of interest through project- and literature-based work. All software employed in the course is open-source, so students can continue to use these tools without license after the course completes. This course is intended for graduate students or advanced undergraduates. A background in thermodynamics is required. Experience in quantum and statistical mechanics as well as computing is useful, but not necessary.

ENGN 2810. Fluid Mechanics I.
Formulation of the basic conservation laws for a viscous, heat conducting, compressible fluid. Molecular basis for thermodynamic and transport properties. Kinematics of vorticity and its transport and diffusion. Introduction to potential flow theory. Viscous flow theory; the application of dimensional analysis and scaling to obtain low and high Reynolds number limits.

ENGN 2910G. Topics in Translational Research and Technologies.
To improve human health, engineering and scientific discoveries must be explored in the context of application and translated into human/societal value. Translational research is creating a fundamental change in the way basic science and engineering research has operated for decades, breaking down the literal and figurative walls that separate basic scientists/ engineers and clinical researchers. Such discoveries typically begin at “the bench” with basic research—and in the case of medicine—then progress to the clinical level, or the patient’s “bedside.” This seminar course will utilize case studies to demonstrate to students how the translational research unfolds. Lectures will be delivered by clinicians, medical researchers, engineers, and entrepreneurs, with case studies focused on topics ranging from value creation, IRB, HIPAA, FDA approval, etc.

ENGN 2910Q. Chemically Reacting Flow.
This course focuses on problems in chemical engineering that involve chemical change in the presence of thermal energy. Consequences of chemical reactions on chemical and thermal fields will be discussed. The course will focus on the vibration characteristics of mechanical systems. Topics will include: analysis of free and forced single degree-of-freedom linear oscillators, vibration control and isolation, multiple degree-of-freedom and continuous systems, and introduction to nonlinear oscillations. Relevant analytical and numerical methods useful for modeling and analysis of vibrating systems will be discussed throughout. Students will be expected to do some numerical calculations on a computer.

ENGN 2910Q. Chemically Reacting Flow.
This course focuses on problems in chemical engineering that involve chemical change in the presence of thermal energy. Consequences of chemical reactions on chemical and thermal fields will be discussed. The course will focus on the vibration characteristics of mechanical systems. Topics will include: analysis of free and forced single degree-of-freedom linear oscillators, vibration control and isolation, multiple degree-of-freedom and continuous systems, and introduction to nonlinear oscillations. Relevant analytical and numerical methods useful for modeling and analysis of vibrating systems will be discussed throughout. Students will be expected to do some numerical calculations on a computer.

ENGN 2910G. Topics in Translational Research and Technologies.
To improve human health, engineering and scientific discoveries must be explored in the context of application and translated into human/societal value. Translational research is creating a fundamental change in the way basic science and engineering research has operated for decades, breaking down the literal and figurative walls that separate basic scientists/ engineers and clinical researchers. Such discoveries typically begin at “the bench” with basic research—and in the case of medicine—then progress to the clinical level, or the patient’s “bedside.” This seminar course will utilize case studies to demonstrate to students how the translational research unfolds. Lectures will be delivered by clinicians, medical researchers, engineers, and entrepreneurs, with case studies focused on topics ranging from value creation, IRB, HIPAA, FDA approval, etc.

ENGN 2910Q. Chemically Reacting Flow.
This course focuses on problems in chemical engineering that involve chemical change in the presence of thermal energy. Consequences of chemical reactions on chemical and thermal fields will be discussed. The course will focus on the vibration characteristics of mechanical systems. Topics will include: analysis of free and forced single degree-of-freedom linear oscillators, vibration control and isolation, multiple degree-of-freedom and continuous systems, and introduction to nonlinear oscillations. Relevant analytical and numerical methods useful for modeling and analysis of vibrating systems will be discussed throughout. Students will be expected to do some numerical calculations on a computer.

ENGN 2910G. Topics in Translational Research and Technologies.
To improve human health, engineering and scientific discoveries must be explored in the context of application and translated into human/societal value. Translational research is creating a fundamental change in the way basic science and engineering research has operated for decades, breaking down the literal and figurative walls that separate basic scientists/ engineers and clinical researchers. Such discoveries typically begin at “the bench” with basic research—and in the case of medicine—then progress to the clinical level, or the patient’s “bedside.” This seminar course will utilize case studies to demonstrate to students how the translational research unfolds. Lectures will be delivered by clinicians, medical researchers, engineers, and entrepreneurs, with case studies focused on topics ranging from value creation, IRB, HIPAA, FDA approval, etc.
ENGN 2911P. Fate and Transport of Environmental Contaminants. Physical, chemical and biological processes governing the fate and transport of contaminants in the environment. Topics to be covered include solute transport, sorption processes, mass transfer, non-aqueous phase liquid (NAPL) entrapment and dissolution, abiotic and biotic transformations. A portion of the course will involve the use of analytical and numerical models to assess the impact of coupled processes on contaminant fate and transport.

ENGN 2911R. Analytical Modeling for Biomechanical and Biomedical Systems. Students will develop fundamental understanding of important statistical, physical and mathematical modeling methods for biomedical engineering applications. Topics covered will include factorial design and analysis of experiments, modeling of infectious disease spread and dynamics, drug delivery, and cell and tissue mechanics. Students will learn statistical methods, factorial design of experiments, transport models, numerical methods, nonlinear and time dependent response, soft material modeling and applications of these methods in the biomedical systems. Students will also gain experience in critical analysis of scientific literature and effective oral and written communication. Prerequisite: APMA 0330 or equivalent. Fall ENGN2911FS01 16552 TTh 9:00-10:20(02) (V. Srivastava)

ENGN 2912B. Scientific Programming in C++. Introduction to the C++ language with examples from topics in numerical analysis, differential equations and finite elements. As a prerequisite, some programming knowledge, e.g., MATLAB projects. The course will cover the main C++ elements: data types; pointers; references; conditional expressions; streams; templates; Standard Template Library(STL); design and debugging techniques. Fall ENGN2912ES01 16325 MW 5:40-7:00(10) (G. Taubin)

ENGN 2912F. Soft Matter. This course is a special topics graduate course on soft matter, treating polymers, liquid crystals, surfactants, and colloids. The different topics will be unified by a common approach using statistical mechanics.

ENGN 2912K. Mixed-Signal Electronic Design. ADCs, DACs, switched-capacitor circuits, noise and distortion. Circuit simulation and system design projects. Examples will be used from various biological sensing and instrumentation applications and recent scientific literature. Prerequisite: ENGN 1620 and 1630, or instructor permission. Enrollment limited to 20. Fall ENGN2912KS01 16550 MW 3:00-4:20(10) (J. Rosenstein)

ENGN 2912R. Implantable Devices. This course will expose students to topics across the electrical and biological sciences through lecture, design, and laboratory exercises. Students will learn basic governing concepts of implantable device design, including those of tissue interfaces, power delivery, data transmission, hermetic packaging and biocompatibility, and in vivo evaluation through appropriate animal models including design of surgical approach. Teams will be formed early in the course and maintained throughout the semester. Successful teams will invent, design, build, and implant their unique device. Teams will have access and exposure to the Technology Ventures Office through guest lectures and individual meetings.

ENGN 2912W. Two Phase Flows. Introduction of two-phase flows. Flow maps. Conservation Equations. Two-phase homogenous flows. Drift flux models. Interfacial dynamics. Motion of single particles, drops or bubbles. Bubble growth and collapse. Cavitation. Dusty gases. Granular flows. Sprays. The student who successfully completes this course will be able to understand the principles to two phase fluid mechanics; be able to start reading specialized literature of the subject; recognize the areas of active research; and develop research projects in this general area. Prerequisites: Advanced undergraduate fluid mechanics (e.g., ENGN 1850); graduate fluid mechanics course (e.g., ENGN 2810). ENGN 2920G. Creating Economic and Social Value from Your Science or Engineering Research. As a graduate student or undergraduate researcher, the primary output of your research is new knowledge and research publications. But is there a more direct way of creating value, through licensing and commercialization to a company, through creating products or services, or through the creation of a new venture? And how can we assess the potential social impact? We will together examine some currently emerging science to establish the methods. Thereafter you will examine the science and technology within your own research group in order to discover value, that you may possibly be able to exploit. Students must be actively participating in research. Undergraduate students must also be undertaking research (instructor permission is required). Graduate students are requested to contact the instructor when registering. Fall ENGN2920GS01 16500 Th 4:00-5:30 (A. Kingon)

ENGN 2930. Atomistic Modeling of Materials. This class describes the fundamentals of statistical mechanics with a focus on both traditional analytic methods and modern atomistic simulations methods. The class is divided in two parts. (i) Techniques used to calculate interactions at the atomic level are first covered, from simple interatomic potentials to quantum mechanical first-principles methods. (ii) Simulations techniques to sample atomic degrees of freedom for obtaining macroscopic quantities are then discussed, such as Monte Carlo and Molecular Dynamics. The tools presented in class are illustrated with ongoing examples that illustrate how these methods work in concert. Enrollment limited to 40 graduate students.

ENGN 2952J. Topics in Computing with Emerging Technologies (CSCI 2952J). Interested students must register for CSCI 2952J. Fall ENGN2952JS01 18548 Arranged 'To Be Arranged'

ENGN 2970. Preliminary Examination Preparation. For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination. Fall ENGN2970S01 15478 Arranged 'To Be Arranged'

ENGN 2980. Special Projects, Reading, Research and Design. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ENGN 2990. Thesis Preparation. For graduate students who have met the residency requirement and are continuing research on a full time basis. Fall ENGN2990S01 15479 Arranged 'To Be Arranged'

English

ENGL 0100Q. How Poems See. What makes poems and pictures such powerful forms of life? Why do pictures have so much to tell us? How do we see things in words? How do graphic images, optical images, verbal images, and mental images constitute ways of understanding the world? Looking at poems and images from Giotto and Shakespeare, Wordsworth and Dickinson and Turner through such modern poets and painters as Stevens, Ashberry, Warhol and Heijinian, we will study sensory and symbolic images, the uses and dangers of likeness, and the baffling confluence of concrete and abstract, literal and figurative, body and mind, matter and spirit.

ENGL 0101A. Independence and Modern Literature. Words like “freedom” and “independence” are central to modern global history. This course introduces students to modernist and postcolonial poetry and fiction, exploring individual and collective self-determination. We address questions of aesthetic autonomy and form, and collective aspirations along disparate lines of nation, race, gender, and sexuality. Readings from Achebe, Bulawayo, Conrad, Eliot, Hurston, Joyce, Kincaid, Lamming, Walcott, and Woolf. Students should register for ENGL 0101A S01 and may be assigned to conference sections by the instructor during the first week of class. Fall ENGL0101AS01 16304 MW 11:00-11:50(16) (T. Katz)

ENGL 0101B. Earth Poetics: Literature and Climate Change. Climate change is one of the most pressing issues of our time and calls for new strategies of collective action, but also for new ways of
conceptualizing and attending to the changing Earth. This course will address how literary texts can help us develop our understanding of environmental change by attending to the material entanglements between nature and culture.

**ENGL 0101C. America Dreaming.**
What ever happened to the American Dream? How is American literature a series of dreaming—fantasy, utopia, dystopia, anti-slavery, reform, the West, and escape. Fiction, film, the essay, the nonfiction novel. What makes for an “American” myth? How is it exported to the world?

**ENGL 0150C. The Medieval King Arthur.**
Where did stories of King Arthur come from and how did they develop in the Middle Ages? We will read the earliest narratives of King Arthur and his companions, in histories and romances from Celtic, Anglo-Norman, and Middle English sources, to examine Arthur’s varying personas of warrior, king, lover, thief. Enrollment limited to 19 first-year students. Fall ENGL0150CS01 16207 TTh 9:00-10:20(02) (E. Bryan)

**ENGL 0150F. Hawthorne and James.**
An introduction to a pair of writers whose work continues to shape our understanding of American literature and American identity. Focusing on much of their most important work, our aim will be to understand how their conceptions of the relationship between writing and history both complement and complicate each other. Limited to 19 first-year students. Fall ENGL0150FS01 16208 MWF 11:00-11:50(16) (S. Burrows)

**ENGL 0150U. The Terrible Century.**
Although the term "terrible century" was coined in the 18th century, and although its contemporary resonance has reached an unprecedented pitch, the truly terrible century was arguably the 20th. This course introduces 20th century literature in English through a historical and philosophical examination of terror and terrorism. We will focus on several historical contexts, including: British colonialism in Ireland and Africa, South African apartheid, and the post 9/11 world. Readings include Conrad, Bowen, Gordimer, Coetzee, Foucault, Walters, Hamid. Enrollment limited to 19 first-year students.

**ENGL 0150X. The Claims of Fiction.**
This course explores the interplay of tropes of strangeness, contamination, and crisis in a range of novels and shorter fiction, in English or in translation. We will ask why social misfits and outsiders somehow become such fascinating figures in fictional narratives. How do these fictions entice and equip readers to reflect on collective assumptions, values, and practices? Writers will include Baldwin, Brontë, Coetzee, Conrad, Faulkner, Ishiguro, Morrison, Naipaul, Rushdie, Salih, Shelley. Limited to 19 first-year students.

**ENGL 0310A. Shakespeare.**
We will read a representative selection of Shakespeare’s comedies, tragedies, histories, and romances, considering their historical contexts and their cultural afterlife in terms of belief, doubt, language, feeling, politics, and form. Students should register for ENGL 0310A S01 and may be assigned to conference sections by the instructor during the first week of class.

**ENGL 0510G. New Worlds, New Subjects: American Fiction at the Dawn of the Twentieth Century.**
In 1900, the historian Henry Adams declared, Americans lived in a world so radically transformed that "the new American … must be a sort of God compared with any former creation of nature." This new world had many progenitors: Darwin’s theory of evolution; Nietzsche’s theory of the will; Freud’s theory of the unconscious; the rise of the mass media; the industrial production line; the triumph of consumerism; mass immigration; Jim Crow; the New Woman. This class reads works of fiction from the turn-of-the-century in the context of these transformations. Writers include Freud, Nietzsche, Stephen Crane, Henry James, and Edith Wharton.

**ENGL 0511H. Late Romantics.**
An introduction to the varied work of canonical and non-canonical writers often described as British second-generation or late Romantics: Keats, the Shelleys, Byron, Clare, de Quincey, Hemans, Austen. We will explore what lateness constitutes for these authors as a political, aesthetic, and ethical category, and consider how it informs the kind of distinctly "Romantic" work that characterizes their writings. Particular emphasis on close readings of poetry and theoretical texts, as well as excursions into late nineteenth-century authors.

**ENGL 0511K. Terrible Births: the Novel out of Romanticism.**
A new world struggling to be born at the turn of the nineteenth century, as Europe was consumed in revolutionary wars, the Industrial Revolution spawned new powers and violence, and the age of Romanticism envisioned a Prometheus spirit unbound in poetry. We will be reading the novels that defined this tumultuous age and those that came in its wake. We will read Shelley’s "Frankenstein," Brontë’s "Wuthering Heights," and books by Walter Scott, Charlotte Brontë, and Charles Dickens.

**ENGL 0710Q. American Literature in the Era of Segregation.**
This course examines how American literature intersects with the legal, ethical, and racial discourses that defined the system of racial segregation. In doing so, the course will assess the ways that literary style and genre became inseparable from the culture of segregation. Authors include Mark Twain, Nella Larsen, William Faulkner, and Richard Wright.

**ENGL 0710X. Black Poetics.**
This course is interested in poetic thinking: how a poem inclines toward a certain kind of knowing; how a poem’s imagining invites philosophical considerations (as in, what is being, and how to be); how a poem’s language and its formal qualities sustain such thinking. We are interested, also, in how poetic thinking reckons (with) blackness.

**ENGL 0710Z. American Literature and the Constitution.**
A study of the interactive relations between US literary constitutional and literary history, with a special emphasis on how American constitutional discourses and American writers have framed and conceived of the interplay between civil rights, racial equality, and economic privilege.

**ENGL 0711A. Americans in Paris.**
For many American artists, particularly in the years following the first world war, Paris promised artistic freedom; for others, particularly in the years following the second world war, it promised something closer to actual freedom. This class explores the relationship between these two conceptions of liberty, ranging widely over fiction, poetry, autobiography, essays, dance, music, painting, and photography.

**ENGL 0900. Critical Reading and Writing I: The Academic Essay.**
An introduction to university-level writing. Students produce and revise multiple drafts of essays, practice essential skills of paragraph organization, and develop techniques of critical analysis and research. Readings from a wide range of texts in literature, the media, and academic disciplines. Assignments move from personal response papers to formal academic essays. Enrollment limited to 17. Banner registrations after classes begin require instructor approval. S/NC.

**ENGL 0930. Introduction to Creative Nonfiction.**
Designed to familiarize students with the techniques and narrative structures of creative nonfiction. Reading and writing focus on personal essays, memoir, science writing, travel writing, and other related subgenres. May serve as preparation for any 1000-level nonfiction writing course. Writing sample may be required. Enrollment limited. Banner registrations after classes begin require instructor approval. S/NC.

Brown University
ENGL 1030A. The Thoughtful Generalist.
This "ONLINE" section of "ENGL1030: Critical Reading and Writing II: Research" will prepare you for academic and real-world discourse. In Canvas, you will discuss essays demonstrating deep research distilled into engaging intellectual journey. You will research and revise four explanatory, analytical, persuasive essays, using varied sources to explore subjects or issues of your choice. Mandatory peer reviews and conferences ONLINE. Enrollment limited to 17. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1030C. Writing Science.
This course explores how science, as an academic way of thinking and a method, affects our critical thinking and expression of culture. Readings examine the various dialects of scientific discourse. Students write three major research essays on self-selected scientific topics from both within and outside their fields of study. Enrollment limited to 17. Writing sample may be required. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1030F. The Artist in the Archives.
While artists can benefit greatly from archival work, they are not typically given the tools to make use of these institutions. This writing intensive course takes a two pronged approach to the problem: embedding students in archives both at Brown and RISD to produce creative, lyrical, and multimedia essays; and exploring how artists have used these institutions for information and inspiration. Enrollment limited to 17. Writing sample may be required. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1050A. Narrative.
This course offers a broad exploration of the many kinds of essays you can write in creative nonfiction. We will be looking at how authors structure their pieces and the range of narrative techniques they often use. You can expect workshops, in-class prompts and readings by Jamaica Kincaid, John McPhee, David Foster Wallace, Annie Dillard, David Sedaris and others. Enrollment limited to 17. Writing sample required. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1050G. Journalism Writing.
This course, taught by a Pulitzer Prize-winning reporter, teaches students how to report and write hard news and feature stories. Students learn to gather and organize material, develop in-depth interviewing techniques, use public records to report stories and become better observers of everyday life. The first half of the semester focuses on hard news and investigative reporting -- crime, government and court news. The second half is devoted to feature writing -- profiles and the art of narrative storytelling. Class list will be reduced to 17 after writing samples are reviewed. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1050H. Journalistic Writing.
This course teaches students how to report and write hard news and feature stories for newspapers and online. Students learn to gather and organize material, develop interviewing techniques, and hone their writing skills -- all while facing the deadlines of journalism. The first half of the semester focuses on "hard" news: issues, crime, government, and courts. The second half is devoted to features, profiles, and narrative story telling. Writing sample required. Class list will be reduced to 17 after writing samples are reviewed in first week of classes. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1140E. Writing for Activists.
How can writing support and further change? In this course students will practice grant applications, budget narratives, mission and strategy statements, press releases, position papers, op-eds, and other writing strategies with practical application in activist work. We'll read examples and theoretical grounding, and guest speakers will introduce us to writing and needs specific to a range of fields. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. Instructor permission required. S/NC.

ENGL 1160A. Advanced Feature Writing.
For the advanced writer. Nothing provides people with more pleasure than a "good read." This journalism seminar helps students develop the skills to spin feature stories that newspaper and magazine readers will stay with from beginning to end, both for print and on-line publications. Students will spend substantial time off-campus conducting in-depth interviews and sharpening their investigative reporting skills. The art of narrative storytelling will be emphasized. Prerequisite: ENGL1050G or 1050H, or published clips submitted before the first week of classes. Class list reduced to 17 after writing samples are reviewed. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1160N. Investigative Reporting: The Opioid Crisis in Rhode Island.
This advanced reporting class will bring journalism students together with computer science concentrators who together will spend the semester investigating and writing about the opioid epidemic in Rhode Island, a public health crisis that has taken thousands of lives. We will produce a series of eye-opening stories -- to be published in a newspaper of general circulation -- based on data fitting, documents and in-depth interviews. Prerequisite ENGL 1160F. Not open to first-year students. Enrollment limited to 12. Instructor permission required.

ENGL 1180B. Digital Nonfiction.
In this class, we will join the host of other artists, activists, and writers that have used Twitter bots, iPhone apps, virtual reality experiences, and more to tell compelling stories. No previous digital writing experience is necessary, however, as an advanced creative nonfiction class, Digital Nonfiction requires students to have completed ENGL 0930 or any 1000-level nonfiction writing course. Enrollment is limited to 17. Instructor permission required.

ENGL 1180C. Advanced Creative Nonfiction: Writing with Food.
This course examines writing about food and how writing affects food and culture. We shall explore the relationship of food to the pen through reading classic texts, writing in and out of class, guest lectures, and touring culinary archives. The goal is to polish personal voice in menus, recipes, memoir, history, reportage, and the lyric essay. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1180E. Lifewriting.
Features theoretical and practical study of lifewriting's various forms--memoir, diary, essay, and autobiography--and the crafting of personal narrative. Students read books, view films, and keep an electronic diary and paper notebook. Requirements include a personal critical essay and autobiography. Writing sample required. Prerequisite: ENGL 0130, 0160, 0180, 1140, 1160, 1180, or 1190. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. Banner registrations after classes begin require instructor approval. S/NC.

ENGL 1180H. Satire and Humor Writing.
For the advanced writer. This course will introduce students to the practice of writing satire and humorous essays. Readings will include works by Jonathan Swift, Mark Twain, Garrison Keillor, Bill Bryson, David Foster Wallace, David Sedaris, and others, and students will develop skills in analyzing, writing, and workingshop in the genre. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes.
Preference will be given to English concentrators. Banner registrations after classes begin require instructor approval. S/NC.
Fall ENGL1180-S01 17994 TTh 2:30-3:50(12) (J. Readey)

ENGL 1180P. Further Adventures in Creative Nonfiction.
For the advanced writer. A workshop course for students who have taken ENGL 0930 or the equivalent and are looking for further explorations of voice and form. Work can include personal essays, literary journalism and travel writing. Readings from Ian Frazier, Joan Didion, David Sedaris, John McPhee and others. Writing sample required. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. Banner registrations after classes begin require instructor approval. S/NC.
Fall ENGL1180PS01 16241 TTh 10:30-11:50(13) (E. Hardy)

ENGL 1180V. Asian American Narrative.
This course considers themes, forms, and contexts of Asian American narratives. We will examine diverse representations of Asian American experience and explore the questions these texts raise about race and ethnicity; self-invention and identity; and visibility and representation. We'll consider how Asian American authors have used writing to reclaim agency, preserve cultural memory, and redress past and present injustice. Prerequisite: ENGL0930 or any 1000-level nonfiction writing course. Writing sample required. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference given to English concentrators. Instructor permission required. S/NC.
ENGL 1180W. Writing About History.
This course introduces students to the practice of writing about history, including crafting news, features, and memoir pieces. Readings include works by Jill Lepore, Ta-Nehisi Coates, David McCullough, Iris Chang, Henry Louis Gates Jr., John Hersey, W.E.B. Du Bois, and others. Students will strengthen skills in primary and secondary research, interviewing, writing, and revision, utilizing Brown's libraries and other archives. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. Banner registrations after classes begin require instructor approval. S/NC.
ENGL 1190M. The Teaching and Practice of Writing: Writing Fellows Program.
This course prepares students for their work as Writing Fellows. Course readings, activities, and assignments introduce students to: post-process writing theory and pedagogy; data-based investigations of the revision habits of experienced and inexperienced writers; and effective methods for responding to student writing and conferencing with student writers. Enrollment is restricted to undergraduates who have been accepted into the Writing Fellows Program in the preceding July. Banner registrations after classes begin require instructor approval. S/NC.
Fall ENGL1190MS01 16258 TTh 10:30-11:50(13) (A. Jackson)
Fall ENGL1190MS02 16259 TTh 1:00-2:20(08) (A. Jackson)

ENGL 1190U. Nature Writing.
This course seeks to develop your skills as a sensitive reader and writer of the natural world. You will build a portfolio of revised work through a process of workshops, tutorials, and conferences, and engage in discussion of a range of written and visual narratives with reference to their personal, political, and ecological contexts. Writing sample required. Prerequisite: ENGL 0930 or any 1000-level nonfiction writing course. Class list will be reduced to 17 after writing samples are reviewed during the first week of classes. Preference will be given to English concentrators. S/NC.
ENGL 1200. Independent Study in Nonfiction Writing.
Tutorial instruction oriented toward some work in progress by the student. Requires submission of a written proposal to a faculty supervisor. Section numbers vary by instructor. Instructor permission required. S/NC.
ENGL 1301A. Firing the Canon: Early Modern Women's Writing.
Rediscovery and reconsideration of works by early modern women have changed the literary canon; these once-neglected works are becoming mainstream, and they are changing the way we read 'traditional' texts. The reading in this course includes poetry, letters, drama, essays, fiction, and life-writing by authors including Lanyer, Wroth, Cavendish, Behn, Manley, Haywood, Scott, and Montagu.
ENGL 1310V. Chaucer: The Canterbury Tales.
Middle English narratives by Geoffrey Chaucer, a band of fictional pilgrims, read in their 14th-century historical and literary contexts. Prior knowledge of Middle English not required. Not open to first-year students.
Fall ENGL1310VS01 16212 TTh 1:00-2:20(08) (E. Bryan)

ENGL 1361A. Fantasies of Milton.
Paradise Lost has served as the basis for numerous fantasy novels. Even Comus has become a (supposedly inappropriate) children's story. How can a seventeenth-century poet's treatment of temptation, disobedience, reason and self-regard come to seem relevant in the present? What do contemporary writers feel compelled to preserve and to change? How might we reimagine Milton? Enrollment limited to 20.
Fall ENGL1361A-S01 16196 W 3:00-5:30 (J. Kuzner)

ENGL 1361P. Shakespeare's Girls.
From his witty comic heroines to his misogynist stereotypes, Shakespeare's relationship to the "woman question" has long been debated. Taking Shakespeare's plays and poems alongside key texts from feminist reception history, this course asks: what can Shakespeare teach us about feminism? And what can feminism teach us about Shakespeare? We will address issues including race, power, sexuality, and the body.
Fall ENGL1361PS01 17912 Th 4:00-6:30 (C. Scozzaro)

ENGL 1380. Independent Study in Medieval and Early Modern Literatures.
Tutorial instruction oriented toward a literary research topic. Section numbers vary by instructor. Instructor permission required.
Henry James wrote about fiction as a form of experience: "The power to guess the unseen from the seen, to trace the implications of things." He advises the writer, "Try to be one of the people on whom nothing is lost!" In this course we will read James's critical writings and his major works in the novel and short story. Enrollment limited to juniors and seniors.
ENGL 1560A. Jane Austen and George Eliot.
A survey of the major novels of Austen and Eliot. Readings will also include contemporary reviews and responses, letters, and Eliot's critical prose, as well as literary theory and criticism addressing questions such as novelistic form, realism and narrativity, the problem of the subject, the politics of aesthetics, and the changing status of the woman writer in the 19th century. Enrollment limited to 20 seniors and juniors. Instructor permission required.
ENGL 1560N. Eighteenth-Century Novel.
The 18th century marks the beginning of the novel as we know it. This course considers the "rise" of fiction during the "long" eighteenth century. Beginning with Behn, Haywood and Defoe, readings include works by Richardson, Fielding, Sterne, Smollett, Lewis, and Godwin.
Fall ENGL1560N-S01 17953 W 3:00-5:30 (M. Rabb)

ENGL 1561G. Swift, Pope, Johnson.
The course provides in-depth study of three major writers of the eighteenth century and will include cultural contexts. Readings include Gulliver's Travels, The Rape of the Lock, and Rasselas. Enrollment limited to 20.
ENGL 1561Y. In Excess: Rossetti, Hopkins, Wilde.
This seminar will be a focused close reading of three late Victorian writers whose works might be described as radically excessive insofar as they transgress and push beyond the limits of social, ethical, aesthetic, sexual, and political conventions. What does it mean to describe a text as excessive, and how can excess be considered as a constitutive part of its form? We will concentrate on poetry, plays, and theoretical texts, putting our authors into conversation with contemporary thinkers of excess. Enrollment limited to 20.
Fall ENGL1561YS01 16310 TTh 2:30-3:50(12) (J. Khalip)

ENGL 1561Z. American Renaissance.
A course focusing on the writings of the Transcendentalists, reform literature, antislavery and Native American and Indigenous rights. The subjects of history, the capitalist market, Nature, and the development of modern authorship and literary professionalism. Emerson, Thoreau,
Douglass, Alcott, as well as Harriet Wilson, William Apeess, and magazine writers.

ENGL 1562A. The Invention of Policing in the English Novel.
How did the police, the carceral state, new definitions of crime, and state authority shape the English novel? The focus is on how representing these social facts determined the course of novelistic form. We will read mystery and detective fiction, sensation novels, and their predecessors. Authors may include: Charles Dickens, Willkie Collins, Arthur Conan Doyle, Agatha Christie.

Tutorial instruction oriented toward a literary research topic. Section numbers vary by instructor. Instructor's permission required.

ENGL 1710J. Modern African Literature.
This course considers themes, antecedents, and contexts of modern African literature and related forms. Our readings will include fiction in English or in translation, traditional oral forms like panegyric and festival poetry, and some films. We will examine how these diverse materials explore the interplay of ethnicity, nationality, and race. We will also address the issue of "tradition" in contexts where nationalisms of various stripes are becoming stronger, even as the world becomes more interconnected through trade, immigration, and digital technology. Authors will include Achebe, Adichie, Dangarembga, Kourouma, Ngugi, Sallah, Soyinka, Wicomb. Films by Koyaté, Loreau, Semblé.

ENGL 1711D. Reading New York.
This course explores narratives of New York City in a variety of genres, from the early 20th century to the present. Topics include immigration, mobility, cosmopolitanism and the neighborhood, cruising, gentrification, post-9/11. Work by John Dos Passos, Nella Larsen, E.B. White, Jane Jacobs, Frank O'Hara, Samuel Delany, Patti Smith, Nan Goldin, Ernesto Quinones, Teju Cole. Prerequisite: one previous literature course.

ENGL 1711N. Monsters in our Midst: The Plantation and the Woods in Trans-American Literature.
This course focuses on how literary and visual culture grappled with land as a topographic entity in relation to race, gender, and time. Students read literature about the Caribbean and parts of the U.S., produced from the 19th century to the present. Readings include Marlon James's The Book of Night Women and Jean Rhys's Wide Saragasso Sea.

ENGL 1711P. "We have not yet heard enough, if anything, about the female gaze": Contemporary Writing Not by Men.
The concept of the "male gaze" has been central to feminist critiques of cinema. In developing the concept, Laura Mulvey refused to posit a corrective "female gaze" – which makes Maggie Nelson's remark about the female gaze in literature all the more surprising. This course discusses experimental writing primarily by women through the proposition that, without the male gaze, writing has the potential to be an "astonishing equalizer." Writers include Cusk, Fitzgerald, Gladman, Quin, Z. Smith, Spark, S. Hartman.

ENGL 1711Q. Poetic Modernisms: Now!
This course is a survey of modernist poetry that explores how key works by figures such as Langston Hughes, Gertrude Stein, Ezra Pound, William Carlos Williams, and Marianne Moore have continued to shape poetic forms and possibilities throughout the twentieth century and into the contemporary moment.

ENGL 1760U. American Modernism and its Aftermaths.
An interdisciplinary study of the rise of modernist aesthetic theory in the United States, its dissemination across various aesthetic (poetry, fiction, various plastic arts) and intellectual (economics, sociology, political theory) fields, and its persistence in United States intellectual life in the various permutations of postmodernism that have succeeded it. Authors to be considered include: poets such as Eliot, Williams, Bishop, Brooks, and Ashbery; novelists such as Faulkner, Hurston, O'Connor, and Didion; aesthetic theorists such as Greenberg, Rosenberg, Fried, Baraka and Kraus; and social theorists such as von Neuman, Rawls, Cavell, Kuhn, Samuelsohn, Druckers, and Freiman. Enrollment limited to 20.

ENGL 1761E. Blackness and Being.
Through reading criticism, theory, literature, we will think about the representational, aesthetic, and, philosophically (ontological, epistemological, ethical) questions that shape blackness as a conceptual notion. Our study will think through feminist and queer studies, as well as through diaspora and American and ethnic studies, and will consider the historical trajectory of various critical turns in theorizing (literary) blackness. Enrollment limited to 20 juniors and seniors. Instructor permission required. Class list will be finalized after the first day of classes. Please email the professor to add your name to the potential roster.

ENGL 1761F. Toni Morrison.
This course is an advanced introduction to the oeuvre of Nobel Laureate Toni Morrison. Reading her novels and nonfiction, we investigate concerns that shaped our world in the last century and haunt the current one, foregrounding Morrison's writing as a key site of trouble and of transformation.

ENGL 1760. Undergraduate Independent Study in Modern and Contemporary Literatures.
Tutorial instruction oriented toward a literary research topic. Section numbers vary by instructor. Instructor's permission required.

ENGL 1900P. History of Criticism from Plato to Postmodernism.
A survey of the major theorists of literature in the western tradition, from the Greeks to the contemporary period. Recurrent issues will include the definition of literary value, the distinctiveness of the aesthetic experience, and the moral and social uses of literature. Enrollment limited. Banner registrations after classes begin require instructor approval.

ENGL 1900Y. Medieval Manuscript Studies: Paleography, Codicology, and Interpretation.
How do you read a medieval manuscript? This course teaches hands-on methodologies for deciphering the material text, including palaeography (history of scripts) and codicology (archeology of the book); contemporary models of interpreting scribal texts, including editorial theory and analysis of readers' reception; and medieval concepts of textuality and interpretation, including medieval theories of authorship and the arts of memory. Prior course work in Middle English or Latin or other medieval language recommended. Not open to first-year students. Enrollment limited to 20. Instructor permission required.

ENGL 1950F. Law and Literature.
This seminar explores the conceptual, psychological and rhetorical connections between literature and law, examining how both disciplines shape the imagination but also aim to elicit response and responsibility. We will consider how literary works, legal writings, and legal opinions inform each other, but also illuminate each other's blind spots. Looking beyond trial scenes, the course invites students to think about how principles and notions in law structure, and are structured by, literature and language. Authors include Walter Benjamin, Joseph Conrad, Albert Camus, Rebecca West, and Chinua Achebe; legal texts by Holmes, Bentham, Cover and a number of judicial opinions. Limited to 20 senior English concentrators.

ENGL 1950. Law and Literature.
This seminar explores the conceptual, psychological and rhetorical connections between literature and law, examining how both disciplines shape the imagination but also aim to elicit response and responsibility. We will consider how literary works, legal writings, and legal opinions inform each other, but also illuminate each other's blind spots. Looking beyond trial scenes, the course invites students to think about how principles and notions in law structure, and are structured by, literature and language. Authors include Walter Benjamin, Joseph Conrad, Albert Camus, Rebecca West, and Chinua Achebe; legal texts by Holmes, Bentham, Cover and a number of judicial opinions. Limited to 20 senior English concentrators.

ENGL 1991. Senior Honors Seminar in English.
Weekly seminar led by the Advisor of Honors in English. Introduces students to sustained literary-critical research and writing skills necessary to successful completion of the senior thesis. Particular attention to efficient ways of developing literary-critical projects, as well as evaluating, incorporating, and documenting secondary sources. Enrollment limited to English concentrators whose applications to the Honors in English program have been accepted. Permission should be obtained from the Honors Advisor in English. S/CNC
Independent research and writing under the direction of a faculty member. Permission should be obtained from the Honors Advisor in English. Open to senior English concentrators pursuing Honors in English. Instructor permission required.
Fall ENGL1992 S01 16830 Arranged (P. Armstrong)

ENGL 1993. Senior Honors Seminar in Nonfiction Writing.
This course is designed for students accepted into the Nonfiction Honors Program. It will be run in workshop format, and will focus on research skills and generative and developmental writing strategies for students embarking on their thesis projects. Weekly assignments will be directed toward helping students work through various stages in their writing processes. Students will be expected to respond thoughtfully and constructively in peer reviewing one another’s work. Open to seniors who have been admitted to the Honors Program in Nonfiction Writing. Instructor permission required. S/NC
Fall ENGL1993 S01 16242 F 3:00-5:30 (K. Schapira)

ENGL 2360Z. Shakespeare: a Politics of Love.
This seminar will explore certain of Shakespeare’s plays—mainstays such as Romeo and Juliet and Othello but also more marginal texts, such as All’s Well and As You Like It—in order to discern a politics of love. Enrollment limited to 15.

ENGL 2380. Graduate Independent Study in Medieval and Early Modern Literatures.
Section numbers vary by instructor. May be repeated for credit. Instructor’s permission required.

ENGL 2450. Exchange Scholar Program.
Fall ENGL2450 S01 15474 Arranged 'To Be Arranged'

ENGL 2561U. Consciousness and the Novel.
How does the novel represent conscious life? Intensive study of literary examples from the 18th through the 20th centuries (Richardson, Sterne, Austen, Dickens, Joyce, Woolf, and Morrison) will be accompanied by selected theoretical readings on challenges to the grammatical model from historical and cognitive methods and from affect theory, race and gender studies, and theories of the posthuman. Enrollment limited to 15.

ENGL 2561W. Image, World, Bodies: Wordsworth, Clare, Hopkins.
A close reading of the poetry of Wordsworth, Clare, and Hopkins with particular reference to theories of vision, embodiment, and worlding/worldlessness. Enrollment limited to 15.

Section numbers vary by instructor. May be repeated for credit. Instructor’s permission required.

ENGL 2761R. Metaphor/Matter/Time: Literature and the Changing Earth.
In this collaborative seminar we will consider the flickering edge between metaphor and materiality in the shadow of the Anthropocene. Weekly discussions will be built around a series of "threshold sites"—including Sea, Sun, Silk, Plastic, Forest, Photograph, Shell, Horse, Whale—in which "matter" and "figure" may be seen to be simultaneously in relation and at odds. We will endeavor to think metaphorically as the imbalance of materiality and semiosis, and in its relationship to ecological time, through readings from Lucretius, Melville, Coleridge, Ponge, Moore, Bervin, Barad, Haraway, Derrida, Ricoeur, among others. Enrollment limited to 15.
Fall ENGL2761FS01 16201 Th 4:00-6:30 (A. Smallbegovic)

ENGL 2780. Graduate Independent Study in Modern and Contemporary Literatures.
Section numbers vary by instructor. May be repeated for credit. Instructor’s permission required.

ENGL 2900X. Postcolonial Theory.
In this introduction to postcolonial theory we will consider key Western sources (Hegel, Marx, Lacan, Levi Strauss, Emmanuel Levinas); anticolonial manifestos (Gandhi, Fanon, Césaire, Memmi); political and ethical practices (civil disobedience, armed struggle, friendship). In addition to canonical critics (Said, Bhabha, Spivak), the course will review new interests in the field (transnationalism, non-western imperialisms, the environmental turn).
Fall ENGL2900X S01 16226 F 3:00-5:30 (L. Gandhi)

ENGL 2910D. War and the Politics of Cultural Memory.
The past several decades have seen the rise of a veritable memory industry devoted to the memorializing of wars. This seminar focuses on a selection of British, European, and American novels, memoirs, and films that self-consciously engage in remembering a range of conflicts, from the First World War to the "War on Terror," alongside a relevant body of theoretical writings. Our aim is to think in detail, and collectively, about the political stakes of such literary remembrances and to develop together a "contrapuntal" approach that engages with the collaborative tensions between Anglo-European, postcolonial, and US minority modes of memory.

ENGL 2910M. Bakhtin and the Political Present: Literature, Anthropology, Dialogue.
This collaborative humanities graduate seminar explores the revolutionary ideas of Mikhail Bakhtin, considering their influence in two disciplines, literary studies and linguistic anthropology. The primary historical context of the course is our own political present, characterized by linguistic homogeneity, the unification of power, and the rise of authoritarian governments. How effective are Bakhtin’s theories of dialogue, polyphony and carnival as principles of resistance to the challenges of the current moment? Instructor permission required. Enrollment limited to 15.
Fall ENGL2910M S01 16204 M 3:00-5:30 (T. Bewes)

ENGL 2910N. Suspicion and Its Others.
From the hermeneutics of suspicion to post-critique, a range of thinkers and theories have positioned suspicion as a central critical disposition of the modern age. In this collaborative seminar we will explore the concept and practice of suspicion both in relation to the classic objects over against which it emerged—morality, religion, and tradition—and through the lens of other modes of engagement more recently proposed, including charity, reconstruction, attunement, quiet, resonance, and reparative practices of reading. Readings will be drawn from philosophy, critical theory, race and ethnicity studies, gender and sexuality studies, and literary theory and criticism.
Fall ENGL2910N S01 16205 W 3:00-5:30 (A. Anderson)

ENGL 2910P. Black Feminism: Roots, Routes, Futures.
This graduate seminar pursues an interdisciplinary investigation of black feminist theories, methods, praxes, and politics. Using a black feminist lens, it investigates legacies of racial slavery and colonialism; the pathways and promises of African diaspora; citizenship, labor, and the law; theories of the flesh and changing definitions of kin; human ontology and the mutability of gender; black expressive practices and emancipatory politics. Enrollment limited to 15.

ENGL 2940. Scholarly Writing for Journal Publication.
Writing and professionalization workshop intended for graduate students in literary studies. Topics covered include selection of journal; framing, structuring and composition of the article; the logistics of peer review; sharing and workshopping drafts; working with academic mentors and advisors. Every passing student will have a publishable article under consideration by the end of the semester. Enrollment limited to 12 English Ph.D. students. Instructor permission required. S/NC.

ENGL 2950. Seminar in Pedagogy and Composition Theory.
An experimental and exploratory investigation into writing as a preparation for teaching college-level writing. Reviews the history of writing about writing, from Plato to current discussions on composition theory. Against this background, examines various processes of reading and writing. Emphasizes the practice of writing, including syllabus design. Enrollment restricted to students in the English Ph.D. program.
Fall ENGL2950 S01 16243 T 12:00-2:30 (J. Readey)
ENGL 2970. Preliminary Examination Preparation. 
For graduate students who have met the tuition requirement and are 
paying the registration fee to continue active enrollment while preparing for 
a preliminary examination.
Fall ENGL2970 S01 15475 Arranged *To Be Arranged*

ENGL 2990. Thesis Preparation. 
For graduate students who have met the residency requirement and are 
continuing research on a full time basis.
Fall ENGL2990 S01 15476 Arranged *To Be Arranged*

ENGL XLIST. Courses of Interest to Students Concentrating in 
English. 
Fall 2020 
These courses, offered in other departments, are cross listed with the English 
Department and do not require advisor approval to count toward the concentration 
for English concentrators. Please refer to the primary department for registration 
details.

Gender and Sexuality Studies 
GNSS 1711 Speech and Silence, Trust, Rage and Fear: An Inquiry into the 
Possibility of Intimacy 
Winter/Spring 2023 
These courses, offered in other departments, are cross listed with the English 
Department and do not require advisor approval to count toward the concentration 
for English concentrators. Please refer to the primary department for registration 
details.

Cogit Institute for Humanities 
HMAN 2401B Thinking Breath: An Inquiry Across Philosophy, Literature, and 
Performance 
HMAN 2401C Inscribing the Event: Poetics and Politics of the Date

Environmental Studies

ENVS 0070C. Transcending Transportation Impacts. 
Students will be engaged in interdisciplinary analyses of the life-cycle 
costs, environmental impacts, technical developments, and policy 
innovations at the local and regional level. We will discuss technical 
modifications in vehicles, such as plug-in hybrids, as well as policy and 
planning on intermodal systems, recycle-a-bike programs, intelligent 
transportation systems, and other innovations. Enrollment limited to 19 first 
year students. Instructor permission required.
Fall ENVS0070C S01 16800 TTh 1:00-2:20(08) (K. Teichert)

Environmental Change in the 21st Century. 
This is an engaged scholars course that offers an introduction to 
temporary environmental issues. We explore the relationships 
between human societies and the non-human environment through a 
survey of topical cases, including: human population growth and 
consumption, global climate change, toxins, waste streams, water 
resources, environmental justice and ethics, and agro-food systems. This course 
also analyzes various solutions—social, political, technical, and 
economic—put forth by institutions and individuals to address questions of 
environmental sustainability. Each student must also sign up for a 90-
minute weekly engaged scholar lab during the second week of class. Each 
lab will partner with a community organization to complete an engaged, 
environmental project.
Fall ENVS0110 S01 16804 Arranged (D. King)

Introduces students to environmental science and the challenges we face in 
studying human impacts on an ever-changing earth system. We will 
explore what is known, and not known, about how ecosystems respond 
to perturbations. This understanding is crucial, because natural systems 
provide vital services (water and air filtration, climate stabilization, food 
supply, erosion and flood control) that cannot be easily or inexpensively 
replicated. Special emphasis will be placed on climate, food and water 
supply, population growth, and energy.
ENVS 0705. Equity and the Environment: Movements, Scholarship, 
Solutions. 
The environmental justice movement emerged in the U.S. South from the 
observation that African-Americans were more exposed to toxics than 
whites. It spurred decades of academic and activist efforts to understand 
and address the relationship between inequality and environment. The 
issue has expanded around the world, and beyond unequal exposures to 
"bads", to unequal access to "goods," along lines of equity by race, class, 
gender, ethnicity, indigenous identity, and position in the global economy. 
Issues of assigning responsibility and applying theories of justice with legal 
Instruments have made environmental justice policy difficult. This course 
seeks to serve first-years and sophomores.
ENVS 1400. Sustainable Design in the Built Environment. 
Course develops students’ analytical abilities to apply fundamental 
concepts of environmental issues, building systems analysis, and 
arclutural and engineering design. Students learn how to reduce 
the negative environmental impacts, and maximize positive social and 
economic impacts, of the built environment. Students cultivate applied 
skills in sustainable design; including fundamental energy calculations, 
heat flow analysis, schematic design analysis, and building operating 
impacts assessment. Course emphasis is on building energy flows. 
Students conduct group and independent research projects, providing the 
opportunity to study broader impacts of the built environment and propose 
solutions. Class meetings combine lectures, student presentations, and 
group workshops.
Fall ENVS1400 S01 16803 TTh 9:00-10:20(02) (K. Teichert)

ENVS 1490. SES-Independent Study/Science Writing. 
The culmination of the Semester in Environmental Sciences at the Marine 
Biological Laboratory is an independent research project that builds on 
the topics covered in the aquatic and terrestrial ecosystem analysis core 
courses. In addition students participate in a seminar designed to help 
improve their ability to tell a lay reader about science. Enrollment is limited 
to students in this program. Instructor permission required.
Fall ENVS1490 S01 11366 Arranged *To Be Arranged*

ENVS 1491. SES-Terrestrial Ecosystem Analysis. 
Team-taught course examining: the structure of terrestrial ecosystems 
fundamental biogeochemical processes, physiological ecology, impacts of 
environmental change on the landscape; the application of basic principles 
of ecosystem ecology to investigating contemporary environmental 
problems. Part of the Semester in Environmental Science at the Marine 
Biological Laboratory; enrollment is limited to students in this program. 
Instructor permission required.
Fall ENVS1491 S01 11367 Arranged *To Be Arranged*

ENVS 1492. SES-Aquatic Ecosystem Analysis. 
Team-taught course examining the structure of freshwater, estuarine 
and marine ecosystems; impacts of environmental change on the landscape 
at local regional and global scales; the application of basic principles of 
ecosystem ecology to investigating contemporary environmental problems 
such as coastal eutrophication, fisheries exploitation. Part of the Semester 
in Environmental Science at the Marine Biological Laboratory; enrollment is limited to students in this program. Instructor permission required.
Fall ENVS1492 S01 11368 Arranged *To Be Arranged*

ENVS 1493. SES-Environmental Science Elective. 
Two environmental science electives are offered each fall semester as part of the Semester in Environmental Science at the Marine Biological 
Laboratory, including: aquatic chemistry, mathematical modeling of 
ecological systems and microbial ecology. Enrollment is limited to students in this program. Instructor permission required.
Fall ENVS1493 S01 11369 Arranged *To Be Arranged*

ENVS 1545. The Theory and Practice of Sustainable Investing. 
21st century businesses and investors face a broadening and deepening 
array of Environmental, Social, and Governance (ESG) risks and 
opportunities. Climate change, water scarcity, community conflicts, 
resource depletion, supply chain breakdowns, worker well-being and 
economic inequality pose present material challenges that make 
sustainability an imperative for successful corporations and investors. 
We will examine current ESG strategy, trends, future scenarios, players, 
and framework and integrate that theory with practical investment 
performance analysis, metrics, and study of screens, asset classes, and 
diversification.
Fall ENVS1545 S01 16802 TTh 2:30-3:50(12) (C. Krosinsky)
ENVS 1555. Urban Agriculture: The Importance of Localized Food Systems.
This is an engaged scholar course. Urban agriculture has a critical function in a small but increasing movement toward more localized and sustainable food systems. This course focuses on research and readings from multiple disciplines addressing urban agriculture and local food systems’ role in shaping food policies, labor practices, sustainable agricultural practices, and human health (to name a few). More importantly, students will work with community partners to actively engage in a local food system project. Enrollment limited to 40.

This course investigates current environmental impacts and risks related to urban infrastructures. Students analyze efforts to minimize negative environmental, health, and economic impacts of the built environment. The course explores urban initiatives to increase sustainability and resiliency of infrastructure systems in anticipation of increased risks related to climate change. The goal is to learn the rationale, process, and technical aspects of the practice of environmental stewardship and resilience planning in an urban context. Students will develop competence in technical analysis, policy analysis, and program implementation through case studies and systems analyses.

ENVS 1605. Glaciers and Climate Change.
What is the fate of glaciers in a warming world? Where, how much, and how rapidly will glaciers melt? This course investigates how Earth’s glaciers are responding to climate change. This class will provide a comprehensive overview of changes to Earth’s glaciers, ice caps, and ice sheets, synthesize the latest scientific information, find gaps in our current knowledge, and identify what questions should be explored in future research. And, students will work with glacier-based observations and interpret trends using remote sensing, GIS, and/or visualization techniques. Topics will also include impacts to sea level rise, ocean circulation, and water resources.

Scholars in many disciplines have begun using the term the Anthropocene to signal a geological epoch defined by human activity. This seminar examines the Anthropocene idea from the perspective of environmental history. What activities might have changed the planet—the use of fire thousands of years ago, or agriculture, or fossil fuels? Is the Anthropocene a term for climate change, or does it include pollution and extinction? Is it a useful concept? Drawing on anthropology and the sciences as well as history, we will use the Anthropocene to think through environmental change and the human relationship with the non-human world.

This course provides an introduction to a wide range of research approaches in the social and environmental sciences. We will cover the epistemological and theoretical foundations of various research approaches and discuss implications of these foundations for what research questions are answerable and what evidence one can bring to bear to answer such questions. By the end of the semester, students will be able to write a clear and answerable research question, and know what methods are appropriate to use to answer such a question. Enrollment limited to ENVS Juniors. ENVS seniors must receive instructor override from Professor Bosworth, kai_bosworth@brown.edu.

From coal power to solar power, energy drives economies and increases quality of life world-wide. However, this same energy use can, and often does, lead to severe environmental destruction/pollution and global warming. This course serves as an introduction to energy policy in the United States and also explores global attempts to solve energy problems. This course examines different types of energy sources and uses, different ideological paths driving energy policy, the environmental impacts of energy use, current global and domestic attempts to solve energy problems, and the role of renewable and alternative forms of energy in future energy policy.

ENVS 1926. Wasted: Rethinking Chemical Environments.
This senior seminar investigates chemical and other forms of industrially produced waste and its impacts on environment and society. We will take an interdisciplinary approach, drawing on scholarship from anthropology, geography, history, sociology, science studies, and discard studies. We will follow chemicals around the world, from their inception in Western laboratories to their disposal in landfills and waste pits of the global South. Along the way, we will consider how corporations engineer chemicals’ manufacture, governments regulate their use, sciences measure their human and ecological effects, and communities contend with the lived realities of chemical exposure and toxic suffering.

First semester of individual analysis of environmental issues, required for all environmental studies concentrations. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor override required prior to registration.

Second semester of individual analysis of environmental issues, required for all environmental studies concentrations. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor override required prior to registration.

ENVS 2450. Exchange Scholar Program.

ENVS 2980. Reading and Research.
First semester of thesis research during which a thesis proposal is prepared. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor override required prior to registration.

ENVS 2981. Reading and Research.
Second semester of thesis research. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor override required prior to registration.

ENVS 2990. Thesis Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing a thesis.

French Studies
FREN 0100. Basic French.
This is the first half of a two-semester course. Four meetings a week for oral practice. One hour of work outside of class is expected every day (grammar/writing, oral practice, reading). Enrollment limited to 15.

FREN 0200. Basic French.
This is the second half of a two-semester course. Four meetings a week for oral practice plus one conversation hour. One hour of work outside of class is expected every day (grammar/writing, oral practice, reading). An accelerated track enables qualified students to go directly to FREN 0500 after FREN 0200. Enrollment limited to 15.

FREN 0300. Intermediate French I.
A semi-intensive elementary review with emphasis on all four skills (listening, speaking, reading and writing). Class activities include drills, small group activities, and skits. Class materials include videos, a French film, short stories, and various other authentic documents. Prerequisite: FREN 0200 or placement (Previous experience with French is required to take this class). Four meetings per week, plus a 50-minute conversation section with TAs.

Fall ENVS 1910 S01 16087 T 4:00-6:30 (S. Moustafa)

Fall ENVS1910 S01 16087 Th 4:00-6:30 (B. Demuth)

Fall ENVS1920 S01 16806 Arranged (R. Wets)
FREN 0400. Intermediate French II.
Continuation of FREN 0300 but may be taken separately. A four-skill language course that stresses oral interaction in class (three meetings per week plus one 50-minute conversation section). Materials include audio activities, film, and a novel. Short compositions with systematic grammar practice. Prerequisite: FREN 0300, FREN 0200 with permission, or placement.

Fall FREN0400 S01 16151 MWF 10:00-10:50(14) (C. Robison)
Fall FREN0400 S02 16152 MWF 12:00-12:50(15) (C. Robison)

FREN 0500. Writing and Speaking French I.
A four-skill language course that stresses oral interaction in class. Thematic units will focus on songs, poems, a short novel, a graphic novel, films and a longer novel. Activities include a creative project using Comic Life, and a systematic grammar review. Prerequisite: FREN 0400, FREN 0200 with written permission, or placement.

Fall FREN0500 S01 16154 MWF 10:00-10:50(14) (S. Ravillon)
Fall FREN0500 S02 16155 MWF 12:00-12:50(15) (S. Ravillon)

FREN 0600. Writing and Speaking French II.
Prerequisite for study in French-speaking countries. Class time is devoted mainly to conversation and discussion practice. Writing instruction and assignments focus on essays, commentaries, and to a lesser degree, on story writing. Apart from reading assignments for discussion (press articles and literary excerpts), students select two novels to read. Prerequisite: FREN 0500 or placement. Enrollment limited to 15.

Fall FREN0600 S01 16197 MWF 11:00-11:50(16) (S. Ravillon)
Fall FREN0600 S02 16202 MWF 1:00-1:50(06) (S. Ravillon)

FREN 0950C. Paris hors les murs.
This course represents an immersive exploration of Paris. Discussions will be organized around a number of themes covering modern and contemporary visions of the city. After a brief presentation of the history and the geography of the city, we will study the myths of Paris (the Eiffel Tower, Notre-Dame); various short writings (Baudelaire, Hugo, Barthes); the rise of the suburbs (La Haine, Les Misérables); current challenges (the climate, COVID-19). We will visit the city through newspaper articles, films videos, podcasts and museums. Three papers during the semester including your personal “mythology” of Paris as a concluding project for the course.

Fall FREN0950CS01 18222 MWF 10:00-10:50(14) (S. Toux)

FREN 1000B. Littérature et culture: Chevaliers, sorcières, philosophes, et poètes.
From the Middle Ages to the Age of Versailles, this course examines 6 foundational moments in French civilization: the Crusades, courtly love, humanism, the witch hunts, Cartesian reason, and the emergence of the autonomous self. Close scrutiny of literary texts and films will provide a window onto French civilization before the Revolution. Readings include medieval epic, Montaigne, and Descartes. In French. Prerequisite: a course at the 600- or 700-level or equivalent proficiency. Contact the instructor to verify your proficiency if you have not taken French at Brown.

Fall FREN1000B S01 16197 MWF 11:00-11:50(16) (S. Ravillon)
Fall FREN1000B S02 16202 MWF 1:00-1:50(06) (S. Ravillon)

FREN 1120F. L’œuvre romanesque de Marguerite Duras.
Starting with her first novels in the 1950s and up until her broad recognition, for The Lover, as France’s most renowned female writer of the post-WWII period, Marguerite Duras was involved in profound research into the form and force of novelistic narrative. Our course will examine a representative series of her texts from three different points of view: narrative, writing, femininity.
Prerequisite: a course at the 600- or 700-level or equivalent proficiency. Contact the instructor to verify your proficiency if you have not taken French at Brown. Taught in French.

Fall FREN1120FS01 16115 Th 2:30-3:50(12) (D. Willis)

FREN 1310N. La Pornographie.
In 1769, Restif de la Bretonne coined the word pornographie: one who writes (graphien) about prostitution (pognie est la prostituee). It is in literature, then, that what is known today as “pornography” was invented. This course will be dedicated to classics of the pornographic genre (from Sade to Bataille), to pornological essays (by Deleuze or Nancy), and to the political stakes of pornography in contemporary writings (by Despenes or Guibert). We will not forget cinema (with films by Genet or Bonello): if pornography pertains to a compulsion to show everything, what would be the blind spot of its absolute visibility? Taught in French.

Fall FREN1310NS01 17316 T 4:00-5:30 (L. Odelo)

FREN 1410R. Images d’une guerre sans nom: The Algerian War in Literature and Film.
Not officially acknowledged as a war by France until recently, the Algerian War of independence remains, more than a half-century later, a contested battleground in the French national consciousness. Focusing on depictions of the Algerian War in literature and film we will investigate the many taboos that still endure, most notably around the question of violence and torture, and attempt to reassess the relative "invisibility" of this conflict. Readings will include films by Gillo Pontecorvo, Jean-Luc Godard, Alain Resnais, Agnès Varda, and works by Frantz Fanon, Jean-Paul Sartre, Albert Camus, Benjamin Stora, Claire Etcherelli, Assia Djebar, and Leïla Sebbar. Prerequisite: a course at the 600- or 700-level or equivalent proficiency. Contact the instructor to verify your proficiency if you have not taken French at Brown. Taught in French.

Fall FREN1410RS01 18272 W 3:00-5:30 (O. Mostefai)

FREN 1510A. Advanced Oral and Written French: Traduction.
An introduction to the theory and practice of translation, this course will be designed to expand students’ range and appreciation of written styles and registers and will be based on translation exercises and texts reflecting different types of written and oral communication. Texts range from literary texts (excerpts from novels, plays, comic books…) to journalistic texts (articles from newspapers…). Class activities will also include comparative studies of translated texts, as well as grammar review and vocabulary work. Course taught in French. Written translations to and from French. Prerequisite: FREN 0600 or equivalent. Enrollment limited to 18. Instructor permission required.

Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Instructor permission required.

Independent study in an area of special interest to the student, with close guidance of a member of the staff, and leading to a major paper. Required of candidates for honors, and recommended for all senior concentrators. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

FREN 2130R. Penser et écrire le non-humain au XVIIème siècle.
Under the influence of “New Science,” the 17th century witnessed dramatic shifts in ways of perceiving and relating to the natural world. Guided by theoretical and historical work in environmental humanities and with a focus on literature, we will consider how French thinkers and writers framed the relationship between humans and their non-human others (animals, plants, natural landscapes). Theoretical readings in Braidotti, Descola, Foucault, Latour; primary texts by Descartes, Cyrano de Bergerac, Cureau de la Chambre, Scudéry, Pascal, La Fontaine,
FREN 2150G. Literature and Politics in the Age of Revolutions (COLT 2822D). Interested students must register for COLT 2822D.

FREN 2170N. La Poésie et ses révolutions. Study of major poets of the second half of the long nineteenth century. Topics include: symbolism and decadence, vers libre et vers libre, French prosody, prose poetry, gender and the lyric, the poetic subject. Authors read will include: Baudelaire, Mallarmé, Rimbaud, Verlaine, Krysinke, Vivien, Valéry, Apollinaire. Taught in French.

FREN 2190M. LA THÉORIE LITTÉRAIRE DE BARTHES ET DE DERRIDA.

Barthes and Derrida developed their theories on the basis of various texts and ideologies, which Derrida termed 'derridology'. Their views of literature are based on certain assumptions and systematic questions of literature. Barthes's approach is literary and rhetoric, and Derrida's approach is a reading of the literary fragment. This course will delve into the different concepts and theories of the two philosophers, focusing on the impact of their work on the literary field. Taught in French.

FREN 2450. Exchange Scholar Program.

FREN 2620K. Metaphor/Matter/Time. In this collaborative seminar we will consider the flickering edge between metaphor and materiality in the shadow of the Anthropocene. Weekly discussions will be built around a series of “threshold sites”—including Sea, Sun, Silk, Plastic, Forest, Photograph, Shell, Horse, Whale—in which “matter” and “figure” may be seen to be simultaneously in relation and at odds. We will endeavor to think metaphoricity as the imbrication of "matter" and "figure" may be seen to be simultaneously in relation and materiality, and in its relationship to ecological time, through readings from Lucretius, Melville, Coleridge, Ponge, Moore, Bervin, Barad, Haraway, Derrida, Ricoeur, among others. Taught in English.

FREN 2620L. Le Maghreb Postcolonial : Fractures et Réparations. This course examines the concepts of fracture and repair in a diverse array of works of literature, film, and transmedial art by artists from the Maghreb and its diaspora. Whether the fracture presents as a destructive historical relation, psychic break or trauma or rupture of meaning, it inevitably calls into question its opposite. What does it mean to repair? Moving beyond the idea of a 'return to the same', we will consider the ways in which repair is also historical and political restoration, affective healing, aesthetic rewriting, and how it is represented as both imagined and real.

FREN 2970. Preliminary Examination Preparation. For graduate students who have completed their course work and are preparing for a preliminary examination.

FREN 2980. Reading and Research. Work with individual students in connection with special readings, problems of research, or preparation of theses. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

FREN 2990. Thesis Preparation. For graduate students who have met the residency requirement and are continuing research on a full time basis.

FREN XLIST. Courses of Interest to French Concentrators.

Gender and Sexuality Studies

GNSS 1711. Speech and Silence, Trust, Rage and Fear: An Inquiry into the Possibility of Intimacy. Seminar examines intimate relationships: problems that arise from failures of couples to speak to each other, when instead of silence, they fail to speak openly, honestly, from a position of equality—particularly about their feelings, needs and desires. We examine the moral agency of men and women as it is reflected in what couples do, say and think. We look at whether relationships fail when men or women consciously or unconsciously choose women who fall into oppressive, subordinate postures and examine whether men take advantage of these postures. Class material from literature, films, and readings from philosophical, literary, and legal essays.

GNSS 1810. Independent Study and Research. Independent reading and research for upper-level students under the direction of a faculty member. Please check Banner for the correct section number and CRN to use when registering for this course.

GNSS 1820. Independent Study and Research. Independent reading and research for upper-level students under the direction of a faculty member. Please check Banner for the correct section number and CRN to use when registering for this course.

GNSS 1961Q. Conversations in Trans/Feminisms: Theories, Cultures, & Politics. This course explores the bridges and tensions between trans* and feminist movements through academic & activist literature/cultural production. How & why did transfeminism as a critical intervention in relation to feminist theory & politics arise, & why are transfeminist discourses & theories fiercely relevant from the 1960s to the present? How does trans*, as an infinite spectrum of categories, theories, & identities rupture, and/or transcend the gender binary? We will explore the that ways can trans* scholars, artists, and organizations contest gendered meanings, borders, & hierarchies within systems of oppression such as anti-blackness, white supremacy, settler colonialism, homophobia, and xenophobia.

GNSS 1970. Directed Research and Thesis. Independent research under the direction of a faculty member, leading to a thesis. Required of honors candidates. Open to seniors only. Instructor permission required.

GNSS 1980. Directed Research and Thesis. Independent research under the direction of a faculty member, leading to a thesis. Required of honors candidates. Open to seniors only. Instructor permission required.

GNSS 1990. Senior Seminar. A research seminar focusing on the research and writing of the participants. Required of senior concentrators; open to other advanced students by permission.

GNSS 2000. Method, Evidence, Critique: Gender and Sexuality Studies across the Disciplines. Gender and Sexuality Studies is by its very nature transdisciplinary. Can we speak of a single methodology that ties GNSS together? How might scholars work on gender and/or sexuality while respecting disciplinary boundaries and training? We will start with the premise that studies in gender and sexuality are tied together by critique that questions foundational assumptions and takes account of its own position within a given field of knowledge. By studying canonical theoretical texts alongside disciplinary studies characterized by a feminist and/or queer focus, we will investigate how critique operates and how standards of evidence are marshaled in particular disciplines.

GNSS 2010N. Narrating Debt. There have been many approaches to the problem of debt—a problem that has grown more urgent in the light of the central role played by indebtedness in neoliberal, financialized capitalism. There have been
global histories of debt, claims for reparations in postcolonial debates, legal arguments about “odious debt,” psychoanalytical readings of debtor characters, inquiries into specific types of debt, critical studies dedicated to gender/race in the micropolitics of debt. The guiding hypothesis of our seminar is that all these approaches, diverse as they may be, presuppose a more fundamental tie between indebtedness and narrativity, or the possibility of narration.

Fall  GRMN2010S  S01  18127  MWF  10:00-12:30  (P. Szendy)

GNSS 2450. Exchange Scholar Program.

GNSS 2720. Graduate Independent Study.

Section numbers vary by instructor. Instructor’s permission required.

GNSS XLIST. Courses of Interest to Concentrators in Gender and Sexuality Studies.

German Studies
German Studies

GRMN 0110. Intensive Beginning German.
An intensive, double-credit language course that meets three days a week and focuses on speaking, listening, reading and writing skills and the cultures of the German-speaking countries. At the end of the semester, students will be able to communicate successfully about everyday topics relating to the university, jobs, daily life and traveling. Ideal for undergraduate students interested in learning German for study abroad or for concentration requirements and for graduate students interested in starting their foreign language requirements. The course is designed for new students of German, regardless of any previous experience with German.

Fall  GRMN0110 S01  18132  MWF  1:00-3:00  (J. Fine)

GRMN 0300. Intermediate German I.
Focuses on deepening students’ understanding of modern German culture by reading texts and viewing films pertinent to Germany today. Intended to provide a thorough review of German grammar and help students develop their writing, reading, listening, and speaking skills. Recommended prerequisite: GRMN 0200.

Fall  GRMN0300 S01  16007  MWF  10:00-10:50(14)  (J. Sokolosky)
Fall  GRMN0300 S02  16008  MWF  1:00-1:50(06)  (J. Sokolosky)

GRMN 0500F. Twentieth-Century German Culture.
A broad exploration of twentieth-century German culture using many kinds of written and visual texts (e.g. literature, journalism, film, art). While continuing to work on all four language skills (speaking, listening, reading, writing) students will gain more intensive knowledge about German culture, society, and history. In German. Recommended prerequisite: GRMN 0400.

Fall  GRMN0500F S01  16009  MWF  11:00-11:50(16)  (J. Fine)

GRMN 1340Y. Germans and Jews.
This introductory course will examine the fraught relationship between Germans (and Austrians) and Jews in Germanophone writing across genres from the Enlightenment to the mid-20th century. We will consider writing by Jewish authors, images of Jews, and the themes of Jewishness and Germanness, emancipation, assimilation, anti-semitism and Zionism. Students will learn analytic reading, writing and research skills. Texts by Lessing, Mendelsohn, Veit, von Arnim, Heine, Marx, Droste-Hülshoff, Laske-Schüler, Kafka, Benjamin, Scholem and Arendt, among others.
Readings and discussion in English.

Fall  GRMN1340Y S01  16875  M  11:00-12:30  (S. Bernstein)

GRMN 1450L. Flussdichtungen.
The flow of words and the flow of water are complicit in many languages. Between fluency disorder and logorrhea the discourse on human speech (and speech deficiency) often recurs to the image of rivers, or streams. The seminar will follow and unfold this complicity between (spoken) language and rivers in excerpts from Homer’s Odyssey; in poems by Aeusonius, Hölderlin, Mörke, Heine, Keller, Stefan George, Bertolt Brecht; in a chapter from James Joyce’s Finnegans Wake (“Anna Livia Plurabelle”); in two prose pieces (by Hebel and Kafka) on swimmers; and in a song by Johnny Cash: Big River. Taught in German.

Fall  GRMN1450L S01  17188  TTh  10:30-11:50(13)  (T. Schestag)

Independent study on a particular topic related to German culture. In German or English. At the discretion of the instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

GRMN 1990. Senior Conference.
Special work or preparation of an honors thesis under the direction of a faculty member. Please check Banner for the correct section number and CRN to use when registering for this course.

GRMN 2261U. Mourning, in Theory.
Our graduate seminar will trace the fundamental affinity between critical theory and modes of mourning. Through careful reading of key reflections on the bonds among thinking, language, and mourning, we will work to deepen our understanding of how our relation to finitude, loss, and absence relates to the potentialities of conceptual inquiry. Texts to include Heidegger on Dasein’s finitude; Freud on mourning and melancholia; Benjamin on the “mourning play”; Barthes’ Mourning Diary; Derrida’s The Work of Mourning and his newly published seminar Life Death; and Butler on the politics of grievable and allegedly unliveable lives. Students from diverse fields welcome.

Fall  GRMN2261U S01  17189  M  3:00-5:30  (G. Richter)

GRMN 2450. Exchange Scholar Program.

GRMN 2662C. History, Philology.
At one point in his Treatise on Philological Knowledge Peter Szondi claims that philological knowledge differs, in essence, from historical knowledge. The seminar will pursue and discuss this (non)relation in texts by Seneca, Dante, Vico, Auerbach, Said, Nietzsche, Benjamin, Kafka, Heidegger, Joyce, Beckett, Szondi, Paul de Man, and Derrida. Taught in English.

Fall  GRMN2662S S01  16878  T  1:00-3:30  (T. Schestag)

GRMN 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the Registration Fee to continue active enrollment while preparing for a preliminary examination.

Fall  GRMN2970 S01  15496  Arranged  ‘To Be Arranged’

GRMN 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

GRMN 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full-time basis.

Fall  GRMN2990 S01  15487  Arranged  ‘To Be Arranged’

GRMN XLIST. Courses of Interest to Students Concentrating in German Studies.

Swedish

SWED 0300. Intermediate Swedish I.
Continuing Swedish.

Fall  SWED0300 S01  18133  TTh  4:00-5:30  (A. Weinstein)

Hispanic Studies

HISP 0100. Basic Spanish.
This fast-paced beginning course provides a solid foundation in the development of communicative skills in Spanish (speaking, listening comprehension, reading and writing) as well as some insight on the cultures of the Spanish-speaking world. Individual work outside of class prepares students for in-class activities focused on authentic communication. Placement: students who have never taken Spanish before, or have scored below 390 in SAT II, or below 240 in the Brown Placement Exam. Students who have taken Spanish before and those with an AP score of 3 or below must take the Brown Placement Exam. Students should check Placement and Course Description in the Undergraduate Program section of the Hispanic Studies Website. Enrollment limited to 15; 15 spaces are available for students during preregistration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their
any day before the 4th class when the composition of the course section is finalized.

Fall HISPO100 S01 16557 TTh 9:00-10:20(02)  (S. Sobral)
Fall HISPO100 S02 16558 TTh 10:30-11:50(13) (S. Sobral)
Fall HISPO100 S03 16559 TTh 1:00-2:20(08)  (S. Sobral)

**HISP 0110. Intensive Basic Spanish.**

A highly-intensive, two-semester sequence in one semester that carries 10 contact hours per week. Primarily for students with knowledge of Spanish, who have scored below 450 in SATII or below 340 in Brown Placement Exam. Students with little or no preparation in Spanish should consult with the Course Supervisor. Focused on acquisition of communicative skills (speaking, listening comprehension, reading and writing), and development of cultural awareness. With successful completion of the course students will be able to understand simple texts, carry on short spontaneous conversations involving everyday topics (such as modern day life, health, art and culture, nature and the environment, and relationships) and write simple texts with good command of grammar and sentence structure. Ideal for students interested in fast-tracking their language learning to meet study abroad requirements. Double credit.

Instructor permission required. Enrollment limited to 18: 15 spaces are available for students during pre-registration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized.

**HISP 0200. Basic Spanish.**

A continuation of HISP 0100. This course continues to focus on acquisition of communicative skills (speaking, listening comprehension, reading and writing) as well as cultural awareness. With successful completion of the course students will be able to understand simple texts, carry on short spontaneous conversations involving everyday topics (such as modern day life and its pressures, health, art and culture, nature and the environment, relationships) and write simple texts with good command of grammar and sentence structure. Prerequisite: HISP 0100 or placement: SAT II scores between 400 and 450; Brown Placement Exam scores between 241 and 340. Students with an AP score of 3 or below must take the Brown Placement Exam. Students should check Placement and Course Description in the Undergraduate Program section of the Hispanic Studies Website. Enrollment limited to 18; 15 spaces are available for students during pre-registration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized.

**HISP 0300. Intermediate Spanish I.**

This course continues to develop and strengthen students' proficiency in the Spanish language, as well as to help them increase their cultural understanding. It seeks to develop both fluency and accuracy and to teach students to express, interpret, and negotiate meaning in context. Through the exploration of themes such as the individual and the community, health issues, traveling, multiculturalism and human rights, students focus on communication and learn to appreciate cultural differences. Pre-requisite: either HISP 0200, HISP 0110, or placement: SAT II scores between 460 and 510, or Brown Placement Exam scores between 341 and 410. Students with an AP score of 3 or below must take the Brown Placement Exam. Students should check Placement and Course Description in the Undergraduate Program section of the Hispanic Studies Website. Enrollment limited to 18; 15 spaces are available for students during pre-registration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized.

Fall HISPO300 S01 16562 TTh 9:00-10:20(02)  (N. Schuhmacher)
Fall HISPO300 S02 16563 TTh 10:30-11:50(13) (N. Schuhmacher)
Fall HISPO300 S03 16564 TTh 1:00-2:20(08)  (N. Schuhmacher)

**HISP 0400. Intermediate Spanish II.**

This course offers an exploration of the Spanish language and Hispanic culture through a variety of thematic foci: the world of work, the arts, globalization and technology, leisure, and celebrations. It focuses on vocabulary building, the examination of some of the more difficult points of grammar, and moving students towards a more sophisticated level of comprehension and expression. Students work with readings, including literary texts; songs; film; and the visual arts. Prerequisite: HISP 0300 or placement: SAT II scores between 520 and 590 or Brown Placement Exam scores between 411 and 490. Students with an AP score below 3 or below must take the Brown Placement Exam. Students should check Placement and Course Description in the Undergraduate Program section of the Hispanic Studies Website. Enrollment limited to 18; 15 spaces are available for students during pre-registration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized.

**HISP 0500. Advanced Spanish I.**

Offers comprehensive work in listening, speaking, reading, and writing, with targeted grammar review. Students work with a variety of readings (literature, newspaper articles, etc.) and with art forms such as music and film, in order to develop oral and written expression and to explore issues relevant to the Hispanic world. Students explore topics of their own interest through student-led activities and presentations. Prerequisite: HISP0400 or placement: SAT II scores between 600 and 660, Brown Placement Exam scores between 491 and 570, or AP score of 4 in language or literature. Please check Hispanic Studies website (Undergraduate Programs) for course descriptions and placement information. Enrollment limited to 18; 15 spaces are available for students during pre-registration. 3 spaces will be available at the start of the semester for incoming or re-admitted students who should attend the first class. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized.

Fall HISPO500 S01 16604 TTh 9:00-10:20(02)  (S. Sobral)
Fall HISPO500 S02 16605 TTh 10:30-11:50(13) (S. Sobral)
Fall HISPO500 S03 16606 TTh 1:00-2:20(08)  (S. Sobral)

**HISP 0600. Advanced Spanish II.**

Offers continued, advanced-level work in speaking, listening, reading, and writing skills, with focused review of challenging aspects of Spanish grammar. Course materials include films, music, art works, and a variety of written texts (articles, stories, plays, a novella, etc.) chosen to promote class discussion and in-depth written analysis. There will be individual and group activities, including in-class presentations and creative writing projects. Prerequisite: HISP0500 or placement: SATII scores between 670 and 740, Brown Placement Exam scores between 571 and 650, or AP score of 5 in language. Please check Hispanic Studies website (Undergraduate Programs) for course descriptions and placement information. Enrollment limited to 18. Pre-enrolled students must attend the first four days of class to maintain their pre-registered status and notify the instructor in advance if they must miss any day before the 4th class when the composition of the course section is finalized. Students with scores of 750 and above on the SAT II, 551 on the Brown Placement Exam, or 5 in AP Literature should consider offerings in the HISP 0730-0740-0750 range.

Fall HISPO600 S01 16608 MWF 11:00-12:20(16)  (N. Schuhmacher)
Fall HISPO600 S02 16609 MWF 12:00-13:20(15) (N. Schuhmacher)
Fall HISPO600 S03 16610 MWF 1:00-2:20(06)  (N. Schuhmacher)

**HISP 0650. Advanced Spanish Through Literature & Film.**

Este curso sirve como una introducción a la literatura y la cultura del mundo hispanohablante, y a las prácticas de la lectura crítica y la escritura analítica. HISP 0650 no sólo provee un panorama histórico y contextualizado de la literatura en español, sino que también aporta estrategias de leer, pensar, y escribir sobre textos literarios y cine.
preparando el/la estudiante para cursos más avanzados de literatura y cultura. A lo largo del semestre, se realiza un repaso de gramática a nivel avanzado para aclarar dudas y fortalecer el español hablado y escrito de cada estudiante.

Fall HISPO650 S01 17410 MW 12:00-12:50(15) (T. Renker)

HISP 0710C. Introducción a la lingüística hispánica.
This course introduces students to the study of language and deepens their knowledge of Spanish in its main linguistic components. After briefly considering the nature of language, we will study the sounds of Spanish (phonology and phonetics), word and sentence structure (morphology and syntax), and the elements and mechanisms to express and interpret meaning (semantics and pragmatics). We will then turn our focus to linguistic phenomena such as changes in Spanish over time (historical linguistics), variations in the language according to region and social group (sociolinguistics), and bilingualism, with special attention to Spanish in the U.S.

HISP 0710F. Introduction to Literary Translation.
This course provides students with an introduction to the field of translation studies as well a foundation of experience in the practice of literary translation, predominantly from Spanish to English. The course is highly interactive, with students frequently called upon to reflect on their experience as translators, and dialogue about this experience with their peers. This course involves regular workshops, with students sharing their work – both translations and reading reflections – and collaborating with one another throughout.

Fall HISPO710F S01 18215 TTh 9:00-10:20(02) (S. Thomas)

HISP 0730. Encounters: Latin America in Its Literature and Culture.
An introduction to major authors, movements, and themes of Spanish American literature from the Discovery to the present. This course also aims to develop students’ oral and written expression in Spanish. Students are expected to engage in close reading and discussion of texts, as well as to revise their papers. Prerequisite: HISP 0600, or AP score =5, or SAT II (Literature) score of 750 or above, or Brown placement score of 651 or above.

Fall HISPO730 S01 16889 MWF 9:00-9:50(01) (G. Quintero)

HISP 0740. Intensive Survey of Spanish Literature.
This course provides students an overview of the major authors and movements in Spain’s literature from the Middle Ages to the twentieth century. It teaches students to close-read and engage critically with individual texts and their literary, historical, and social conditions of production. Throughout, we will interrogate canon formation, examine the literary construction of the self and the nation, and analyze the reflection and creation of culture in literature. Prerequisite: HISP 0600, or AP score =5, or SAT II (Literature) score of 750 or above, or Brown placement score of 651 or above.

HISP 0750B. The Latin American Diaspora in the US.
Designed to bridge academic learning about Hispanic/Latino culture and volunteer work in agencies serving Hispanics in Providence. Readings, films, and guest presentations focus on issues of concern to these groups. Spanish language learning occurs in the classroom and the community, where students have the opportunity to enrich and test course content. Prerequisite: HISP 0600 or placement: SAT II scores of over 750, 5 in AP Literature or 651 and over in the Brown Placement Exam.

HISP 0750G. Wildeyed Stories.
Students will study a wide-range of stories from cultures of the Spanish speaking world in literature and film: tales, fables, and humorous stories of heroism, deception and revenge. Class discussions will seek to situate the works examined within the political and cultural currents and debates of their time. Emphasis will be placed on both the historical context and on the development of close reading skills. Conducted in Spanish. Prerequisite: HISP 0600 or placement: SAT II scores of over 750, 5 in AP Literature or 551 and over in the Brown Placement Exam.

HISP 0750Q. Health, Illness and Medicine in Spanish and Spanish American Literature and Film.
In this class we will read/see, discuss and write about texts and films that deal with health, illness, death and medicine in Spanish and Spanish American contexts. Our approach will be informed by principals of Narrative Medicine that demonstrate how attending to, representing and affiliating oneself with other human beings by studying literature and the arts can transform relationships between patients and healthcare professionals. We will be honing our reading and analytical skills as we confront the subjective dimensions of illness and medicine from humanistic and cross-cultural perspectives. This course is conducted in Spanish.

HISP 0770U. Re-writing Realities: A Non-Fiction Creative Writing Workshop.
This course focuses on the basic elements of creative non-fiction writing in Spanish. By writing our own pieces, we will discover how artistic uses of Spanish language can help us view our ‘reality’ under a new light. We will be reading texts from the Spanish language tradition of non-fiction produced through hybrid texts—that is, narrative and essayistic pieces that are not investigative journalism. Our readings will range from influential writers such as Rubén Darío, Jorge Luis Borges, and Alfonso Reyes to contemporary authors including Javier Cercas, Juan Villoro, and Eduardo Halfon.

The end of the Spanish Civil War inaugurated one of the longest dictatorships of the twentieth century. This course will examine the literature and popular culture produced in the peninsula during that period—both the “official” culture allowed and sponsored by the Franco regime, and the voices of resistance that attempted to present alternative political views against a background of repression and censorship.

HISP 1290J. Spain on Screen: 80 Years of Spanish Cinema.
Spain’s is one of the most dynamic and at the same time overlooked of European cinemas. In recent years, Spain has become more internationally visible on screen, especially thanks to filmmakers like del Toro, Almodóvar, and Bayona, or actors Penélope Cruz and Javier Bardem. But where does Spanish cinema come from? And what can it tell us about the nation and its history? Focusing on issues such as landscape, memory, violence, gender, sexuality, and national identity, this course provides students with a solid training in film analysis and a wide-ranging introduction to Spanish culture through its cinema.

HISP 1330P. The Philosophy of Borges.
Jorge Luis Borges devoted several essays during his youth to developing his philosophical understanding of concepts like “personality,” “memory,” “reality,” “narrative” and “style.” At some point later in his literary career, he attempted to erase the memory of those years from his public existence, to the extent that most of the books published during the 1920s were never reprinted during Borges’ lifetime. Nevertheless, it was in those years that he developed the entire philosophical grounding of his future literary work. We will work to decipher Borges’ philosophy through the reading and interpretation of his essays, narratives and poems, including several key texts from his first three suppressed prose volumes (Inquisiciones, El tamaño de mi esperanza, and El idioma de los argentinos). In English, with some Spanish readings. Prerequisite: HISP 0730 or 0740.

HISP 1331F. Museum Fictions.
Museums: monuments to national pride or international pillage? Sites for exhibition or for exoticism? Anchored in the past or for the present? This course looks at the way that museums have been imagined and practiced in Spain and Latin America: spaces for art and anthropology, materials and memories, collections and encounters. We will explore poetry inspired by artworks and by museums; stories that take place in museums; films that show us the behind-the-scenes of institutions; theory that asks what we look at when we look at a collection. We will visit some museums, and perhaps create some of our own.

HISP 1371K. Between Borders and Walls.
This conversation will focus on the study and deconstruction of cultural encounters between Europe and the Americas. We plan to start with Shakespeare’s Caliban and Montaigne’s essays, and to follow Martí in NY, Sarmiento in the Mississippi, and Trump in Puerto Rico. Walls and barriers will be discussed in this balance of books undoing prejudice and violence.
HISP 1371N. LITERATURA Y CULTURA POPULAR EN AMERICA LATINA
Este curso está dedicado a los orígenes, el desarrollo y la función social y política de la cultura popular. La plaza pública, el carnaval, el mercado, son algunos de los espacios de afirmación de la identidad étnica popular. Veremos su desarrollo en el Caribe, el mundo Andino, México, Chile y Argentina. Nos detendremos en las leyendas fundacionales, y nos interesa el desarrollo de la cultura Afro-hispánica. Leeremos leyendas, mitos, poemas, canciones y cuentos. Y estudiaremos los cuadros de castas, el arte popular, la música campesina, el carnaval. Los estudiantes harán un ensayo final o un proyecto creativo.
Fall HISP1371N S01 18216 TTh 10:30-11:50(13) (J. Ortega)

HISP 1980. Independent Study
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

HISP 1990. Senior Thesis Preparation
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

HISP 2030G. Mester de clerecia.
This course will focus on different works of “mester de clerecia” from the 13th and 14th centuries, and provide an overview of current thinking regarding their nature and origin, while at the same time seeking to interrogate many of the prevailing assumptions and received ideas of Spanish literary historiography. Works and topics will include: Libro de Alexandre (ideologies of power), Libro de Aponolion (the intellectual hero), Bercoo's works (hagiography, clerical poetry, the rise of literacy), Poema/ Libro de Ferán González (epic hero), and Libro de buen amor (seduction manual/spiritual guide).
Fall HISP2160G S01 18170 W 3:00-5:30 (L. Bass)

HISP 2160Q. Stage and Page in Early Modern Spain: A Seminar on the Comedia Nueva
This seminar studies the development and florescence of early modern Spain's most popular form of entertainment, the comedia nueva, from both literary and performance perspectives. We will read works by the principal playwrights of the period (Lope de Vega, Tirso de Molina, Calderón de la Barca, and others); examine the comedia's main sub-genres (honor plays, comedias de capa y espada, and autos sacramentales, etc.); and consider the institutional regulation and social and material dimensions of theatrical activity (including the configuration of playhouses and composition of acting companies). Key critical approaches to the comedia, past and present, will also be explored.
Fall HISP2160Q S01 16170 W 3:00-5:30 (J. Ortega)

HISP 2350Y. Escritoras Transatlánticas del XXI.
En este curso estudiaremos la producción de algunas poetas y narradoras que han hecho de la condición femenina el centro alarmado de su obra. Leeremos los libros de Diamela Eltit (Chile), Matilde Sánchez (Argentina), Mariela Dreyfus (Perú), Julia Castillo y Marina Perezagua (España), Rocío Ceron (México), Maria A. Alvarez (Venezuela), y las Poetas Transatlánticas de Brown (Silvia Goldman, Claudia Becerra, Ethel Barja, Berta García Fael). Fall HISP2350Y S01 16798 Th 4:00-6:30 (J. Ortega)

HISP 2350Z. Neovanguardias: escribir despues.
This class explores the practices of a range of poets working individually or collectively in the wake of the historical avant-gardes in Latin America. We will range over conversational poetry from Brazil and Mexico; performed poetry from Cuba and Argentina; and experiments with and by the book. Our readings will be set against a moving backdrop of theory, film, art practices, and political upheavals, asking how poetry reconfigures the aesthetic while engaging questions of gender, race, and audience. Writers will include Parra, Carrión, JL Martínez, Hora Zero, Varela, Thenón, Carrera, Zurita.

HISP 2450. Exchange Scholar Program

HISP 2520L. Latin American Existential Literature.
European existentialism had a strong impact on Latin American literature, though that impact remains under-explored. The course begins with European existentialism and Latin American identity politics. It then explores the particular constructions of European existentialism effected by Argentine, Uruguayan, Mexican, and Brazilian writers of prose fiction in the mid-twentieth century. Readings in Spanish and English. Instructor override needed for registration.
Fall HISP2520L S01 16712 F 3:00-5:30 (S. Merrim)

HISP 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall HISP2970 S01 15491 Arranged 'To Be Arranged'

HISP 2980. Research in Spanish and Latin American Literature.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

HISP 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall HISP2990 S01 15492 Arranged 'To Be Arranged'

HISP 2991. Thesis Preparation.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

HISP XLIST. Courses of Interest to Concentrators in Hispanic Studies

History

HIST 0234. Modern Latin America.
This course is an introduction to the history of modern Latin America. Through lectures, discussions, shared readings, we will explore major themes in the past two hundred years of Latin American history, from the early nineteenth-century independence movements to the recent "Left Turn" in Latin American politics. Some of the topics we will examine include the racial politics of state-formation; the fraught history of U.S.- Latin American relations; the cultural politics of nationalism; how modernity was defined in relation to gender and sexuality; and the emergence of authoritarian regimes and revolutionary mobilizations, and the role of religion in shaping these processes.

HIST 0253. Religion, Politics, and Culture in America, 1865 - Present. Religion has played an undeniable role in the contemporary American cultural landscape. This course lends some perspective on the present by investigating the various and, at times, surprising role religion has played in history in the shaping of American culture from 1865 to the present.
Fall HIST0253 S01 15965 MWF 10:00-10:50(14) (L. Fisher)

HIST 0270B. From the Columbian Exchange to Climate Change: Modern Global Environmental History. Environmental stories are constantly in the news, from weird weather to viral outbreaks to concerns about extinction and fracking. In this course, we put current events in the context of the past 500 years, exploring how climate, plants, animals, and microbiota – not just humans – acted as agents in history. From imperialism to the industrial revolution and from global capitalism to environmental activism, we will examine how nature and culture intermingled to create the modern world. This is an introduction to environmental history and assumes no prior courses.

HIST 0268A. History of Medicine I: Medical Traditions in the Old World Before 1700. People have always attempted to promote health and prolong life, and to ameliorate bodily suffering. Those living in parts of Eurasia also developed textual traditions that, together with material remains, allow historians to explore their medical practices and explanations, including changes in their traditions, sometimes caused by interactions with other peoples of Europe, Asia, and Africa. We'll introduce students to major medical traditions of the Old World to 1700, with emphasis on Europe, and explore some reasons for change. A knowledge of languages and the social and natural sciences is welcome not required.
P Fall HIST0268A S01 15863 MWF 9:00-9:50(01) (H. Cook)

HIST 0268B. History of Medicine II: The Development of Scientific Medicine in Europe and the World.
From the 18th century onward, Western medicine has claimed universal validity due to its scientific foundations, relegating other kinds of medicine to the status of "alternative" practices. The course therefore examines the development of scientific medicine in Europe and elsewhere up to the late
20th century, and its relationships with other medical ideas, practices, and traditions. Students with a knowledge of languages and the social and natural sciences are welcome but no prerequisites are required.

**HIST 0656A. History of Intercollegiate Athletics.**

The United States is the only country in the world in which practically every institution of higher education finances and promotes high-caliber athletics. How did this phenomenon happen? Has there ever been any resistance to its happening? How and when did African Americans integrate college sports? Did Title IX really open up opportunities for women in college sports? Are sports the “front door” of colleges and universities? This course examines these and other questions as it examines the interrelationship between the histories of sports and higher education in the U.S.

Fall HIST0656A S01 17734 TTh 9:00-10:20(02) (H. Chudacoff)

**HIST 0930L. History of the Holocaust (JUDS 0902).** Interested students must register for JUDS 0902.

Fall HIST0930L S01 17212 Arranged “To Be Arranged”

**HIST 1110. Imperial China/China: Culture and Legacy.**

As the current revival of Confucianism in the People’s Republic of China demonstrates, the past is still very much alive in China today. This lecture-and-discussion course surveys the history of China from the origins of the first state through the twilight of the imperial period in the nineteenth century. Lectures are designed and the reading assignments chosen to emphasize in particular those ideas and beliefs, institutions and government structures, and literary and artistic developments that have shaped (and continue to shape) China today. “Imperial China” provides the knowledge necessary for informed study of modern China.

**HIST 1121. The Modern Chinese Nation: An Idea and Its Limits.**

How did the Chinese empire become a nation-state? This question drives a survey of the history of China, Taiwan, Hong Kong and Chinese societies overseas from 1895 to the present. We will explore a variety of conceptions of the Chinese nation and the rise of new state formations in investigating the extent to which they shaped the way people experienced everyday life. We will also pay attention to those who have been excluded by or unwillingly drafted into these processes, or who live outside them altogether, looking at other ways society has been organized and culture defined.

**HIST 1149. Imperial Japan.**

This course is for students interested in exploring the changing ideas, technologies and practices that shaped Japan’s history from the 1850s, when it confronted the power of an encroaching West, to the 1930s when its choices led the nation to the edge of ruin. Lectures and readings will address the collapse of the Tokugawa regime, the Meiji Restoration, the construction of empire, and the emergence of new forms of cultural and political expression. Students will also learn how ideas about gender, race, and tradition were understood and made use of in Imperial Japan. Open to all students.

Fall HIST1149 S01 15867 MWF 11:00-11:50(16) (K. Smith)

**HIST 1155. Japan’s Pacific War: 1937-1945.**

Uses film, oral histories, historical fiction, and more traditional forms of historical interpretation to explore the events, ideas, and legacies of Japan’s Pacific War. The armed conflict began in 1937 with the Japanese invasion of China and ended in 1945 with the atomic bombing of Hiroshima and Nagasaki. Some attention is paid to military developments, but the principle concerns fall into the areas of mutual images, mobilization, and memory.

**HIST 1202. Formation of the Classical Heritage: Greeks, Romans, Jews, Christians, and Muslims.**

Explores essential social, cultural, and religious foundation blocks of Western Civilization, 200 BCE to 800 CE. The main theme is the eternal struggle between universalism and particularism, including: Greek elitism vs. humanism; Roman imperialism vs. inclusion; Jewish assimilation vs. orthodoxy; Christian fellowship vs. exclusion, and Islamic transcendence vs. immanence. We will study how ancient Western individuals and societies confronted oppression and/or dramatic change and developed intellectual and spiritual strategies still in use today. Students should be prepared to examine religious thought from a secular point of view. There is no prerequisite or assumed knowledge of the period.

**HIST 1230C. The Search for Renewal in 20th century Europe.** The overarching theme of the course is the relationship between modernity and the primitive as manifested in major cultural, aesthetic and political movements in the 20th century. Films are an integral part of the course.

Fall HIST1230C S01 17215 MWF 1:00-1:50(06) (M. Gluck)

**HIST 1262M. Truth on Trial: Justice in Italy, 1400-1800.** Why do we think that one human being can judge another? How did this activity, ensnared in legal and political systems, profoundly shape society? We’ll examine the changing face of justice, from the medieval ordeal to judicial torture; expansion of inquisitorial and state law courts; and the eventual disillusionment with the use of torture and the death penalty in the eighteenth century. Using Italy as focus, the course explores how law courts defined social, political, scientific, and religious truth in Italy. Students may pursue a project on another geographical area for their final project for the course.

**HIST 1266C. English History, 1529-1660.**

Examines politics, religion, and society from the Protestant Reformation to the Puritan Revolution—a period of rapid and dramatic change when the world, for most English people, was turned upside down. Considers the experiences and concerns of ordinary men and women, as well as the elite. Takes in Scotland, Ireland, and the great migration to New England.

Fall HIST1266C S01 15872 MWF 2:00-2:50(10) (T. Harris)

**HIST 1266D. British History, 1660-1800.**

A survey of British history from the restoration of monarchy to the Wilkes affair and the loss of the American colonies. In addition to political developments such as the Glorious Revolution and the rise of party, examines political ideology (including the great political theorist, John Locke) and various themes in social history (such as crime, popular protest, the sexual revolution, and the experiences of women).

**HIST 1272D. The French Revolution.**

This course aims to provide a basic factual knowledge of the French Revolution, an understanding of the major historiographic debates about the revolutionary period, and a sense of the worldwide impact of events occurring in late-eighteenth century France. A strong historiographic focus will direct our attention to the gendered nature of the revolutionary project; the tension between liberty and equality that runs throughout French history; the intersection of race and citizenship in the Revolution; and the plausibility of competing social, political, and cultural interpretations of the Revolution.

**HIST 1825F. Nature, Knowledge, Power in Renaissance Europe.**

This course examines the creation and circulation of scientific knowledge in Renaissance Europe, ca. 1450-1600. We will explore the practices, materials, and ideas not just of astronomers and natural philosophers, but also of healers, botanists, astrologers, alchemists, and artisans. How did social, political, economic, and artistic developments during this period reshape how naturalists proposed to learn about, collect, manipulate, and commercialize nature? We will also consider the ways in which colonial projects forced Europeans to engage with other “ways of knowing” and rethink classical knowledge systems.

**HIST 1835A. Unearthing the Body: History, Archaeology, and Biology at the End of Antiquity.**

How was the physical human body imagined, understood, and treated in life and death in the late ancient Mediterranean world? Drawing on evidence from written sources, artistic representations, and archaeological excavations, this class will explore this question by interweaving thematic lectures and student analysis of topics including disease and medicine, famine, asceticism, personal adornment and ideals of beauty, suffering, slavery, and the boundaries between the visible world and the afterlife, in order to understand and interpret the experiences of women, men, and children who lived as individuals—and not just as abstractions—at the end of antiquity.

**HIST 1930G. Black Freedom Struggle Since 1945 (AFRI 1090).** Interested students must register for AFRI 1090.
HIST 1930S. Roman History II: The Roman Empire and Its Impact (CLAS 1320). Interested students must register for CLAS 1320.
Fall HIST1930S S01 17201 Assigned "To Be Arranged"

HIST 1956A. Thinking Historically: A History of History Writing. Philosopher George Santayana famously warned that "Those who cannot remember the past are condemned to repeat it." Ten years later, industrialist Henry Ford perhaps even more famously dismissed that notion: "History is more or less bunk." What we mean by history and how we construct and use it are essential questions in all societies. Thinking Historically explores how we view and employ the past. The course examines major ways of interpreting the past through a survey of historians and methods and studies how history is produced, used, and misused, by professionals as well as by the public.
Fall HIST1956A S01 17277 Th 4:00-6:30 (K. Sacks)

HIST 1964C. Gender and Sexuality in Early Modern Europe. This seminar explores the relationships among gender, sex, and sexuality, as well as the ways in which these categories were constructed, maintained, and subverted in Europe from roughly 1450-1800. We will investigate how these categories operated as systems of power, often also intersecting with other categories of difference, including those rooted in the body, religion, or social status. Finally, we will survey how scholars have framed their study of these topics through women's and gender history; gay and lesbian history; and queer and trans studies.
Fall HIST1964C S01 17458 W 3:00-5:30 (T. Nummedal)

HIST 1964L. Slavery in the Early Modern World. There were multiple forms of slavery in the Early Modern world. We will look at three major systems: Mediterranean slavery and the Barbary Corsairs, Black Sea slavery and slave elites of the Ottoman Empire, and the Atlantic triangular trade. We will examine the religious, political, racial, and economic bases for these slave systems, and compare the experiences of individual slaves and slave societies. Topics discussed include gender and sexuality (e.g., the institution of the Harem and the eunuchs who ran it), the connection between piracy and slavery, and the roles of slavery in shaping the Western world.

HIST 1965C. Stalinism. In this course students will examine in detail one of the most deadly and perplexing phenomena of the twentieth century: Stalinism. Readings will introduce students to major events of Soviet history from the mid-1920s to the mid-1950s as well as debates among historians about how to interpret those events.

HIST 1968A. Approaches to the Middle East. When and why did the Middle East emerge as a field of study? What are the competing approaches to framing our understanding of this pivotal region? How did these approaches change over time? This upper-level seminar explores these questions within the larger context of the colonial encounter that shaped modern regimes of knowledge production. The class features visits by leading scholars from different disciplines who reflect on the questions they ask and how they go about answering them. Readings range from canonical works to innovative new scholarship. Meets WRIT requirements. No pre-requisites but previous coursework on this region recommended.
Fall HIST1968A S02 17310 W 3:00-5:30 (B. Doumani)

HIST 1968V. America and the Middle East: Histories of Connection and Exchange. This seminar explores connections and exchanges between the diverse peoples of two constructed regions: the Middle East and North America. The course proceeds chronologically from the global context surrounding Columbus’s 1492 voyage, eventually focusing on US relations with the "Middle East." But we’ll not stop there. Rather, we’ll read closely for underlying socioeconomic, diplomatic, and cultural processes— including trade, migration, education, and evolving conceptions of race, religion, and citizenship—themes often ignored by conventional histories that dwell on watershed events, personalities, or conflict. Our goal: to recognize how American-Mideast ties are far more complex, rich, and deep-rooted than is generally assumed.

HIST 1969A. Israel-Palestine: Lands and Peoples I. This advanced undergraduate seminar seeks to provide a deeper understanding of the links between the region now known as Israel and Palestine and the peoples that have inhabited it or have made it into part of their mental, mythical, and religious landscape throughout history. The course will be interdisciplinary at its very core, engaging the perspectives of historians, geologists, geographers, sociologists, scholars of religion and the arts, politics and media. At the very heart of the seminar is the question: What makes for the bond between groups and place - real or imagined, tangible or ephemeral. No prerequisites required.
Fall HIST1969A S02 17731 W 3:00-5:30 (O. Bartov)

HIST 1969C. Debates in Middle Eastern History. This seminar investigates the historical bases of some of the major debates which continue to dominate contemporary discussions on the Middle East. These include debates on colonialism and its legacies; problems associated with the post-colonial Middle Eastern state (the "democracy deficit": human rights; oil; political Islam); and arguments about the causes and consequences of some of the major events in Middle Eastern history (the Israel-Palestinian conflict; the Iranian revolution; the Lebanese civil war; 9/11 and the Iraq invasion; and the Arab Spring).
Fall HIST1969C S01 17735 M 3:00-5:30 (S. Mitter)

HIST 1969D. Palestine versus the Palestinians. This course explores alternatives to the common view that the Palestinian-Israeli conflict is a struggle between two nationalist movements over the same land. Moving away from state-centric political discourse, it engages the questions of imperialism, settler-colonialism, and displacement from a bottom-up perspective of everyday life of Palestinian communities in historic Palestine and the Diaspora. How do these internally divided and spatially fragmented communities negotiate the present and imagine the future? Ultimately, the course asks: What does it mean to be a Palestinian? And what can the Palestinian condition teach us about the modern world?

HIST 1969F. Nothing Pleases Me: Understanding Modern Middle Eastern History Through Literature. This course will be interdisciplinary at its very core, engaging the perspectives of historians, geologists, geographers, sociologists, scholars of religion and the arts, politics and media. At the very heart of the seminar is the question: What makes for the bond between groups and place - real or imagined, tangible or ephemeral. No prerequisites required.
Fall HIST1969F S01 17737 W 3:00-5:30 (K. Sacks)

HIST 1970D. Problem of Class in Early America. This seminar considers economic inequality in colonial British North America and the new United States. Studying everyone from sailors, servants, and slaves in the seventeenth century to industrial capitalists and slaveholders in the nineteenth century, this course will look at the changing material structures of economic inequality and the shifting arguments that legitimated or challenged that inequality. Readings will explore how historians have approached the subject of inequality using class as a mode of analysis. Students will write extended papers that place primary research in conversation with relevant historiography. Enrollment limited to: 20. Written permission required.
Fall HIST1970D S01 17471 Th 4:00-6:30 (S. Rockman)

HIST 1970G. Captive Voices: Atlantic Slavery in the Digital Age. The digital revolution is transforming the study of history. But is it allowing us to better recover the voices and lived experiences of people in the past? This course considers the possibilities and pitfalls of using digital tools to understand the lives of enslaved men and women in the Americas between 1500 and 1800. Each session considers a different digital humanities project, supplemented by primary sources and recent books. For their final project, students will contribute to the Database of Indigenous Slavery in the Americas, which is hosted here at Brown. There are no prerequisites for this course.

HIST 1972A. American Legal History, 1760-1920. Undergraduate seminar on the United States and international law. Focuses mainly on the period before the twentieth century. Examines books. For their final project, students will contribute to the Database of Indigenous Slavery in the Americas, which is hosted here at Brown. There are no prerequisites for this course.
law; law as an instrument of economic development and exploitation; and the evolution of rights-consciousness—all within the context of international law. Enrollment limited to 20. Students should contact the instructor before the beginning of the semester if they are interested in taking the course. Instructor permission required.

**HIST 1972L. Loss, Political Activism and Public Feelings: Between Fact and Affect.**

Why do political actors deploy quantitative approaches when dealing with catastrophe, while personal experiences of grief draw heavily on affective resources? Juxtaposing texts from public health, public policy, empirical political science, and law, alongside cultural and artistic responses that focus on public feelings of mourning, rage, and defiance, this co-taught course examines political action between fact and affect. Case studies will include the long afterlife of transatlantic slavery, anti-lynching campaigns, the enshrining of the Civil War and Civil Rights Movement in national memory, and political movements such as ACT UP and the Movement for Black Lives.

**Fall**

**HIST 1972J. Racial Capitalism and U.S. Liberal Empire.**

This seminar will reflect on terms that seem to trap us: empire, capitalism, modernity. Many Americans reject the notion that the United States is an empire due to a sense of patriotism and/or an inability to distinguish colonialism from imperialism, let alone recognize settler colonialism. In this course, however, we will examine how U.S. empire and racial capitalism are inseparable and consider how liberal blinders have operated in American popular and academic discourse—and that perhaps “provincializing the United States” might offer some clarity.

**Fall**

**HIST 1977I. Gender, Race, and Medicine in the Americas.**

This seminar explores the gendered and racial histories of disease and medicine in nineteenth and twentieth century Latin America and the United States. From the dark history of obstetrics and slavery in the antebellum U.S. South to twentieth-century efforts to curb venereal disease in revolutionary Mexico or U.S.-occupied Puerto Rico, to debates over HIV policy in Cuba and Brazil—together we will explore how modern medicine has shaped both race and gender in the Americas. Topics we will explore include environmental health and the body; infant mortality; the medicalization of birth; and the colonial/imperial history of new reproductive technologies.

**Fall**

**HIST 1977J. War and Medicine since the Renaissance.**

Since the Renaissance, warfare has mainly been a mass activity organized by states, with the ability to cause mass harm growing by leaps and bounds. At the same time, states have developed methods to care for their armed forces, and sometimes the civilians entangled in their military operations. This course will deal briefly with the history of warfare, and mainly with the ways in which states, citizens, and interested parties have attempted to ameliorate the bodily effects of warfare, from the Renaissance to the late 20th century.

**Fall**

**HIST 1978D. Contested Histories of Colonial Indochina: Culture, Power, Change.**

This seminar explores the history of French colonial Indochina (Vietnam, Cambodia, Laos) from 1858 to 1945, Challenging Euro-centric narratives of colonialism, we will critically analyze the colonial encounter as complex exchanges, geographically diverse, and socially uneven. Rather than position colonialism as an external agent of change, this seminar dedicates attention to local agency, and social and cultural transformations. Key historical and theoretical debates addressed include the mechanisms of the colonial state, production and legacies of colonial knowledge, construction of modernity and civilization, development of civil societies, transformations of religious communities, and articulations of identities around gender, class, revolution, and nation.

**Fall**

**HIST 1981D. Jewish Humor and Commercial Entertainment in Early 20th-Century Europe and America (JUDS 1726).**

Interested students must register for JUDS 1726.

**Fall**
and written forms. This is a required course for and open only to third-year students in the History Ph.D. program.

**HIST 2970C. Rethinking the Civil Rights Movement.**
This graduate course encourages a rethinking of complex components, arguments and activities that have characterized what we have come to know as the Civil Rights Movement, concentrating primarily on African American agency, actions and politics, through careful reading of recent scholarship in the field. While knowledge of U.S. history is preferred, this course asks larger thematic questions about protest movements (the role of the state, relationships with and between oppressed groups and organizations, and periodization), that will interest non-Americanists also. Some of the topics covered include: gender, organizing and strategies, the local, global ramifications and interactions, organizational structures and politics, and the recent concept of the Long Civil Rights Movement. M

**HIST 2970M. Readings in East Asian History.**
The primary goal of this seminar is to introduce graduate students to key the questions and debates in the histories of modern East Asia. Readings have been chosen to represent a range of time periods and sites of study, and to highlight important methodological interventions and historiographical perspectives. The seminar is intended for students with potential research and teaching interests in East Asia, as well as for those already preparing fields in Chinese or Japanese history.

**HIST 2971I. New Perspectives on Medieval History.**
Over the past several decades, the field of medieval history has been reshaped radically. New approaches have changed the ways in which medievalists think about old subjects. Our understanding of medieval society itself has expanded as previously marginalized or unexplored subjects have become central to medievalists’ concerns. This seminar explores the ways in which medievalist historians have altered how they practice their craft in response to these developments. Readings in classic older works are juxtaposed with newer ones on the way to becoming classics themselves.

**HIST 2980W. First Person History in Times of Crisis: Witnessing, Memory, Fiction.**
This seminar examines the relationship between History as a narrative of events and history as individual experience. Postulating that historical events as related by historians were experienced in numerous different ways by their protagonists, the seminar focuses on the complementary and contradictory aspects of this often fraught relationship at times of crisis, especially in war and genocide. While much time will be spent on World War II and the Holocaust, the seminar will engage with other modern wars and genocides across the world. Materials will include eyewitness reports, postwar testimonies and trial records, memoirs and daily-life objets. By exploring the role of art and architecture in the formation and expansion of the Empire, considering the experiences of ancient viewers, the course offers a post-colonial reading of ancient Roman history and culture. (A)

**HIAA 0002. Advanced Design Studio.**
These studios, three of which are required for graduation, are offered by individual instructors to students who have successfully completed the core curriculum. They are assigned by lottery on the first day of classes. Once assigned to an advanced studio, a student may not drop studio.

**HIAA 0003. Architectural Projection.**
This course introduces the beginning student to the origins, media, geometries and role(s) of projection drawing in the design and construction process. The student will learn systems of projection drawing from direct experience, and be challenged to work both from life and to life. Subjects such as transparency, figure/ground, schiagraphy, oblique projection, surface development, volumetric intersections, spatial manipulation and analytic operations will build on the basics of orthographic and conic projection. The course involves line and tone drawing, hand drafting, computer drawing (AutoCad) and computer modeling (Rhino).

**HIAA 0010. A Global History of Art and Architecture.**
Introduction to the global history of art, architecture and material culture from cave paintings to installation art. The course is both an historical survey as well as an analysis of case study examples. In addition to examining visual strategies of representation, the course explores the varied ways in which art shapes and reflects cultural, social, religious, and political concerns. Weekly one-hour conference required. Limited to 225. A

**HIAA 0032. Art and Architecture of the Roman Empire.**
How did a small city in central Italy grow to become one of the most powerful empires in history? This course explores the art and architecture produced in ancient Rome from its origins in the 6th century BCE to the fourth century CE. It considers a wide variety of media, including reliefs, freestanding sculpture, architectural monument, mosaics, wall paintings, and daily-life objects. By exploring the role of art and architecture in the formation and expansion of the Empire, considering the experiences of ancient viewers, the course offers a post-colonial reading of ancient Roman history and culture. (A)

**HIAA 0033. Intermediate Architectural Design Studio.**
This course will consider issues related to architecture, urban design, and presentations, the major figures of the period--Georgia O'Keeffe, Frank Lloyd Wright, Jackson Pollock, and Andy Warhol among them--and their constituent sites, buildings, and programs. Our work will help you gain greater fluency with the designer's "tools", e.g. models and drawings and the iterative processes through which designers represent conditions of site, program, tectonics, and materiality to create architectural form and urban space.

**HIAA 0041. The Architectures of Islam.**
Through selected case study examples, the course examines the varied manifestations of Islamic architectures. The course spans fourteen centuries and three continents and examines religious as well as secular buildings. We will trace the sources and 'invention' of Islamic architecture in the Umayyad dynasty of the seventh and eighth centuries, and will explore its varied manifestations up to the contemporary period. By examining cross-cultural and trans-regional interactions, we will also investigate the relationship between Islamic and non-Islamic architectural traditions.

**HIAA 0072. Introduction to American Art: The Twentieth Century.**
This lecture/seminar examines the advent of modernism and the rise of modern art in the United States from 1900-1980. Through discussion and presentations, the major figures of the period--Georgia O’Keeffe, Frank Lloyd Wright, Jackson Pollock, and Andy Warhol among them--will be placed in historical and cultural context. Readings by leading scholars will allow a wide-ranging consideration of art historical methods of interpretation.

**HIAA 0102. Intermediate Architectural Design Studio.**
This course will consider issues related to architecture, urban design, and public space. Using the city of Providence as a field of exploration we will examine the cultural, environmental, and political forces which shape the relationships between buildings and urban landscapes. We will utilize various two and three dimensional graphic techniques to analyze and reimage public spaces, and their constituent sites, buildings, and programs. Our work will help you gain greater fluency with the designer's "tools", e.g. models and drawings and the iterative processes through which designers represent conditions of site, program, tectonics, and materiality to create architectural form and urban space.
HIAA 0660. Giotto to Watteau: Introduction to the Art of Europe from Renaissance to French Revolution.
Giotto to Watteau introduces the great works of European art from the Renaissance to French Revolution. What ideas and forces enabled artists such as Leonardo da Vinci, Hieronymus Bosch, El Greco, Caravaggio, and Rembrandt to transform the visual world so profoundly that their innovations still radiate outwards through history into the present? What are the best terms and concepts to describe and understand the new styles that developed between 1300 and 1800? Lectures, discussion, reading, and direct looking consider these questions in a way that works for students at an introductory level.

This seminar examines the material and visual cultures of death in premodern East Asia. Topics include the materiality of funerary rites, the practice of entombing the dead with miniatures, and the visual tradition associated with the influential Scripture on the Ten Kings, which envisioned the afterlife as an infernal bureaucracy. We will discover that the way people in premodern East Asia envisioned death had a lot to do with the way in which they experienced life. By thinking through the continuities, we will use the present traces of death to envision the absent world of the living.

HIAA 1307. Politics and Spectacle in the Arts of Ancient Rome.
This seminar investigates the intersection of politics and spectacles in the artistic production of ancient Rome. We will explore a variety of public monuments to reveal how they codify essential aspects of Roman culture. Topics include the architecture of entertainment spaces such as theaters, amphitheaters, and circuses, as well as the social functions of spectacles such as gladiatorial games and triumphal processions. We will look at expressions of imperial propaganda in monuments such as tombs and honorific arches. The class also considers how these ideas entered the private realm in the form of domestic wall paintings, mosaics, and sculpture gardens.

HIAA 1550C. Dreaming of Food in the Early Modern World.
Floods, wars, trade, climate change, class distinctions, carnivals and public feasts kept food at the forefront of the early modern imagination. Focusing on Italy, but including its global connections, we will look at the cultures of food as the material of art and literature in markets, vineyards, courts, recipe books, medicine, kitchens, and the dreams of the hungry. Investigating the cultivation, presentation and consumption of food through related arts and the evolution of manners allows us to consider the design of tableware, food sculpture, and tapestries alongside more canonical arts. Some previous art history required, languages helpful. Upperclass seminar.

HIAA 1600A. Bosch and Bruegel: Art Turns the World Upside Down.
An in-depth look at the work of these two enigmatic Netherlandish artists. After seeing how art history uses various methods to establish what they actually painted and drew, we will move outwards to interpretation and historical study of their images of comedy, proverb, religion, and landscape. Artworks in local museums will be important focuses of discussion. Prerequisite: HIAA 0010 or 0500.

After the Spanish invasion, indigenous cultures of the Americas endured profound changes including the suppression of religious practices and reconfiguration of socio-political systems. During the succeeding centuries of colonial rule, diverse members of a highly stratified society relied upon cultural objects to contend for social, economic, political, and religious authority. This course considers the ways in which objects of visual culture in Mexico and Peru functioned as leveraging tools, means to assert authority and identity, ways to maintain the status quo, and forms of resistance with emphasis on the roles various participants played in artistic production and reception.

This seminar will map out the field of indigenous art with an emphasis on artworks from English-speaking settler colonial countries, concentrating on Native North American and Aboriginal Australian artists. We will approach indigenous art theoretically, outlining major issues and concepts of this global topic. Units will include defining indigeneity and indigenous art terms, anthropology in relation to art, and curatorial practice. We will begin by addressing the concept of indigeneity through legal and sociopolitical frameworks, continuing with muselogical display of indigenous art across time, and seeing how museums are working to better contextualize their anthropological collections.

Reading and reports on an approved topic, supervised by a member of the staff. Project proposals must be submitted and approved no later than the first week of the semester. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

The subject of the thesis and program of study will be determined by the needs of the individual student. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

This seminar prepares students to interrogate the languages of the visual arts in premodern East Asia. Beginning with foundational claims made in the Classic of Changes (Yijing) and other early texts, it traces the ways in which graphic terminology was refined and redefined throughout its encounter with Sanskrit and Buddhism, the medieval advent of new technologies of visualization, and the emergence of representationalism in the Song-Yuan period. Reading knowledge of Literary Chinese is required. Open to qualified undergraduates with instructor's permission.

HIAA 2440B. Architecture of Solitude: The Medieval Monastery.
Religious men and women, as well as their patrons, sought to establish places of devotion and learning across the medieval landscape. This course examines the rise and development of the medieval monastery from its late antique beginnings in the deserts of Africa to the rise of the preaching orders in early thirteenth-century Europe. Emphasis will be placed upon the material expressions of western monasticism and upon the notion of the monastery as an architectural, archaeological and historical research problem through examination of individual case study examples. Instructor permission required. Enrollment limited to 12.

HIAA 2440F. Reframing Medieval Art.
The seminar will look critically at the history of medieval art and architecture. We will examine the voices of past scholarship, and the ways in which topics like cultural contact, race, and the movements (forced and unforced) of people and objects have been handled. Each student will construct a syllabus that develops new pedagogic strategies for teaching medieval art and architecture in a global and postcolonial context.

HIAA 2450. Exchange Scholar Program.

HIAA 2550D. Dreaming of Food.
Floods, wars, trade, climate change, class distinctions, carnivals and public feasts kept food at the forefront of the early modern imagination. Focusing on Italy, but including its global connections, we will look at the cultures of food as the material of art and literature in markets, vineyards, courts, recipe books, medicine, kitchens, and the dreams of the hungry. Investigating the cultivation, presentation and consumption of food through related arts and the evolution of manners allows us to consider the design of tableware, food sculpture, and tapestries alongside more canonical arts. Some previous art history required, languages helpful.

This seminar will engage with the expanding and accelerating field of "Jesuit Studies" as it includes all of kinds of visual communication, from a new template for architecture to Inca quipu adapted to remember sins...
practices have been a major focus of researchers and educators aiming to equalize educational settings. This course explores how discipline, punishment and sometimes criminalizing students have been central themes in the history of U.S. education reform. Discipline is a central focus on educators seeking to create ordered classrooms but discipline has also played a key function in the broader efforts to maintain social order. We will use an interdisciplinary body of literature in education, history and the social sciences to ask questions about the link between schooling, reform and the practices of discipline.

This course presents an interdisciplinary approach to the study of security. This means we examine the notion of what constitutes security from a variety of disciplinary perspectives that may not always agree or overlap. Specifically, in addition to political science, the course draws on recent work in evolutionary psychology, biological anthropology and behavioral economics to examine existing problems, issues and questions in security studies. The goal of this course is to investigate the extent to which various disciplinary models and methods can help to further inform or develop the study of security. Substantive applications include a wide variety of empirical methods.

This course examines the challenges of cyber security from a strategy and policy perspective. Our main focus: challenges to achieving cyber security; and of building cyber security capacity in national security (including cyber war and critical infrastructure security), economic development, and international security contexts. We incorporate global, as well as corporate, government, and non-governmental organizational perspectives. We start by working toward what “cyber,” “security,” “strategy,” and “power” mean; and develop an understanding of the policy issues faced by public and private sector stakeholders. Students should be familiar with international relations theory, but no technical background is needed.

Fall IAPA1203 S01 17309 TTh 10:30-11:50(13) (S. Kinzer)

IAPA 1205. International Law.
This introduction to public international law covers the nature of legal reasoning in international relations, the interplay of international law and international politics, and the international legal process. Examines selected substantive fields such as state responsibility, the use of force, international human rights, and the U.S. and international law.

IAPA 1401. Economic Development in Latin America.
This course covers some of the unique events and characteristics that have shaped the economic development landscape of Latin America since colonial times until the present. Topics include: the historical legacy, why Latin America fell behind, import substitution industrialization, the debt crisis, poverty and income inequality, inflation, trade and financial liberalization and competitiveness. The class exposes students to a variety of disciplinary perspectives that may not always agree or overlap. Specifically, in addition to political science, the course draws on recent work in evolutionary psychology, biological anthropology and behavioral economics to examine existing problems, issues and questions in security studies. The goal of this course is to investigate the extent to which various disciplinary models and methods can help to further inform or develop the study of security. Substantive applications include a wide variety of empirical methods.

Using primarily paintings and films, this seminar explores the visual imaginaries created and circulated between 17th and early 20th centuries, especially in the Americas but also in Europe, which came to underpin prominent mid- to late-19th century and early 20th-century development theories and resultant legislation and public policies in the United States, and which were deployed both internally and abroad. The course will include an overview of policymaking and policy analysis in the contemporary United States. The course begins with an examination of traditional policies and the implementation. Not open to graduate students.

IAPA 1050. Punishment and School Discipline: Historical Insights on the School to Prison Pipeline.
School discipline and specifically racially disproportionate school discipline practices have been a major focus of researchers and educators aiming to equalize educational settings. This course explores how discipline, punishment and sometimes criminalizing students have been central themes in the history of U.S. education reform. Discipline is a central focus on educators seeking to create ordered classrooms but discipline has also played a key function in the broader efforts to maintain social order. We will use an interdisciplinary body of literature in education, history and the social sciences to ask questions about the link between schooling, reform and the practices of discipline.

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For students preparing a terminal MA thesis, may be repeated in the same set of ideas and imaginaries about categories of humans, land, nature, work, gender, race, capacity for self-definition and political self-representation, and who should wield power.

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IAPA 1700. Economics for Public Policy.
This course examines the role of the public sector in the economy. We begin by exploring when and how the government intervenes in the economy. We also consider the impact of government intervention. We then use this theoretical foundation to examine current issues in expenditure, education, health, retirement, business competition, environment, cybersecurity, crime, financial, and tax policy. The student will acquire analytical skills to better evaluate existing and alternative public policy alternatives. Qualitative and quantitative methods will be used throughout the course. Class sessions require a significant degree of student participation.
Fall IAPA1700 S01 16126 MW 8:30-9:50(01) (A. Baranovsky)

IAPA 1803. Humanitarian Response in Modern Conflict.
This course provides students with a comprehensive introduction to exploring challenges and opportunities related to conflict from both a human and national security perspective—with a special focus on putting people and communities, as opposed to national interests, at the center of attention. Students will gain a deep understanding of humanitarian crises caused by conflict, including impacts on food and water security, healthcare, mass displacement of civilians, and protection of civilians and humanitarian aid workers.
Fall IAPA1803 S01 17650 T 4:00-6:30 (D. Polaty)

IAPA 1803E. Social Entrepreneurship.
Social Entrepreneurship, engages students in the process of exploring significant global problems and developing innovative solutions that drive transformative social change. The course helps students understand the strategies that social entrepreneurs employ to tackle complex and entrenched social problems with transformative approaches that work and impact systems. Students will learn about real organizations and interact with entrepreneurs leading this work. Case studies, complemented by articles and guest speakers, will show different approaches to social entrepreneurship and illustrate the strengths and weaknesses of various models and strategies. Enrollment in the class is determined by application: http://goo.gl/forms/tLjK5twXcY4
Fall IAPA1803E S01 16129 MWF 10:00-10:50(14) (W. Allen)

IAPA 1804. Diplomacy, Crisis, War, in the Modern Era.
This seminar examines war and peace after 1945 through the context of international relations (IR) theory. It teaches students theoretical perspectives on IR and to critically evaluate the changing ways in which states have interacted with one another since the end of World War II. Was the Cold War inevitable? Did nuclear weapons change the way that states negotiated with one another? How much did individuals make a difference during diplomatic crises? Why did states sometimes fail to reach peaceful settlements with one another? How have social and economic institutions changed international politics in the twenty-first century?
Fall IAPA1804 S01 17647 W 3:00-5:30 (T. Jost)

IAPA 1804B. Global Megaprojects.
Megaprojects are costly, complicated, risky, and laborious. They include power plants, pipelines, ports, and petrochemical complexes; take years—or even decades—to finish; and owe their successes and failures to social and organizational—and not merely technical—considerations. This class addresses the origins, design, management, and consequences of megaprojects in contemporary and historical perspective. Our goal is to learn not only about specific projects—like the Panama Canal, Tennessee Valley Authority, Trans-Amazon Highway, and Belt and Road Initiative being undertaken by China—but about theories and methods that will help us understand the origins and fates of large-scale organizations more generally.
Fall IAPA1804B S01 17649 M 3:00-5:30 (A. Schrank)

IAPA 1804D. Legal Methods for Public Policy.
This course uses both traditional lecture and interactive, mock-trial to give public policy students with the tools to understand, interpret and apply the law as expressed in judicial opinions, particularly the opinions of the Supreme Court of the United States. The end-product for the course will be a capstone public policy paper on a subject of the student's choice involving timely or complex legal issues. For the first three weeks, we'll have an introduction to civil procedure, examining how cases are brought, the requirements for valid claims, including what affects parties' right to bring a lawsuit, emergency relief, disposition with and without trial, appeals and the principles that the Supreme Court uses in deciding cases.
Fall IAPA1804D S01 18398 T 4:00-6:30 (A. Gabinet)

IAPA 1804F. The Politics of Crime and Violence in Latin America.
Latin America ranks first in the world in both violent and common crime, and more than one in three people in the region believe insecurity is the most important problem facing their country. In this course we explore the causes and consequences of crime and violence in regional perspective, with a focus on better understanding the current political moment. Some of the motivating questions of this course are: What are the legacies of dictatorships? How do organized crime groups govern, and what consequences do these modes of governance have for public life? How do state responses to crime affect different populations and overall public safety? Under what conditions do citizens resist crime and impunity, or conversely, further contribute to cycles of violence?
Fall IAPA1804F S01 18462 M 3:00-5:30 (To Be Arranged)

IAPA 1804G. Coercion: Deterrence and Compellence.
This advanced undergraduate seminar dives deep into the theory and practice of coercion—the use of threats to change incentives. From a library threatening late fees for tardy patrons to a parent sending an insolent child to their room, banal aspects of daily life brim with the logic of coercion. The threat of punishment casts an even longer shadow in international affairs. Threats of invasion, bombing, or economic sanctions are common throughout history. This course will introduce students to classic and contemporary scholarship on military and economic coercion. Topics will include deterrence and compellence, signaling, bargaining, reputation, crisis stability, air power, and trade and financial sanctions.
Fall IAPA1804G S01 18461 Th 4:00-6:30 (R. Pauly)

IAPA 1804H. Early History of the CIA.
This seminar traces the establishment, rise, and spreading ambition of the Central Intelligence Agency in its first fifteen years, from 1947 to 1962. During this period the CIA was on the front line of the Cold War, which was then in its most intense phase. It carried out dozens of covert operations, setting off chains of events that would shape the history of the United States and many other countries. We will examine the events that led to the creation of the CIA, study its Cold War battles, and trace its growth into a powerful global force.
Fall IAPA1804H S01 18531 W 3:00-5:30 (S. Kinzer)

IAPA 1807C. Individual Research Project.
Section numbers vary by instructor. Required: A completed proposal form and syllabus and faculty sponsor's and concentration advisor's approval prior to registering.

IAPA 1809C. Senior Thesis Preparation.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Reserved for Development Studies seniors.

IAPA 1816A. Senior Honors Seminar.
Open only to Senior students accepted into the honors program in international relations. Instructor permission required.
Fall IAPA1816A S01 17306 W 6:30-9:00PM (C. Elliott)

IAPA 1817A. Senior Honors Thesis.
Open only to Senior students accepted into the honors program in international relations. Instructor permission required.

IAPA 1818A. Individual Research Project.
Limited to juniors and seniors. Section numbers vary by instructor. Required: A completed proposal form and syllabus, sponsor's and concentration advisor's approval, and written permission from Dr. Elliott (following review of the proposal) prior to registering for any section of this course. Banner overrides will be given by the IR Program manager only, and no overrides will be issued after the Registrar's course add deadline.

IAPA 1850. Senior Honors Seminar.
An advanced two-semester research seminar for senior honors candidates in the public policy and American institutions concentration. Participants jointly consider strategies appropriate to researching and writing a senior paper before proceeding to individual research on topics they choose.
Each participant is required to present a summary of his or her work to the colloquium.

ITAL 0100. Elementary Italian.
Elective for students without previous training in Italian. No credit for first semester alone. Fundamentals of Italian grammar and development of skills in speaking, comprehension, and writing. Overview of contemporary Italian society. Four meetings per week, audio and video work, two Italian films. Not: This is a year course.
Fall ITAL0100 S01 16078 MWF 11:00-11:50(16) (C. Abbona-Sneider)

ITAL 0110. Intensive Elementary Italian.
Covers the same material presented in Italian 100-200. One semester equivalent to the standard two-semester sequence. Daily meetings plus audio and video assignments.
Fall ITAL0100 S01 16085 MWF 11:00-11:50(16) (C. Abbona-Sneider)

ITAL 0200. Elementary Italian.
See Elementary Italian (ITAL 0100) for course description.

ITAL 0300. Intermediate Italian I.
Review of the fundamentals of grammar, with emphasis on speaking and writing. Reading of representative short stories. Weekly compositions, presentations, and a paper. Three Italian films. Prerequisite: ITAL 0100-0200, or ITAL 0110, or placement by examination. Requirement for enrollment in the Bologna Program.
Fall ITAL0300 S01 16085 MWF 11:00-11:50(16) (C. Abbona-Sneider)
Fall ITAL0300 S02 16086 MWF 12:00-12:50(15) (C. Abbona-Sneider)

ITAL 0400. Intermediate Italian II.
Review of specific grammar problems. Reading of one novel and newspaper articles. Compositions and oral presentations. Three Italian films. Prerequisite: ITAL 0300, or placement by examination.
Fall ITAL0400 S01 16085 MWF 11:00-11:50(16) (C. Abbona-Sneider)
Fall ITAL0400 S02 16086 MWF 12:00-12:50(15) (C. Abbona-Sneider)

ITAL 0500. Advanced Italian I.
The purpose of this advanced course is to improve speaking and writing skills by offering extensive practice in a variety of styles and forms. Students will discuss various aspects of contemporary Italian culture. Reading, analysis and class discussion of texts (articles, songs, pictures, short stories, movies and television), oral presentations, based on research, and a writing portfolio (compositions, essays, blog and a journal). Prerequisites: ITAL 0400, or placement by examination.
Fall ITAL0500 S01 16088 TTh 12:00-12:50(15) (C. Abbona-Sneider)

ITAL 0600. Advanced Italian II.
A sixth semester course with intensive practice in speaking and writing. Short stories, poems, music, and movies will be used to discuss Italian Society from the Second World War through the present. We will explore some important themes: family, religion, gender, and politics. Class discussion, compositions, oral presentations, and a final paper. Prerequisite: ITAL 0500, placement by examination.

ITAL 1010. Dante in English Translation: Dante’s World and the Invention of Modernity.
Primarily for students with no knowledge of Italian. Given in English. Concentrators in Italian should enroll in ITAL 1610; they are expected to read the material in the original. Close study and discussion of Dante’s deployment of systems of retribution in the Inferno and rehabilitation in the Purgatorio with a view to imagining a society based on love and resistant to the effects of nascent capitalism and the money economy. Dante’s work summarizes and transforms the entire ancient and medieval tradition of literature, philosophy, and science.
Fall ITAL1010 S01 16688 TTh 2:30-3:50(12) (R. Martinez)

ITAL 1020. Boccaccio’s Decameron.
Close study and discussion of Boccaccio’s collection of 100 tales told by ten young Florentines over a period of two weeks, while in flight from the devastating plague of 1348. The Decameron defined the standard of Italian prose narrative for four centuries and deeply influenced Renaissance drama. We will also pay particular attention to visualizations and adaptations of the Decameron into a variety of media, from manuscript illumination to painting, theatre and film. Students will contribute to the Decameron Web, the award-winning Boccaccio web site administered by the department of Italian Studies. Sections in English and Italian. Enrollment limited to 40.

ITAL 1390. Modern Italy.
A look at the dramatic events that transformed Italy over the past two centuries and the ways that this history has been represented in film. For the nineteenth century, the focus is on the violent birth of the modern Italian nation-state. For the twentieth century, the course focuses on the drama of Benito Mussolini and the birth, life, and death of Italian Fascism. In addition to examining the transformation of Italian history, the course investigates the many issues involved in turning a book of history into a commercial film.

ITAL 1400S. II Femminismo in Italia/Italian Feminism.
From the first feminist wave to Rosi Braidotti’s nomadic subject, from the work of Carla Lonzi to Adriana Cavaro, the course aims at covering the major texts of Italian feminist theory. Starting from the movement for the women’s suffrage in the second half of the 19th century, we will look more closely at the themes that are at the core of the feminists’ political struggles in the 20th century: abortion, divorce, labour, prostitution… Taught in Italian.
Fall ITAL1400S S01 17572 Th 4:00-6:30 (L. Odello)

ITAL 1400T. From the Hypernovel to Paranoid Fiction.
How can storytelling help us cope with complexity? How can novels help us detect and debunk conspiracy theories? Is “paranoia” a delusional mental disorder or a vital critical tool, in the age of post-truth, fake news and infowars? We will dissect the double meanings of “plot” in major novels by Italian masters Italo Calvino (If On A Winter’s Night A Traveler, 1979) and Umberto Eco (Foucault’s Pendulum, 1988). We will then tackle the paradoxes of paranoid fiction and conspiratorial evidence, from literature to the internet: from Luther Blissett’s Q (1999) to Q’Anon, Unification and ARG (Alternate Reality Games). Taught in English with a discussion section in Italian.
Fall ITAL1400T S01 16132 TTh 1:00-2:20(08) (M. Riva)

ITAL 1920. Independent Study Project (Undergraduate).
Undergraduate Independent Study supervised by a member of the Italian Studies Faculty. Students may pursue independent research in order to prepare for their honors thesis or honors multimedia project, or they may enroll in the course in order to work individually with a faculty member on a specific area of Italian Studies not covered in the current course offerings. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ITAL 1990. Senior Conference.
Special work or preparation of an honors thesis under the direction of a instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ITAL 2450. Exchange Scholar Program.
Fall ITAL2450 S01 15497 Arranged ‘To Be Arranged’

Brown University
ITAL 2550. Gender Matters.  This course examines the impact of gender as a category of analysis, focusing upon its varied repercussions on the study of history, with Italian history serving as one field of focus. Participants interested in other geographical, chronological, and disciplinary areas will have ample time to pursue their interests. The study of gender has profoundly shaped the practice of history in the last half century, and the course outlines its impact and its transformations. The course places in conversation diverse but overlapping historical developments: the impact of the study of gender on history; influences from beyond history that have shared or shaped historians’ approach to gender and sexuality; the particular inflections of the study of gender in the case of Italy (1400-1800); the impact of the turn to the study of sexuality and queer studies. The course explores and critiques the limits of our gender constructs (theoretical, methodological, and modern) for explaining the culture of people in the premodern world and beyond the western hemisphere, fields of scholarship where the universality of contemporary notions of gender have been challenged. In English.

ITAL 2820. Italian Studies Colloquium.  The Italian Studies Colloquium is a forum for an exchange of ideas and work of the community of Italian scholars at Brown and invited outside scholars. Graduate students present their work in progress, and engage the work of faculty and visitors. They are expected to come prepared with informed questions on the topic presented. Presentations in both Italian and English. Instructor permission required.

ITAL 2970. Preliminary Examination Preparation.  For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

ITAL 2980. Reading and Research.  Courses on special subjects individually planned and supervised. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

ITAL 2990. Thesis Preparation.  For graduate students who have met the residency requirement and are continuing research on a full time basis.

Judaic Studies

HEBR 0100. Elementary Hebrew.  An introduction to the skills of reading, writing, and conversing in contemporary Israeli Hebrew. Students also read Hebrew texts adapted for their level of Hebrew based on biblical, rabbinic, and modern Hebrew literature, which introduce them to the approaches of Hebrew writers in various periods and to a variety of cultural issues. If registration is closed, please contact the professor and a wait list will be created. This is the first half of a year-long course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special permission. Enrollment limited to 20.

HEBR 0300. Intermediate Hebrew.  Develops the skills of reading, writing, and conversing in contemporary Israeli Hebrew at the intermediate level and of reading Hebrew texts of the biblical, rabbinic, and modern periods (biblical stories, rabbinic legends, modern Hebrew poems, stories, essays, newspaper articles). Discussions and compositions focus on the psychological, cultural, political, and social issues reflected in the Hebrew sources that we study. Prerequisite: HEBR 0200 or equivalent. Enrollment limited to 20. If unable to enroll because of closed registration, please contact the professor and a wait list will be created.

HEBR 0500. Writing and Speaking Hebrew.  Enables students to improve their skills in speaking and writing Hebrew on a variety of topics. Features advanced work on language structure and active language practice in the classroom. Class discussions of Israeli current events draw on Israeli stories, poems, television programs, and films and on the Israeli press. Students also compose essays and stories in Hebrew. Prerequisite: HEBR 0400 or equivalent. Enrollment limited to 20.

JUDS 0065. Ancient Israeliite and Jewish Narrative and Artistic Image.  Ancient Israel produced a great body of narrative art that is preserved in the Bible—Genesis, Exodus, the warriors of Judges, the story of David’s founding of Israel and the succession to Solomon. The Jewish culture that followed extended the story-telling tradition in new directions—Daniel, the “novel women” of Esther, Susanna, and Judith. These brilliant and powerful stories inspired equally powerful images in art and sculpture. Both story and image still affect us. This course will explore the ancient narratives as story and the art they inspired as visual image.

JUDS 0902. History of the Holocaust.  Explores questions raised by the Holocaust regarding how such barbarism erupted in our so-called civilized and enlightened age. Attempts to analyze the meaning of the Holocaust from three vantage points: that of European, and more particularly, German history; that of Jewish history; and that of those states and religious institutions which shared responsibility. Enrollment limited to 40. If unable to enroll because of closed registration please contact the professor and a wait list will be created.

JUDS 1614. Heidegger, the Jews, and the Crisis of Liberalism.  This class explores the enduring legacy of Heidegger’s critique of Western philosophy in political, theological, and social thought. Focusing primarily upon Heidegger’s reception in 20th-century Jewish philosophy, we will explore the allure of Heideggerian thought and its implication in both left and right political critiques of liberalism. Topics include onto-theology, phenomenology, and radical historicism; science, hermeneutics, and methodology in the humanities; liberalism and the secular; ethics, politics, action; de-structureutration and deconstruction; time and the Other. Authors include Adorno, Arendt, Butler, Derrida, Levinas, Löwith, Marcuse, Rosenzweig, Schmitt, Strauss.

JUDS 1635. Problems in Israeliite History.  Topics of recent and current debate among specialists in the field of Israeliite history. Problems include (1) the historicity of the patriarchs and matriarchs; (2) the historical evidence relevant to the question of an exodus; (3) the nature of Israel’s settlement in Canaan; (4) the 10th century, era of empire or literary fiction? (5) the land of Judah after the Babylonian conquest. Enrollment limited to 20.

JUDS 1726. Jewish Humor and Commercial Entertainment in Early 20th-Century Europe and America.  The seminar explores the relationship between humor, popular culture and Jewish ethnic identity in early 20th-century Europe and America. It argues that self-deprecating humor and satiric performance of Jewish
students will engage in classroom discussion and produce media to introduce American Sign Language. Through authentic materials from diverse sources, including informal and formal discussions, presentations, and storytelling. Through authentic materials from diverse sources, students will explore American Sign Language literature and oral traditions. Prerequisite SIGN 0300 or placement interview. Additional 1 hour session held through Zoom every week to discuss cultural topics.

SIGN 0500. American Sign Language V
This course increases American Sign Language skills by introducing advanced vocabulary and grammar in various registers and settings, including informal and formal discussions, presentations, and storytelling. Through authentic materials from diverse sources, students will explore American Sign Language literature and oral traditions. Prerequisite SIGN 0400 or placement interview. Additional 1 hour session held through Zoom every week to discuss cultural topics.

JUDS 2450. Exchange Scholar Program.

Center for Language Studies
American Sign Language
SIGN 0100. American Sign Language I, II.
An immersive approach using authentic communication inside and outside of the classroom will be used to develop introductory communicative skills in American Sign Language. Authentic materials from diverse sources will provide an overview of the American Deaf community. Basic media literacy skills will be taught.

SIGN 0200. American Sign Language I, II.
Introduces basic ASL conversation. Features core vocabulary, common signing phrases, non-manual components (facial expression, body postures), signing space, fingerspelling, numbers, loan signs, cultural protocols, rules of ASL grammar and structure. Deaf cultural behavior is introduced in the classroom and through readings, videotapes, and Deaf community events.

SIGN 0300. American Sign Language III.
This course will use an immersive approach incorporating authentic communication to develop intermediate communicative skills in American Sign Language. Through authentic materials from diverse sources, students will engage in classroom discussion and produce media to explore Deaf cultural topics related to family dynamics, language and literacy, and education. Prerequisite SIGN 0200 or placement interview. Additional 1 hour session held through Zoom every week to discuss cultural topics.

SIGN 0400. American Sign Language IV.
Intensive use of expressive and receptive skills in complex grammatical structures, advanced classifiers, dialogues, and storytelling techniques. Discussion of social factors that give rise to code-switching; regional and ethnic sign variations; social, political, and cultural evolution of U.S. Deaf community. Interaction with Deaf community in directed and non-directed activities. Prerequisite SIGN 0300 or placement interview. Additional 1 hour session held through Zoom every week to discuss cultural topics.

SIGN 0500. American Sign Language V
This course increases American Sign Language skills by introducing advanced vocabulary and grammar in various registers and settings, including informal and formal discussions, presentations, and storytelling. Through authentic materials from diverse sources, students will explore American Sign Language literature and oral traditions. Prerequisite SIGN 0400 or placement interview. Additional 1 hour session held through Zoom every week to discuss cultural topics.

Arabic

ARAB 0100. First-Year Arabic.
Builds basic listening, speaking, reading, and writing skills, introducing the Arabic language in its cultural environment. Four contact hours per week, with an emphasis on grammar and communication, plus written, audio, and video assignments outside of class. This is the first half of a two-semester sequence course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0200 covers the entire year and is recorded as the final grade for both semesters. If course is full, please request an override. Enrollment limited to 18.

ARAB 0200. First-Year Arabic.
Builds listening, speaking, reading, and writing skills, at the low intermediate level of Arabic proficiency. Five contact hours per week, with an emphasis on grammar and communication, plus written, audio, and video assignments outside of class. This is the second half of a year-long course. Students must have taken ARAB 0100 to receive credit for this course. If ARAB 0100 was taken for credit then this course must be taken for credit; if taken as an audit, this course must also be taken as an audit. Exceptions to this policy must be approved by both the academic department and the Committee on Academic Standing. Enrollment limited to 18.

ARAB 0300. Second-Year Arabic.
Develops listening, speaking, reading, and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0200. This is the first half of a year-long course. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0400 covers the entire year and is recorded as the final grade for both semesters.

ARAB 0400. First-Year Arabic.
Builds basic listening, speaking, reading, and writing skills, introducing the Arabic language in its cultural environment. Four contact hours per week, with an emphasis on grammar and communication, plus written, audio, and video assignments outside of class. This is the first half of a two-semester sequence course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0200 covers the entire year and is recorded as the final grade for both semesters. If course is full, please request an override. Enrollment limited to 18.

ARAB 0500. Second-Year Arabic.
Develops listening, speaking, reading, and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0400. This is the first half of a year-long course. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0400 covers the entire year and is recorded as the final grade for both semesters.

ARAB 0600. Second-Year Arabic.
Develops listening, speaking, reading, and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0400. This is the first half of a year-long course. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0400 covers the entire year and is recorded as the final grade for both semesters.

ARAB 0700. Second-Year Arabic.
Develops listening, speaking, reading, and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0400. This is the first half of a year-long course. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0400 covers the entire year and is recorded as the final grade for both semesters.

Arabic

ARAB 0100. First-Year Arabic.
Builds basic listening, speaking, reading, and writing skills, introducing the Arabic language in its cultural environment. Four contact hours per week, with an emphasis on grammar and communication, plus written, audio, and video assignments outside of class. This is the first half of a two-semester sequence course whose first semester grade is normally a temporary one. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0200 covers the entire year and is recorded as the final grade for both semesters. If course is full, please request an override. Enrollment limited to 18.

ARAB 0200. First-Year Arabic.
Builds listening, speaking, reading, and writing skills, at the low intermediate level of Arabic proficiency. Five contact hours per week, with an emphasis on grammar and communication, plus written, audio, and video assignments outside of class. This is the second half of a year-long course. Students must have taken ARAB 0100 to receive credit for this course. If ARAB 0100 was taken for credit then this course must be taken for credit; if taken as an audit, this course must also be taken as an audit. Exceptions to this policy must be approved by both the academic department and the Committee on Academic Standing. Enrollment limited to 18.

ARAB 0300. Second-Year Arabic.
Develops listening, speaking, reading, and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0200. This is the first half of a year-long course. Neither semester may be elected independently without special written permission. The final grade at the end of the course work in ARAB 0400 covers the entire year and is recorded as the final grade for both semesters.
ARAB 0400. Second-Year Arabic.
Develops listening, speaking, reading and writing skills at the intermediate level of language proficiency through extensive use of various texts and multimedia. Promotes better understanding of Arabic cultural traditions. Five contact hours weekly, plus written, audio, and video assignments outside of class. Prerequisite: ARAB 0300. This is the second half of a year-long course. Students must have taken ARAB 0300 to receive credit for this course.

ARAB 0450A. Beginning Levantine Colloquial.
Parting from the solid foundation built in MSA during the first two years of Arabic studies, this course will accelerate students’ advancement toward language proficiency by introducing them to Levantine Colloquial, one of the major varieties of Arabic. In preparation for class meetings, we will view and read a variety of media from the Levant. Oral communication and understanding Levantine cultures and contemporary societies will be the focus of our meetings. At the end of the semester, students will gain confidence to function in an ample variety of social and cultural environments and access a wider range of media.

ARAB 0500. Third-Year Arabic.
Offers comprehensive training in listening, speaking, reading, and writing, with grammar review as needed. Broadens students’ perspective of Arabic culture using selections from the classical and modern traditions of Arabic writing and various art forms. Four contact hours weekly. Prerequisite: ARAB 0400.

ARAB 0500. Third-Year Arabic.
Offers comprehensive training in listening, speaking, reading, and writing, with grammar review as needed. Broadens students’ perspective of Arabic culture using selections from the classical and modern traditions of Arabic writing and various art forms. Four contact hours weekly. Prerequisite: ARAB 0500.

ARAB 0700. Advanced Arabic: Tales of the City.
The Arab city, current site of a major political upheaval, is the central theme of this integrated-skill language and culture course. Images of cities, as multifaceted as the people who inhabit them, animate cinema screens and daily news reports, inspire masters of writing, artists, and musicians, arouse political activism. By engaging the complex articulations, pronunciation, fluency and/or expression. Instructor permission required.

This integrated-skill language and culture course stresses oral interaction in class. We will view and discuss films from the Arab World as vehicles to understanding the cultural and linguistic diversity of Arabic-speaking countries. Our selection of films will focus on issues of economic inequality, family dynamics, and gender, as well as the effects of war and immigration on society. By engaging the complex representation of these themes in contemporary cinema, this course will enhance students’ understanding of Middle Eastern culture, while building a content-specific lexicon and advanced communicative ability. Prerequisite: ARAB 0600, or an equivalent. Enrollment limited to 12.

ARAB 0850. Advanced reading and composition in Arabic: Kalila wa-Dimna.
This course aims to introduce students with advanced proficiency in Arabic to Classical Arabic exemplified by the stories of Kalila wa-Dimna, one of the most popular medieval Arabic folk tales, told through a cast of personified animals. While written originally in Sanskrit in the fourth century CE, the Arabic translation of Ibn al-Muqaffa—one of the most influential prose writers in the history of Arabic literature—is what made it a classic in Arabic. It also allowed it to travel to other parts of the globe through various translations based on Ibn al-Muqaffa’s.

Students will also have an opportunity to engage with a modern version of the stories, by Munther Younes, developing further their ability to read critically authentic Arabic texts of different historical periods, sharpening their analytical skills, and expanding their perspective of the language evolution through the ages. Advanced level in Arabic is required.

ARAB 1990. Special Topics in Arabic Language, Literature, and Culture.
Advanced level integrated skill course focusing on specific reading and writing topics derived from the traditions and arts of the Arabic language. Course prerequisites include advanced capacity in Arabic grammar and reading comprehension. Enrollment limited to 10.

ARAB 2450. Exchange Scholar Program.
Fall ARAB2450 S01 15448 Arranged ‘To Be Arranged’

Catalan
An open content course, which may be offered each semester. Offered as an Independent Study, this course will be adapted to students’ needs that are not currently covered by our curricular offerings.

English for Internationals
EINT 2200. Academic Interactions.
This course develops the English language skills of first-year international graduate students who are preparing to be teaching assistants. Students improve their fluency and expression of complex ideas in a variety of linguistic situations typical of classroom interactions. Students also increase their control of vocabulary, pronunciation and listening comprehension when communicating with American undergraduates. Instructor permission required.

EINT 2300. Negotiating an American Classroom.
In this course, international graduate students increase their abilities to communicate accurately and fluently in English with American undergraduates. International students develop their ability to interact, in culturally appropriate ways, in a variety of teaching situations common to an institution of higher education, where they are responsible for expressing and explaining complex information and ideas in English. Instructor permission required.

EINT 2400. Speaking Professionally for Internationals.
This course develops the English communication skills of international graduate students with an emphasis on intelligibility of speech and clarity of expression in a variety of teaching and professional situations (e.g. presenting material, responding to questions, directing discussions). Students develop increased facility of English in extended discourse when they are the authority in a teaching or other professional context. Instructor permission required.

EINT 2400. Speaking Professionally for Internationals.
This course develops the English communication skills of international graduate students with an emphasis on intelligibility of speech and clarity of expression in a variety of teaching and professional situations (e.g. presenting material, responding to questions, directing discussions). Students develop increased facility of English in extended discourse when they are the authority in a teaching or other professional context. Instructor permission required.

Hindi-Urdu
HNDI 0100. Beginning Hindi or Urdu.
Introduces conversation, reading, and writing of modern standard Hindi and the Devanagari script. Those who already know Devanagari but have rusty conversation skills may join the class second semester; obtain instructor’s permission during the first semester. Those who prefer to learn Urdu and the Persian script should contact the instructor.

Fall HNDI0100 S01 15546 MTWThF 12:00-12:50(15) (A. Koul)
HNDI 0200. Beginning Hindi or Urdu.
Introduces conversation, reading, and writing of modern standard Hindi and the Devanagari script. Those who already know Devanagari but have rusty conversation skills may join the class second semester; obtain instructor's permission during the first semester. Those who prefer to learn Urdu and the Persian script should contact the instructor. Prerequisite: HNDI 0100.

HNDI 0300. Intermediate Hindi-Urdu.
A continuation of HNDI 0100-0200, which is a prerequisite. Introduces the variation of the Arabic script used for Urdu. Prepares students to communicate in written and spoken language. Activities are conducted in Hindi/Urdu. Meets four hours weekly.
Fall HNDI 0300 S01 15548 MWF 1:00-1:50(06) (A. Koul)

HNDI 0400. Intermediate Hindi-Urdu.
A continuation of HNDI 0100-0200. Introduces the variation of the Persian script used for Urdu. Prepares students to communicate in written and spoken language. Activities are conducted in Hindi/Urdu. Meets four hours weekly. Prerequisite: HNDI 0300.

HNDI 1080. Advanced Hindi-Urdu.
Each student follows an independent reading list determined in consultation with the instructor. The readings may include folk tales, journalistic prose, 20th-century literature, classical Urdu poetry of the 17th to 19th centuries, or subjects in nonfiction. The class meets together three hours weekly for discussion. Each student also spends one hour weekly with the instructor. Prerequisite: HNDI 0400.
Fall HNDI 1080 S01 15547 Arranged (A. Koul)

Language Studies

LANG 0100. Beginning Nahuatl.
Once the lingua franca of the Aztec Empire, Nahuatl is the most widely spoken indigenous language in Mexico and in North America as a whole, with 1.7 million speakers and 30 variants. As the vehicle of centuries-old knowledge transmitted orally, Nahuatl offers an entry point into the cultures and worldviews of various indigenous communities today, both in Mexico and its diaspora. This online course offers an introduction to Nahuatl (Huasteca variant) through an immersive methodology focused on developing your speaking, listening comprehension, reading and writing, while fostering your cultural sensibility and competence.
Fall LANG 0100 S01 18440 TTh 10:30-11:50(13) (J. Sokolosky)

LANG 1900. Independent Study in Languages.
This course will meet the needs of students who are not studying one of the languages offered by the CLS faculty. Beginner, Intermediate or Advanced integrated skill course focusing on specific reading and writing topics selected by the faculty advisor and the student. Enrollment limited to 10.

LANG 2900. The Theory and Practice of Foreign Language Learning and Teaching.
The course is intended for graduate students in departments of foreign languages and literatures, who are interested in acquiring a theoretical understanding of second language acquisition (SLA) and language teaching methodologies and, by extension, developing a pedagogically sound teaching practice, grounded in research.

Persian

PRSN 2980. Reading and Research.
Work with individual students in connection with special readings, problems of research, or preparation of theses. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Turkish

TKSH 0200. Introduction to Turkish.
This is the second semester of a proficiency oriented introductory course to Turkish Language and Culture. It adopts an integrated skills approach and is designed for students who have taken Turkish 0100 or have placed into the class after consultation with the instructor or a placement exam. The course combines an emphasis on the development of communicative competences with an understanding of language structures and grammar as well as insights into Modern Turkish society and culture.

TKSH 0300. Intermediate Turkish.
This course will focus on both communicative skills and the language structures of modern Turkish. Students will learn about Turkish society, culture, and traditions. Course materials include Turkish films, podcasts, radio programs, as well as authentic and adapted Turkish written texts. New students can place into the course depending on their language level. Class will be scheduled for three times a week synchronously in consultation with students and the instructor. There will also be one hour of asynchronous instruction.
Fall TKSH 0300 S01 15550 Arranged (E. Ozdemir)

TKSH 0400. Intermediate Turkish II.
TKSH 0400 is designed for students who have taken TKSH 0300 and already studied Turkish language to develop proficiency at an advanced level. New students can place into it, after special arrangements with the instructor. The course places equal emphasis on further developing four skills (reading, listening, speaking, and writing) at an advance proficiency level as well as advanced compound and subordinate structures in grammar. It combines an emphasis on the development of communication skills with an understanding of the language and insights into Modern Turkish society and culture. There will be one additional hour TBD in consultation with the instructor and students.

TKSH 0500. Advanced Turkish I.
This course builds upon the linguistic and communicative points covered in TKSH 0400, and it is designed for students who are interested in Turkish language and culture. New students can place into it, after special arrangements with the instructor. The course is based on the development of four integrated skills: speaking, listening, reading, and writing. Students will learn about modern Turkish, Turkish society and culture by reading, watching, and listening to authentic and adapted Turkish texts including articles, news pieces, short stories, poems, movie clips, and songs.
Fall TKSH 0500 S01 17599 Arranged (E. Ozdemir)

TKSH 0720A. Understanding Modern Turkey Through Film and Literature.
This course will introduce students to modern Turkey and offer a wide range of perspectives on the society and its culture. Each week, we will focus on a single theme such as: family and gender; social classes and their interaction with each other; Istanbul and its neighborhoods; Turkey's role within Europe; ethnic identities and their recognition by Turkish society; Turkish media and entertainment; modernism and political Islam; important events in the very recent history of Turkey including the Hrant Dink assassination, terror attacks, and the 2016 coup d’etat attempt; education and academic freedom; modern literature; specific cultural practices and rituals; foreigners’ perspectives on Turkish society; and modern Turkish sensory experiences including music and cuisine.
Fall TKSH 0720A S01 18530 MWF 2:00-2:50(10) (E. Ozdemir)

Yoruba

YORU 0100. Introduction to Yoruba I.
Students successfully completing this beginner's course in Yoruba Language and Culture will have the facility to speak in proper tones and patterns and to understand Yoruba used in common everyday situations. Students will practice skills in an integrated fashion in order to reach some proficiency in speaking, reading, listening, and writing. Course content includes Yoruba culture, literature, theater and music. Heritage speakers may place into the course depending on their language level.
Fall YORU 0100 S02 17435 Arranged (J. Sokolosky)

YORU 0200. Introduction to Yoruba II.
Students successfully completing this beginner's course in Yoruba Language and Culture will have the facility to speak in proper tones and patterns and to understand Yoruba used in common everyday situations. Students will practice skills in an integrated fashion in order to reach some proficiency in speaking, reading, listening, and writing. Course content includes Yoruba culture, literature, theater and music. Heritage speakers may place into the course depending on their language level.
Latin American and Caribbean Studies


This course will be constructed as a journey throughout the complex and diverse region of Latin America. By exploring the main geographical, historical, cultural and ethnic characteristics of this area of the globe, students will discover some critical junctures, and personalities that in the past centuries have defined Latin America as a unique, transnational and multilingual continent. The course will be structured around three axes (foundational and modern myths, nation-building and cultural identities, and icons of popular culture) that will be explored from an interdisciplinary perspective, combining insights from the fields of anthropology, history, literature, and political science. The languages of instruction will be Spanish and English. Students will be expected to be able to conduct their readings in Spanish, when English translations of the reading material are not available, although during class discussion and assignments they will be permitted to use the language of their choice.

Fall LACA0500 S01 17346 TTh 1:00-2:20(08) (E. Durante)

LACA 1503R. Researching Social Movements in Latin America.

In this course students will learn about Latin American social movements while conducting research on them. As such, it is a creative course, as it combines social movement theory, Latin American social movements, and students' creativity to design innovative research projects. We will begin the course reviewing the main social movement theories. Then, we will review basic concepts and research design methods. Third, we will survey the some of the most influential social movements in Latin America in the last 30 years to learn what issues, motivations, and political contexts have mobilized individuals to take up the streets, launch democratizing campaigns, and defend their rights contentiously.

Fall LACA1503RS01 17523 W 3:00-5:30 (M. Inclan)

LACA 1504G. Arts of the Environment in the Americas.

Latin America is one of the regions where the worldwide environmental crisis has manifested itself most forcefully over the past decades--with high levels of environmental toxicity, endangered species, and habitat loss. This course will introduce students to how artists, filmmakers, and writers are representing and raising awareness about key environmental issues in the region. The course is structured around five case studies: the desert, agriculture, oil extraction, water pollution, and waste management. Our focus on the environment will serve as a base for larger discussions about the representation of queer, Latinx, and indigenous communities, the aftermath of political violence in post-conflict societies, and the current immigration crisis at the U.S.-Mexico border.

Fall LACA1504G S01 18125 TTh 2:30-3:50(12) 'To Be Arranged'

LACA 1900. Preparation for Honors and Capstone Projects on Latin American and Caribbean Topics.

This workshop is designed for junior and seniors in any concentration who are researching and writing about Latin America and the Caribbean. It will help students to enhance their research and organization skills, refine their research or creative projects, and develop or complete a Capstone Project (e.g. honors thesis, honors project, substantial research paper).

Fall LACA1900 S01 17347 Th 4:00-6:30 (E. Durante)


For Latin American + Caribbean Studies concentrators writing senior projects or honors theses.


For Latin American + Caribbean Studies concentrators writing senior projects or honors theses.


For upper-division students interested in pursuing topics in Latin American and Caribbean Studies not currently taught in the Brown curriculum. Students must have significant prior coursework, language skills, and sufficient background knowledge to put together a comprehensive reading list and to produce a final paper that meets the research requirement in the LACA concentration.

Class requirements include weekly meetings with the instructor, reading responses submitted before each meeting, and a self-assessment at the end of the semester by the student. The independent study culminate in a research paper of sufficient depth and sophistication to meet the research requirement for the concentration in Latin American and Caribbean Studies.

Registration requires a comprehensive reading list developed by the student in consultation with the faculty member and a written agreement on course requirements. The concentration advisor’s approval is required if the course is to count toward the concentration.

No more than two (2) semesters of LACA 1994/1995 may be used toward concentration requirements in Latin American and Caribbean Studies.


For upper-division students interested in pursuing topics in Latin American and Caribbean Studies not currently taught in the Brown curriculum. Students must have significant prior coursework, language skills, and sufficient background knowledge to put together a comprehensive reading list and to produce a final paper that meets the research requirement in the LACA concentration.

Class requirements include weekly meetings with the instructor, reading responses submitted before each meeting, and a self-assessment at the end of the semester by the student. The independent study will culminate in a research paper of sufficient depth and sophistication to meet the research requirement for the concentration in Latin American and Caribbean Studies.

Registration requires a comprehensive reading list developed by the student in consultation with the faculty member and a written agreement on course requirements. The concentration advisor’s approval is required if the course is to count toward the concentration.

No more than two (2) semesters of LACA 1994/1995 may be used toward concentration requirements in Latin American and Caribbean Studies.

Literary Arts

LITR 0100A. Introduction to Fiction.

A workshop for first year students, introducing them to the art of writing fiction. This course is reading and writing intensive. Enrollment limited to 17. S/NC required.

LITR 0100B. Introduction to Poetry.

A workshop for first year students, introducing them to the art of writing poetry. This course is reading and writing intensive. Enrollment limited to 17. S/NC required.

LITR 0110A. Fiction I.

A workshop for students who have little or no previous experience in writing fiction. Enrollment limited to 17 per section. This course is limited to undergraduates. S/NC.

Fall LITR0110A S01 15837 T 6:40-9:10PM (S. Kagunda)
Fall LITR0110A S02 15838 W 5:45-8:15PM (C. Crews)
Fall LITR0110A S03 15839 Th 6:40-9:10PM (S. Fields)

LITR 0110B. Poetry I.

A workshop for students who have little or no previous experience in writing poetry. Enrollment limited to 17 per section. This course is limited to undergraduates. S/NC.

Fall LITR0110B S01 15840 M 5:45-8:15PM (E. Ammann)
Fall LITR0110B S02 15841 T 6:40-9:10PM (L. Jackson)
Fall LITR0110B S03 15842 Th 6:40-9:10PM (K. Morris)
Fall LITR0110B S04 16995 Th 6:40-9:10PM (G. Oladpo)
Fall LITR0110B S05 17988 F 3:00-5:30 (L. Simone)

LITR 0110D. Digital Language Art I.

Project-oriented workshop for writers, visual/sound artists, filmmakers and programmers who wish to explore digital media techniques. No experience working in this field (or with computer programming) required. You’ll learn through doing, reading, talking and collaborating on works in various traditions. Enrollment limited to 17. S/NC.

Fall LITR0110D S01 17327 T 12:00-2:30 (S. Chavaria)
LITR 0110E. Screenwriting I
This workshop introduces the fundamentals of screenwriting through a variety of readings, exercises and assignments. Our main focus will be on students' writing, with particular emphasis on exploring the cinematic potential of your stories and themes, and on developing structures that best suit your material and intentions. This course is limited to undergraduates. S/NC. Enrollment limited to 17.
Fall LITR0110E S01 17775 M 2:00-4:30 PM (L. Colella)

LITR 0210A. Fiction Writing II.
Topics often include stylistic matters related to tone and point of view, and structural matters like controlling switches in time. See general course description above for course entry procedures for all intermediate workshops. Enrollment limited to 17. Instructor permission required. S/NC.
Fall LITR0210A S01 15843 T 4:00-6:30 (A. Colarusso)
Fall LITR0210A S02 15844 T 6:40-9:10 PM (H. Tran)

LITR 0210B. Poetry Writing II.
Emphasis is placed on verse strategies, meter, rhythm, imagery and rhyme. Writing includes frequent exercises in various poetic traditions. See general course description above for course entry procedures for all intermediate workshops. Written permission required. S/NC.
Fall LITR0210B S01 15845 W 3:00-5:30 (S. Nakayasu)

LITR 03100. Narrative Nonfiction.
This is a class in crafting engrossing and essential stories. True stories need to be told, and deserve to be told well. What's the difference between story and subject? How can narrative and careful structuring maximize the impact of investigative reporting? How do you properly pace a longform story? How do you pitch, report, outline, and edit one? And, most importantly, why do you write it in the first place? Class meetings will include a magazine-style editorial meeting, discussing weekly pitches and, later, story drafts followed by a discussion of reading that explores various approaches to structure, voice, and genre.
Fall LITR03100 S01 17573 W 3:00-5:30 (F. Mari)

LITR 0310P. WIND in the CANE: Or, poetry in the “black outdoors”.
Are poems set on urban streets landscape poems? Can a poem shot through with mistrust of, and alienation from, the land and other natural bodies constitute a nature poem? How do our notions of dwelling in the body inform our notions of dwelling on land? In this cross-disciplinary workshop, we'll consider what informs our prevailing views of the natural world; we'll investigate the language we use to describe the spaces we inhabit, haunt, cross over, and take as refuge; and we'll attune to the body and its material culture, which shapes our experience and enables our relationship to the land.
Fall LITR0310P S01 17574 T 4:00-6:30 "To Be Arranged"

LITR 0710. Writers on Writing Seminar.
Offers students an introduction to the study of literature (including works from more than one genre) with special attention given to a writer's way of reading. This course will include visits to the course by contemporary writers who will read to the class and talk about their work. Enrollment limited to 19 first year students.

LITR 0999. Graphic Novels and Comic Masterworks.
Focused on the influence of graphic novels and comic art, this course examines graphic novels and comic art from seminal texts like Art Spiegelman's Maus through a range of mainstream and independent comics from Marjane Satrapi, Grant Morrison, Alan Moore, David B., Lynda Barry, Daniel Clowes, Frank Miller, and many others, including graphic memoir, reportage, and Indie and DIY zines. The course explores image and language in collaboration, seeking a better understanding of this influential genre. Assignments are critical and creative, both individual and collaborative, and will involve daily reading and writing assignments. Enrollment limited to 20.

LITR 1010A. Advanced Fiction.
The writing of short stories or longer works in progress in regular installments, along with appropriate exercises and reading assignments. See general course description above for course entry procedures for all advanced workshops. Written permission required. S/NC.
Fall LITR1010A S02 17109 W 3:00-5:30 (L. Baker)

LITR 1010B. Advanced Poetry.
Course work includes a body of exercises, close reading of poetry, workshop conversations and conferences. See general course description above for course entry procedures for all advanced workshops. Instructor permission required. S/NC.
Fall LITR1010B S01 15848 T 4:00-6:30 (E. Hunt)

LITR 1010E. Advanced Screenwriting.
Screenwriting for feature-length and episodic works. Participants should already have experience writing short screenplays and be prepared to develop a longer piece. See the Literary Arts Department website for course entry procedures for all advanced workshops. Work sample and instructor permission required. S/NC.
Fall LITR1010E S01 17776 M 6:00-8:30 PM (L. Colella)

LITR 1110N. Workshop for Potential Literature.
A novel without the letter "E", 100,000-billion sonnets by permutation and texts that take the shape of a Mobius-Strip-- all this time and more, as workshop participants try their hands in writing in response to problems created by and inspired by a group of writers engaged in strange constraints and procedures. Instructor permission required. S/NC.
Fall LITR1110N S01 16616 M 3:00-5:30 (P. Nelson)

LITR 1110S. Fiction into Film.
A study of various directors' attempts to transfer masterpieces of fiction into film. Concerning both genres we will ask Gertrude Stein's question: Are poems set on urban streets landscape poems? Can a poem shot through with mistrust of, and alienation from, the land and other natural bodies constitute a nature poem? How do our notions of dwelling in the body inform our notions of dwelling on land? In this cross-disciplinary workshop, we’ll consider what informs our prevailing views of the natural world; we’ll investigate the language we use to describe the spaces we inhabit, haunt, cross over, and take as refuge; and we’ll attune to the body and its material culture, which shapes our experience and enables our relationship to the land.
Fall LITR1110S S01 17252 T 12:00-2:20 PM (C. Channer)

LITR 11150B. The Foreign Home: Interdisciplinary Arts.
Project-centered workshop for exploration beyond one's "home" genre, whether in video, poetry, fiction, music, performance or visual arts. Contemporary and art-historical interdisciplinary workshops will ground our investigation into the tension between expertise and "beginner's mind". Collaborative and individual work expected. See general course description above for entry procedures for all special topics workshops/seminars. Written permission required. S/NC.
Fall LITR11150 S01 17267 M 3:00-5:30 (P. Nelson)

LITR 11151G. Everything Emily.
This is a course that allows students to explore the life of Emily Dickinson—one of the most important poets at the foundations of American poetry and, still today, one of our most exciting and most experimental practitioners. No one in the ensuing 150 years has surpassed her radical modes of expression, invention, and vision. We will engage with her poetry, her letters, her biography, and many of the works of criticism, visual art, film, and poetry that her work has inspired, as well as exploring the Dickinson collections in Brown's Hay Library and visiting her Amherst home.
Fall LITR11151G S01 17253 W 3:00-5:30 (A. Colarusso)

LITR 11151T. Poetry for Healing Territories.
The texts we’ll be reading in this seminar/workshop address the will to heal and recuperate after loss. These are poets with courage enough to reclaim lost territories—and from their recaptions, we too are given permission to claim that which we’ve lost, that which has been taken, and that which is lost. How are these poems able to write through dissolution in a way that substantiates healing? What is gained in every/any instance of loss?
Fall LITR11151T S01 17253 W 3:00-5:30 (A. Colarusso)

LITR 11151Y. Against Genre.
An experimental workshop in creative writing hybridized with other forms—not only literary work that does not adhere to traditional genres, like prose-poetry, but writing that includes video, or music, or collage, and which includes practices like appropriation and non-traditional distribution. Including weekly reading assignments (Kenneth Goldsmith, Paul Metcalf, W. G. Sebald, Robert Smithson, Vito Acconci, the Surrealists, Public Enemy/The Bomb Squad, Shelley Jackson, Thalia Field, etc.), weekly writing prompts, one oral presentation.
Fall LITR11151Y S01 16976 W 3:00-5:30 (H. Moody)
LITR 1152B. Ekphrasis in Action.
Ekphrasis, according to its most basic definition, is simply poetry that addresses art; we’ll be stretching that definition, making it into a way of interacting with art and even into a way of looking at things in the world that makes them into art. We’ll be visiting art in action, from painting studios to dance rehearsals to a natural history museum, using these visits as premises for writing that we will then share in a workshop format, giving copious feedback. The whole will be supported by readings of theoretical and creative works that address ekphrasis.

LITR 1152K. The Shape of Longing.
This class will examine a variety of formal strategies that artists, writers, composers and mystics have used to render longing palpable, present and felt in works of art. Through a series of writing assignments, students will make their own explorations into this charged, expensive, and elusive terrain. A rigorous class of risk and experimentation.

Fall  LITR1152K S01  17576   Th  12:00-2:30  (C. Mao)

LITR 1152L. I’m Feeling Myself: The Black Female Body as Its Own Utopia.
Audre Lorde described sensuality as an immense, untapped power within each of us “that lies in a deeply female plane.” What would that power, generated by a Black woman’s body, look like? By focusing solely on the poetry, art, and music of Black women, we explore the Black female body as its own utopia. Weekly readings include Lorde, Jordan, hooks, Morrison, and Dove, alongside the artwork of Mickalene Thomas and Wangeci Mutu, and the music videos of Rihanna, Janet Jackson, and Beyoncé. By re-centering the western gaze on the Black feminine erotic, we discover a poetics of the impolite body.

Fall  LITR1152L S01  18475   T  4:00-6:30  (S. Sinclair)

LITR 1200. Writers on Writing.
Offers students an introduction to the study of literature (including works from more than one genre) with special attention given to a writer’s way of reading. This course will include visits to the course by contemporary writers, who will read to the class and talk about their work. Enrollment is limited to 30 students.

Fall  LITR1200 S01  15849   Th  4:00-6:30  (H. Moody)
Fall  LITR1200 S02  17989   Th  4:00-6:30  (C. Swensen)

LITR 1230E. Form and Theory of Fiction.
"Form and Theory of Fiction" offers an exploration of narrative theories directed particularly at creative writers, in conjunction with a hands-on examination of contemporary fictional narrative practices. Theoretical readings include historical essays on fiction and work by Gaston Bachelard, Mieke Bal, Gilles Deleuze, and others. Enrollment limited to 20.

Fall  LITR1230E S01  17987   F  3:00-5:30  (L. Hunt)

LITR 1230Y. Structuring (and De-Structuring) Novels: Special Topics Literature Seminar.
How to structure a novel? This is a question most novelists approach with dread, because, a) all the good plots and structures have been used up; b) plots can feel annoying anyway, like a capitation to cinema or theater; and c) nevertheless, it is impossible to write in total darkness. We’ll dispel this darkness by reading works by a range of novelists. How do these authors strike a balance between complex thought and elegant/unusual structure? And how can we, as writers, maintain narrative coherence over the course of hundreds of pages?

Fall  LITR1230Y S01  17231   Th  12:00-2:20(08)  (K. Mahajan)

LITR 1231K. Innovations in Indian Literature.
Modern Indian literature developed in the shadow of colonialism and the birth of the nation state. Indian writers working in English and vernacular languages were forced to confront a sudden—and fragmented—modernity. What innovative narrative and literary strategies did they embrace in response to this historical and cultural pressure? Do these techniques have application beyond the Indian context? In general, how do cultural and political forces precipitate formal innovation?

Fall  LITR1231K S01  17752   W  3:00-5:30  (K. Mahajan)

LITR 1300. Independent Study in Reading, Research, and Writing About Literature.
Provides advanced students with an opportunity to pursue tutorial instruction oriented toward a literary research topic.

Fall  LITR1300 S01  17736   Th  6:40-8:00PM(10)  (A. Landman)

LITR 1310. Independent Study in Creative Writing.
Offers tutorial instruction oriented toward some significant work in progress by the student. Typically taken by honors or capstone candidates in the antepenultimate or penultimate semester. See instructor to seek permission during the semester before undertaking the course of study. One advanced-level workshop is prerequisite. S/NC.

Fall  LITR1310 S01  15850   M  3:00-5:30  (C. Channer)

LITR 2410. Graduate Thesis Independent Study in Literary Writing.
Provides tutorial instruction for graduate students completing their graduate creative theses. Typically taken in the final semester. See instructor to seek permission during the semester before undertaking the course of study. S/NC.

Fall  LITR2410 S01  15851   W  3:00-5:30  (E. Sikelianos)

LITR 2700. Pedagogy Seminar.
The Pedagogy Seminar examines ideas about teaching in a literary arts/creative writing environment. The pros and cons of the "workshop"-style will be discussed alongside alternative models, and general topics of exploration will include: creative process pedagogy, writing-to-learn, multi-genre approaches, uses of readings/research, and general classroom management. Designing an inclusive classroom and syllabus as well as exploring generative and innovative practices will be covered as well. A special emphasis will be on preparing students to feel confident and to explore a range of creative process issues. Personal writing as well as syllabus design will be expected.

Fall  LITR2700 S01  18123   T  12:00-2:20(06)  (L. Hunt)

Mathematics
MATH 0060. Analytic Geometry and Calculus.
A slower-paced introduction to calculus for students who require additional preparation. Presents the same calculus topics as MATH 0090, together with a review of the necessary precalculus topics. Students successfully completing this sequence are prepared for MATH 0100. Prerequisite: MATH 0050 or written permission. May not be taken for credit in addition to MATH 0070 or MATH 0090. S/NC only.

MATH 0070. Calculus with Applications to Social Science.
A survey of calculus for students who wish to learn the basics of calculus for application to social sciences or for cultural appreciation as part of a broader education. Topics include functions, equations, graphs, exponentials and logarithms, and differentiation and integration; applications such as marginal analysis, growth and decay, optimization, and elementary differential equations. May not be taken for credit in addition to MATH 0050 or MATH 0060 or MATH 0090. S/NC only.

Fall  MATH0070 S01  16362   TH  6:40-8:00PM(10)  (A. Landman)
MATH 0900. Introductory Calculus, Part I.

An intensive course in calculus of one variable including limits, differentiation, maxima and minima, the chain rule, rational functions, trigonometric functions, and exponential functions. Introduction to integration with applications to area and volumes of revolution. MATH 0900 and MATH 1010 or the equivalent are recommended for all students intending to concentrate in the sciences or mathematics. May not be taken for credit in addition to MATH 0050 or MATH 0060 or MATH 0070. S/NC only.

Fall MATH0900 S01 16363 Arranged 'To Be Arranged'

MATH 0100. Introductory Calculus, Part II.

A continuation of the material of MATH 0900 including further development of integration, techniques of integration, and applications. Other topics include infinite series, power series, Taylor's formula, polar and parametric equations, and an introduction to differential equations. MATH 0900 or the equivalent are recommended for all students intending to concentrate in the sciences or mathematics.

Fall MATH0100 S01 16379 Arranged (D. Katz)

MATH 0180. Intermediate Calculus.

Three-dimensional analytic geometry. Differential and integral calculus for functions of two or three variables: partial derivatives, multiple integrals, line integrals, Green's Theorem, Stokes' Theorem. Prerequisite: MATH 0100, 0170, or 0190.

Fall MATH0180 S01 16394 Arranged (D. Katz)

MATH 0200. Intermediate Calculus (Physics/Engineering).

Covers roughly the same material as MATH 0180, but is intended for students with a special interest in physics or engineering. The main topics are: geometry of three-dimensional space; partial derivatives; Lagrange multipliers; double, surface, and triple integrals; vector analysis; Stokes' theorem and the divergence theorem, with applications to electrostatics and fluid flow. The extra hour is a weekly problem session. Recommended prerequisite: MATH 0100, 0170, or 0190.

MATH 0420. Introduction to Number Theory.

An overview of one of the most beautiful areas of mathematics. Ideal for any student who wants a taste of mathematics outside of, or in addition to, the calculus sequence. Topics include: prime numbers, congruences, quadratic reciprocity, sums of squares, Diophantine equations, and, as time permits, such topics as cryptography and continued fractions. No prerequisites.

MATH 0520. Linear Algebra.

Vector spaces, linear transformations, matrices, systems of linear equations, bases, projections, rotations, determinants, and inner products. Applications may include differential equations, difference equations, least squares approximations, and models in economics and in biological and physical sciences. MATH 0520 or MATH 0540 is a prerequisite for all 1000-level courses in Mathematics except MATH 1260 or MATH 1610. Recommended prerequisite: MATH 0100 or equivalent. May not be taken in addition to MATH 0540.

Fall MATH0520 S01 16422 Arranged (J. Kostick)

MATH 0540. Honors Linear Algebra.

This course provides a rigorous introduction to the theory of linear algebra. Topics covered include: matrices, linear equations, determinants, and eigenvalues; vector spaces and linear transformations; inner products; Hermitian, orthogonal, and unitary matrices; and Jordan normal forms. MATH 0540 provides a more theoretical treatment of the topics in MATH 0520, and students will have opportunities during the course to develop proof-writing skills. (Recommended prerequisites: MATH 0100 or equivalent.)

Fall MATH0540 S01 16425 TTh 10:30-11:50(13) (C. Mantoulidis)

MATH 0760. Introduction to Higher Mathematics.

This year-long class will expose students to six fundamental areas of mathematics. It will be team taught by six members of the faculty. Fall topics will include logic, combinatorics, and analysis. Spring topics will include number theory, algebra, and geometry. Approximately 4 weeks will be devoted to each topic.

MATH 1010. Analysis: Functions of One Variable.

Completeness properties of the real number system, topology of the real line. Proof of basic theorems in calculus, infinite series. Topics selected from ordinary differential equations. Fourier series, Gamma functions, and the topology of Euclidean plane and 3-space. Prerequisite: MATH 0180, 0200, or 0350. MATH 0520 or 0540 may be taken concurrently. Most students are advised to take MATH 1010 before MATH 1130.

MATH 1040. Fundamental Problems of Geometry.

This class discusses geometry from a modern perspective. Topics include hyperbolic, projective, conformal, and affine geometry, and various theorems and structures built out of them. Prerequisite: MA 0520, MA 0540, or permission of the instructor.


The study of curves and surfaces in 2- and 3-dimensional Euclidean space using the techniques of differential and integral calculus and linear algebra. Topics include curvature and torsion of curves, Frenet-Serret frames, global properties of closed curves, intrinsic and extrinsic properties of surfaces, Gaussian curvature and mean curvature, geodesics, minimal surfaces, and the Gauss-Bonnet theorem.

Fall MATH1060 S01 16433 TTh 9:00-10:20(02) (G. Daskalopoulos)

MATH 1110. Ordinary Differential Equations.

Ordinary differential equations, including existence and uniqueness theorems and the theory of linear systems. Topics may also include stability theory, the study of singularities, and boundary value problems.

Fall MATH1110 S01 16434 TTh 1:00-2:20(08) (B. Pausader)

MATH 1120. Partial Differential Equations.

The wave equation, the heat equation, Laplace's equation, and other classical equations of mathematical physics and their generalizations. Solutions in series of eigenfunctions, maximum principles, the method of characteristics, Green's functions, and discussion of well-posedness. Prerequisites: MATH 0520 or MATH 0540, or instructor permission.

MATH 1130. Functions of Several Variables.

A course on calculus on manifolds. Included are differential forms, integration, and Stokes' formula on manifolds, with applications to geometrical and physical problems, the topology of Euclidean spaces, compactness, connectivity, convexity, differentiability, and Lebesgue integration. It is recommended that a student take a 1000-level course in analysis (MATH 1010 or MATH 1260) before attempting MATH 1130.

Fall MATH1130 S01 16436 TTh 10:30-11:50(13) (N. Kapouleas)

MATH 1140. Functions Of Several Variables.

See Functions Of Several Variables (MATH 1130) for course description. Prerequisite: MATH 1130 or instructor permission.

MATH 1230. Graph Theory.

This course covers important material about graph theory, such as spanning trees, network flow problems, matching problems, coloring problems, planarity, Cayley graphs, spectral theory on graphs, and Ramsey Theory. The emphasis will be on a combination of theory and algorithms. Depending on the instructor, connections to such fields as combinatorics, geometry, or computer science might be emphasized. Prerequisite: MATH 0180, 0200 or 0350 and MATH 0520 or 0540 are recommended. Enrollment limited to 40.

MATH 1260. Complex Analysis.

Examines one of the cornerstones of mathematics. Complex differentiability, Cauchy-Riemann differential equations, contour integration, residue calculus, harmonic functions, geometric properties of complex mappings. Prerequisite: MATH 0180, 0200, or 0350. This course does not require MATH 0520 or 0540.

Fall MATH1260 S01 16437 Arranged (T. Goodwillie)

MATH 1270. Topics in Functional Analysis.

Infinite-dimensional vector spaces with applications to some or all of the following topics: Fourier series and integrals, distributions, differential equations, integral equations, calculus of variations. Prerequisite: At least one 1000-level course in Mathematics or Applied Mathematics, or permission of the instructor.

Fall MATH1270 S01 16438 TTh 2:30-3:50(12) (A. Landman)
MATH 1410. Topology.
Topological spaces, metric spaces, continuity, connectedness, compactness, quotient spaces, product spaces, the Baire category theorem. Prerequisites: MATH 0420 or permission.

MATH 1530. Abstract Algebra.
Introduction to the principles and concepts of modern abstract algebra. Topics include groups, rings, fields, modules, polynomial rings, and vector spaces. Prerequisite: MATH 0210 or permission.

MATH 1540. Topics in Abstract Algebra.
An introduction to the principles and concepts of modern abstract algebra. Topics include groups, rings, fields, modules, polynomial rings, and vector spaces. Prerequisite: MATH 1530 or permission.

MATH 1550. Number Theory.
A study of modular arithmetic, congruences, quadratic reciprocity, and applications. Prerequisite: MATH 0210 or permission.

MATH 1560. Probability.
Probability theory, random variables, independence, expectation, and limit theorems. Prerequisite: MATH 0210 or permission.

MATH 1620. Mathematical Statistics.
Introduction to the principles and concepts of modern abstract algebra. Topics include groups, rings, fields, modules, polynomial rings, and vector spaces. Prerequisite: MATH 1530 or permission.

MATH 1610. Probability.
A study of measure theory, random variables, independence, expectation, and limit theorems. Prerequisite: MATH 0210 or permission.

MATH 2060. Algebraic Geometry.
An introduction to algebraic geometry. Topics include affine and projective varieties, ideals, radicals, and quotients. Prerequisite: MATH 1530 or permission.

MATH 2250. Complex Function Theory.
Introduction to the theory of analytic functions of one complex variable. Content varies from year to year, but always includes the study of power series, complex line integrals, analytic continuation, conformal mapping, and an introduction to Riemann surfaces. Prerequisite: MATH 2060 or permission.

MATH 2260. Complex Function Theory.
See Complex Function Theory (MATH 2250) for course description.

MATH 2370. Partial Differential Equations.
The theory of the classical partial differential equations; the method of characteristics and general first order theory. The Fourier transform, the theory of distributions, Sobolev spaces, and techniques of harmonic and functional analysis. More general linear and nonlinear elliptic, hyperbolic, and parabolic equations and properties of their solutions, with examples drawn from physics, differential geometry, and the applied sciences. Prerequisite: MATH 2260 or permission.

MATH 2380. Partial Differential Equations.
The theory of the classical partial differential equations; the method of characteristics and general first order theory. The Fourier transform, the theory of distributions, Sobolev spaces, and techniques of harmonic and functional analysis. More general linear and nonlinear elliptic, hyperbolic, and parabolic equations and properties of their solutions, with examples drawn from physics, differential geometry, and the applied sciences. Prerequisite: MATH 2260 or permission.

MATH 2410. Topology.
An introduction to general topology. Topological spaces, continuous functions, compactness, connectedness, and separation axioms. Prerequisite: MATH 1530 or permission.

MATH 2420. Algebraic Topology.
An introduction to algebraic topology. Topics include homotopy, homology, and cohomology. Prerequisite: MATH 2410 or permission.

MATH 2450. Exchange Scholar Program.
This course is designed for exchange scholars who wish to pursue advanced study in mathematics. Prerequisite: Permission of the instructor.

MATH 2510. Algebra.
An introduction to abstract algebra. Topics include groups, rings, fields, and modules. Prerequisite: MATH 1530 or permission.

MATH 2520. Algebra.
An introduction to abstract algebra. Topics include groups, rings, fields, and modules. Prerequisite: MATH 1530 or permission.

MATH 2530. Number Theory.
An introduction to number theory. Topics include divisibility, congruences, primitive roots, and quadratic forms. Prerequisite: MATH 1530 or permission.

MATH 2540. Number Theory.
See Number Theory (MATH 2530) for course description.

MATH 2580. Cryptography.
An introduction to modern cryptography. Topics include symmetric and public key cryptography, digital signatures, and applications to internet security. Prerequisite: MATH 1530 or permission.

MATH 2610. Advanced Calculus.
An advanced course in calculus, with emphasis on the theory of functions of one and several variables. Prerequisite: MATH 2060 or permission.

MATH 2970. Preliminary Exam Preparation.
Preparation for the preliminary examination in mathematics. Prerequisite: Permission of the instructor.

MATH 2980. Reading and Research.
Independent reading and research in mathematics. Topics are chosen from the research interests of the faculty. Prerequisite: Permission of the instructor.

MATH 2990. Thesis Preparation.
Preparation for the thesis in mathematics. Prerequisite: Permission of the instructor.
the 21st century. This historical backdrop informs investigation into artistic sentiment of 1979; displacement and formation of diasporic communities; processes of urbanization; spread of modern technologies; revolutionary and cultural references or practices, and/or socialities and ways of being.

Coherence in terms of shared historical and political experiences, religious world, the Arab world, and the Muslim world) and addresses the region's spread of peoples and polities, and considers different regional concepts that Covering expanses of space and time, this course attends to a diversity of cultures, supervised by a member of staff. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. May be repeated once for credit. Open only to Senior students pursuing honors in Middle East Studies. Instructor permission required.

MES 2000A. Decolonizing the Racialized Female Subject: Black and Indigenous Women’s Self-Making Under Empire.
This study grapples with conceptions of freedom and humanity emergent in Black and Indigenous women’s practices under empire. Colonialism is prefaced on construction of an “other.” Aime# Ce#saire refers to this as “thingification,” whereby colonial subjects are dehumanized and the colonizer “decivilized”. Totalizing dehumanizing forms are resisted by praxes and epistemologies which challenge the prevailing symbolic order and assert the humanity of those regarded as subhuman. We will examine how epistemological and political contestations of the human inform discourses on freedom and sovereignty and interrogate how various categories of identity refract and re-frame conceptions of humanity, freedom, and sovereignty.

Middle East Studies
MES 0100. The Middle East: Cultures & Societies.
This course highlights major cultural, social, and political developments in the amorphous region known, since the 20th century, as the Middle East. Covering expanses of space and time, this course attends to a diversity of peoples and polities, and considers different regional concepts that include some or all of the territories normally included in the Middle East (including the Fertile Crescent, the Mediterranean world, the Indian Ocean world, the Arab world, and the Muslim world) and addresses the region's coherence in terms of shared historical and political experiences, religious and cultural references or practices, and/or socialities and ways of being.

MES 1170. Iranian Art: Sites and Sights.
This course introduces students to the modern and contemporary history of art in Iran, including architecture, visual art, cinema, theatre, and politics. It starts with the transition from the Qajar period (1781-1925) and its visual culture to the modern 20th-century nation-state, addressing; processes of urbanization; spread of modern technologies; revolutionary sentiment of 1979; displacement and formation of diasporic communities after the Islamic revolution; and the emergence of Internet technology in the 21st century. This historical backdrop informs investigation into artistic milieus, platforms, and the ever-changing notion of creativity. Course readings consist of excerpts from primary sources in addition to textbook assignments.

Fall MATH2990 S01 15504 Arranged 'To Be Arranged'

MATH XLIST. Courses of Interest to Students Majoring in Mathematics.

Medieval Studies
MDVL 0150C. The Medieval King Arthur (ENGL 0150C).
Interested students must register for ENGL 0150C.
Fall MDVL0150C S01 17289 Arranged 'To Be Arranged'

MDVL 0420. Sacred Bodies (RELS 0420).
Interested students must register for RELS 0420.

MDVL 1010. Dante in English Translation: Dante’s World and the Invention of Modernity (ITAL 1010).
Interested students must register for ITAL 1010.
Fall MDVL1010 S01 17303 Arranged 'To Be Arranged'

MDVL 1020A. Boccaccio’s Decameron (ITAL 1020).
Interested students must register for ITAL 1020.

MDVL 1110F. Fortunatus (LATN 1110F).
Interested students must register for LATN 1110F.

MDVL 1213. The Bureaucracy of Hell (HIAA 1213).
Interested students must register for HIAA 1213.
Fall MDVL1213 S01 17301 Arranged 'To Be Arranged'

MDVL 1310V. Chaucer: The Canterbury Tales (ENGL 1310V).
Interested students must register for ENGL 1310V.
Fall MDVL1310VS01 17290 Arranged 'To Be Arranged'

MDVL 1825A. Unearthing the Body: History, Archaeology, and Biology at the End of Antiquity (HIST 1825A).
Interested students must register for HIST 1825A.

MDVL 1900Y. Medieval Manuscript Studies: Paleography, Codicology, and Interpretation (ENGL 1900Y).
Interested students must register for ENGL 1900Y.

Tutorial instruction on an approved topic in Late Antique and/or Medieval cultures, supervised by a member of staff. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. May be repeated once for credit.

Independent research and writing on a topic of special interest to the student, under the direction of a faculty member. Required of candidates for honors. Permission should be obtained from the Director of the Program in Medieval Studies.

MDVL 2971I. New Perspectives on Medieval History (HIST 2971I).
Interested students must register for HIST 2971I.
Fall MDVL2971I S01 17340 Arranged 'To Be Arranged'

Middle East Studies
MES 0100. The Middle East: Cultures & Societies.
This course highlights major cultural, social, and political developments in the amorphous region known, since the 20th century, as the Middle East. Covering expanses of space and time, this course attends to a diversity of peoples and polities, and considers different regional concepts that include some or all of the territories normally included in the Middle East (including the Fertile Crescent, the Mediterranean world, the Indian Ocean world, the Arab world, and the Muslim world) and addresses the region's coherence in terms of shared historical and political experiences, religious and cultural references or practices, and/or socialities and ways of being.

MES 1170. Iranian Art: Sites and Sights.
This course introduces students to the modern and contemporary history of art in Iran, including architecture, visual art, cinema, theatre, and politics. It starts with the transition from the Qajar period (1781-1925) and its visual culture to the modern 20th-century nation-state, addressing; processes of urbanization; spread of modern technologies; revolutionary sentiment of 1979; displacement and formation of diasporic communities after the Islamic revolution; and the emergence of Internet technology in the 21st century. This historical backdrop informs investigation into artistic milieus, platforms, and the ever-changing notion of creativity. Course readings consist of excerpts from primary sources in addition to textbook assignments.

Fall MES1170 S01 18120 M 3:00-5:30 (S. Tabatabaei)

MES 1270. Histories of Watching and Surveying.
How are surveillance practices historically embedded in social fabric? How have surveillance technologies altered social life throughout history? This course explores these questions by mapping the complex ways that technologies and societies interact to produce security, fear, control, and vulnerability. Some of the areas covered include close-circuit television (CCTV) in public and quasi-public spaces, biometric technologies on the border, and a host of monitoring technologies in cyberspaces, workplaces, and the home. Readings are drawn from the critical theories in visual culture, science-fiction, and popular media.

MES 1968. Approaches to the Middle East (HIST 1968A).
Interested students must register for HIST 1968A.
Fall MES1968 S01 17351 Arranged 'To Be Arranged'

Limited to juniors and seniors. Section numbers vary by instructor. Please check Banner for the correct section and CRN to use when registering for this course. Required: all proposals for independent study must be approved by the faculty sponsor and the MES program director. Students should not register for any section of MES 1970 without this approval.

The purpose of this course is to guide you through the development and construction of your senior thesis project. It will provide you with empirical, methodological, and theoretical toolkits, as well as practical writing strategies, to help you bring your thesis to fruition.

MES XLIST. Courses of Interest to Students Concentrating in Middle East Studies.
For information on courses which may be of interest to students concentrating in Middle East Studies, please refer to the MES XLIST in the Class Schedule menu.

Modern Culture and Media
Print media are ubiquitous, appearing in myriad forms, material configurations, and genres. This course investigates the concept of print as a mass medium, the first produced by means of mechanical reproduction. We will give particular attention to the theoretical problematics that govern its analysis and to competing concepts of print as a form. The course will trace the emergence of mass literacy and reading habits, print culture and the public sphere, the rise of the novel and history of the book, as well as concepts of literariness and representation, mediation and signification, narrativity and virtuality, the work and the text.

MCM 0260. Cinematic Coding and Narrativity.
Introduces students to rigorous study of the structural and ideological attributes of cinema, concentrating on the dominant narrative model developed in the American studio system and alternatives to that model. Attention to film theory in relation to questions of representation, culture, and society. Students become conversant with specific elements and operations of the cinematic apparatus (e. g. camerawork, editing, sound-image relations) and how they produce discursive meanings. Students
MUST register for the lecture, section and one screening. A sign-up sheet will be available for conferences after the first class meeting. Open to undergraduates only.

MCM 0700A. Introduction to the Production Image.
The course will provide students with a basic introduction to digital sound and image acquisition and post-production, and to consider the particular capabilities of these digital technologies, especially as these relate to the production of meaning. Of particular interest will be the representational limits of these technologies at the intersection of science and art. Classes will be organized as workshop environments where extensive class time will be devoted to hands-on learning with digital film cameras, lighting, and digital sound recorders. There are no prerequisites for this class.

MCM 0710A. Introduction to Filmic Practice: Time and Form.
A studio-style course on working with time based media, focused specifically on the technology of 16mm film production. With its focus on photographic and montage processes, as well as lighting and sound, the principles established in this course provide a solid foundation for all subsequent work in media, whether cinematic, video or new media, and it is strongly advised as a foundation level, skills oriented media course. Students produce a series of short, non-sync films. No previous experience required. Screenings, demonstrations and studio work. Fall MCM0710A S01 17653 M 2:00-4:50(06) (J. Montgomery)

MCM 0750A. Art in Digital Culture.
How do we produce, disseminate, and exchange images in a global networked society? How do digital technologies challenge conventions about art making, authorship, and audience? This production course introduces students to the practice, and critical inquiry into art in digital culture. The class will engage in contemporary debates on art and new media and will experiment with digital photography, video, and coding. Throughout the semester, students will work on a series of short projects, and a final individual or collaborative work. Artist case studies include Harun Farocki, Oliver Laric, and anonymous-memes-creators; readings include, Hito Steyerl, David Joselit, and Boris Groys. Fall MCM0750A S01 17655 W 9:00-11:50(06) (M. Armstrong)

After decades at the fringes of computer science, neural networks are now recognized as one of the most effective models for machine learning. A key object of study for media studies, these systems provide a privileged entry into the history and epistemology of computing machines, digital cultures, and the supposedly “objective” data practices underpinning them. Readings work from media studies, history of science, and postcolonial theory, this course will link the historical emergence of neural networks to the remediation of broader ideals and practices of knowledge related to the classification, management, and regulation of individuals and populations. Fall MCM0902O S01 17581 T 4:00-6:30 (T. Lepage-Richer)

MCM 1204U. Slow Cinema.
In the wake of the increasingly frantic pace of 21st century life, a loose, international movement known as “slow cinema” has gained a significant following in the last two decades. But what do we mean by “slowness,” and can these films reveal anything about our current moment of crisis and economic contraction? Are they simply a nostalgic repetition of earlier art cinemas, or are they capable of engendering new, oppositional modes of spectatorialship? We will attempt to answer these questions while grounding our inquiry firmly in a close, formal analysis of key slow films. Fall MCM1204U S01 18556 Th 6:40-8:00PM(10) (T. Theus)

MCM 1501O. Television, Gender, and Sexuality.
Television, across all the screens on which we view, has an enormous impact on society—including on relations of gender and sexuality—just as it is impacted by those relations in turn. This course investigates how television produces and reproduces constructions of gender and sexuality through its institutional form (as it maps relations between public and private, domestic and social, familial and defamilialized), narrative patterns (as it circulates family romances, links gender and genre, and mediates sexual and social tensions), and spectatorial relations (as it variously addresses viewers as sexed and gendered subjects, consumers and commodities, “mainstream” and marginalized). Fall MCM1500D S01 15927 Th 11:00-1:50 (D. Udris)

MCM 1503B. Jane Austen and George Eliot (ENGL 1560A).
Interested students must register for ENGL 1560A.

MCM 1504Q. Reading Narrative Theory (ENGL 1950G).
Interested students must register for ENGL 1950G. Fall MCM1504Q S01 17293 Arranged ‘To Be Arranged’

MCM 1504R. Iranian Cinema.
The emergence in the 1990s of Iranian cinema onto the world stage caught many by surprise. This cinema has, however, had a long and illustrious history. While attempting to provide an historical survey of these films, we will focus primarily on those produced in the last two decades. We will pay close attention to cinematic form but will also examine the ways the films intersect with cultural-political events, including the Revolution and the subsequent Islamicization of the culture, the institutionalization of the “modesty system,” and the alteration of divorce laws. Fall MCM1504R S01 16817 T 1:20-3:50(06) (J. Copjec)

MCM 1505U. The 60s: Film Countercultures (ENGL 1901H).
Interested students must register for ENGL 1901H. Fall MCM1505U S01 17299 Arranged ‘To Be Arranged’

MCM 1506P. From Hypernovel to Paranoid Fiction (ITAL 1400T).
Interested students must register for ITAL 1400T. Fall MCM1506P S01 17433 Arranged ‘To Be Arranged’

This course introduces students to the critical study of Japanese animation (anime) in a global context of media environment. We will study the history, aesthetics, politics, and theory of anime and its socio-cultural formations. The focus is to analyze the forms and idioms of anime in tandem with the studies of media theory and history, and to expand their interest in anime to wider questions such as posthumanism, technorealism, cyborg feminism, media convergence, and participatory cultures. Fall MCM1506R S01 18559 F 3:00-5:30 (J. Li)

MCM 1700D. Reframing Documentary Production: Concepts and Questions.
An advanced seminar for students of video and/or film production. Focuses on the critical discussion and production of documentary media. A major project (10-20 minutes), three shorter works, and in-class presentations of work-in-progress required. Readings on the theory and practice of the form and weekly screenings augment the presentation of student work. Class members should have completed at least one time-based media class. Students are expected to be competent technically. Application required. Application is available in the MCM office. Students must bring a completed application to the first class to be considered for admission. Fall MCM1700D S01 15927 Th 11:00-1:50 (D. Udris)

MCM 1701K. AS ABOVE, SO BELOW: Spatial Relations in Film Practice.
We commonly watch most time-based media through a rectilinear frame, and just as commonly acknowledge that what we are seeing are two-dimensional representations of three-dimensionality. However, it is less common to examine closely the functions of scale, perspective, distortion, and proprioception in the cinematic image. This course proposes to delve deeply into the myriad manifestations of how spatial relations impact our
viewing experience. Since this is a production seminar, students will make a series of short videos that attend to various aspects of our investigations, completing the semester with a longer piece on a relevant topic of their choosing.

Fall  MCM1701K S01  17656  W  2:00-4:50  (J. Montgomery)

**MCM 1970. Independent Study in Modern Culture and Media.** Section numbers vary by instructor. Please check Courses @ Brown for the section number and CRN to use when registering for this course or contact the MCM office if you need a section number created for an instructor that’s not listed. Time dedicated to the project should fall within the recommended range for independent studies (10-20 hours per week). Instructor’s permission required.

**MCM 1980. Honors Thesis/Project Research in Modern Culture and Media (Part 1).** Independent research under the direction of a faculty member leading to an honors thesis/project. MCM 1980 is the first of two courses required of MCM honors candidates and is taken in the 7th semester. Instructor’s permission required.

**MCM 1990. Honors Thesis/Project in Modern Culture and Media (Part 2).** Independent research and writing a thesis or creating/producing a project under the direction of a faculty member leading to an honors thesis/project. MCM 1990 is the second of two courses required of MCM honors candidates and is taken in the 8th semester. Instructor’s permission required. Prerequisite: MCM 1980.

**MCM 2100O. Queer Theories.** This course will engage with possibilities and problems of queer theorizing, from the emergence of queer theory, through its (precarious) institutionalization, to its multiplied interventions. Rather than understanding queer theory as a unified approach, we will consider a range of queer theoretical work as well as challenges within queer analysis itself. Issues to be explored include formations of gender and sexuality, race and nation, epistemology and ethics, politics and communities, subjectivities and socialities, identifications and disidentifications, bodies and pleasures, publics and privates, and the temporalities and locations of our world. Preference given to graduate students; all others seek instructor permission.

Fall  MCM2100O S01  16288  W  3:00-5:30  (L. Joyrich)

**MCM 2110V. The Ethics of Psychoanalysis.** Jacques Lacan’s seminar VII: The Ethics of Psychoanalysis examines theories of ethics, from Aristotle through Bentham and Kant, before proposing an ethics proper to psychoanalysis. The seminar concludes with a fascinating analysis of Sophocles’ Antigone. We will read the seminar closely alongside texts by Freud, Lacan, Badiou, and other contemporary thinkers. Why does psychoanalysis bother to enter ethical debates rather than reject the category altogether?

**MCM 2120P. Photography on the Picket Line: Unlearning Imperial Formations of Photography.** What does it mean to take one’s photograph? What is implied in this seemingly descriptive sentence, in the gesture, practice, and action to which it refers? For this formula – taking a photograph - to be naturalized? For this formula – taking a photograph - to be naturalized?

Fall  MCM2120P S01  18430  Th  12:00-2:20  (A. Azoulay)

**MCM 2450. Exchange Scholar Program.**

Fall  MCM2450  S01  15505  Arranged  ‘To Be Arranged’

**MCM 2510K. Media Regionalism: Between Empires and Territories.** This graduate seminar sets out to rethink media theory and history from the perspective of regionalism, and to confront the dominant model of a distributive, deterritorialized media unfolding with a regional approach that is tethered to particular territories, milieux, geo-environments, and ecological surroundings. What happens when the presumed geography and topology of media formation, as a distributed global network, is called into question? What might the regional models developed within area studies and postcolonial theories have to contribute to media studies?

The purpose is to explore multitudes of theories and methods that help us reconsider “where” and “what” media is.

Fall  MCM2510K S01  17112  M  3:30-5:30  (J. Li)

**MCM 2980. Independent Reading and Research in Modern Culture and Media.** Individual reading and research for doctoral candidates. Not open to undergraduates. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Time dedicated to the project should fall within the recommended range for independent studies (12-20 hours per week).

**MCM 2990. Thesis Preparation.** For graduate students who have met the residency requirement and are continuing research on a full time basis.

Fall  MCM2990 S01  15506  Arranged  ‘To Be Arranged’

**Music**

**MUSC 0071. Opera.** A survey of the history, aesthetics, and politics of opera from 1600 to the present day. Analyzes operas and scenes by Monteverdi, Purcell, Mozart, Rossini, Verdi, Wagner, Strauss, and others. Ability to read music not required.

Fall  MUSC0071 S01  16934  Thh  1:00-2:20(08)  (D. Gooley)

**MUSC 0200. Computers and Music.** Examines the history, literature, invention and theory of music technology. Track development of musical inventions and their impact on musical thought, production and culture. Develop theoretical and practical knowledge of computer music based on first-hand experience in the Multimedia Lab, using computer music software and hardware to complete creative assignments. Gain an appreciation for the pioneering work done in previous decades, both in research and composition. Become familiar with the literature of electronic music and learn about the impact of technology on popular and experimental genres. Permission granted based on questionnaire given in first class. Preference given to lower-level students.

Fall  MUSC0200 S01  16839  Thh  10:30-11:50(13)  (T. Winkler)

**MUSC 0221. MEME Ensemble: Games and Systems.** Does music have to be structured linearly? Or can it be thought of as a web of interactions, with different choices leading to any number of possible outcomes? In this ensemble we will analyze, compose, and play game pieces: music that unfolds according to a set of rules, grants the performer/player decision-making power, and has no predetermined outcome. We will draw from a variety of sources including experimental music, interactive art, game design and systems theory to explore different approaches to rule-based composition. We will likewise employ a variety of tools and technologies to bring our games pieces to life.

Fall  MUSC0221 S01  18453  W  7:00-9:50PM  (M. Galvao)

**MUSC 0400A. Introduction to Music Theory.** An introduction to musical terms, elements, and techniques. Topics include notation, rhythm and meter, intervals, scales, chords, melody writing, harmonization, and form. Students will develop their musicianship skills, including sight-singing and keyboard, in labs which meet twice weekly. No prior musical experience is necessary. MUSC 0400A or 0400B may fulfill part of the theory requirement for the music concentration. Enrollment limited to 40. Permission granted based on questionnaire given in first class. Preference given to lower-level students.

Fall  MUSC0400J S01  16924  MWF  11:00-11:50(16)  (A. Cheung)

**MUSC 0400B. Introduction to Popular Music Theory and Songwriting.** An introduction to musical terms, elements, and techniques, with an emphasis on how they apply to Western popular music. Topics include notation, rhythm and meter, intervals, scales, chords, melody writing, harmonization, and form. Students will develop their musicianship skills, including sight-singing and keyboard, in labs which meet twice weekly. No prior musical experience is necessary. MUSC 0400A or MUSC 0400B may fulfill part of the theory requirement for the music concentration. Enrollment limited to 40. Permission granted based on questionnaire given in first class. Preference given to lower-level students.
MUSC 0550. Theory of Tonal Music I.
Intensive study of the building blocks of tonal music traditions including western and popular music with focus on melody, harmony, counterpoint, keyboard skills, ear training, sight-singing from musical notation, and composition. Prior keyboard experience helpful but not required. A required placement exam is administered at first class meeting. Students who do not have experience reading music notation should take MUSC 0400 prior to MUSC 0550. MUSC 0550 is a prerequisite to many music courses and is a requirement for the music concentration.

Fall MUSC0550 S01 16840 TTh 1:00-2:20(08) (M. Steinbach)
Fall MUSC0550 S02 16933 TTh 2:30-3:50(12) (L. Wang)

See Theory Of Tonal Music (MUSC 0550) for course description. Prerequisite: MUSC 0550 or permission of the instructor.

MUSC 0570. Jazz and Pop Harmony.
For students with knowledge of rudiments of music, including scales, intervals, key signatures, rhythm and meter. Keyboard skills strongly recommended. Intensive study of chord scales, chord progressions, modulation, voice leading, melody writing, harmonization, reharmonization, chord symbols, and lead sheet construction. Lab sessions will focus on ear training, keyboard exercises, and sight singing. Emphasis will be on the vocabulary of jazz theory and the repertoire will be American popular song.

MUSC 0600. Chorus.
Half credit each semester. A practical study of choral literature, techniques, and performance practice from Gregorian chant to the present, offered through rehearsals, sectional, and performance. Enrollment is by audition, based on voice quality, experience, and music-reading ability. Instructor permission required.

Fall MUSC0600 S01 16907 MW 6:30-8:30PM (L. Jodry)

MUSC 0601. Chorus.
See Chorus (MUSC 0600) for course description.

MUSC 0610. Orchestra.
Half credit each semester. A practical study of the orchestra repertoire from Bach to the present, offered through coaching, rehearsals, and performances. Enrollment is by audition. Students will be notified of audition results within the first seven days of the semester. Restricted to skilled instrumentalists. May be repeated for credit.

Fall MUSC0610 S01 16908 T 7:30-9:30PM (M. Seto)

MUSC 0611. Orchestra.
See Orchestra (MUSC 0610) for course description.

MUSC 0621. Wind Symphony.
See Wind Symphony (MUSC 0620) for course description.

MUSC 0631. Jazz Band.
See Jazz Band (MUSC 0630) for course description.

MUSC 0640. Ghanaian Drumming and Dancing Ensemble.
A dynamic introductory course on drumming, dancing, and singing of Ghana and the diaspora. Students learn to perform diverse types of African music, including Ewe, Akan, Ga, and Dagomba pieces on drums, bells, and shakers. No prerequisites. May be repeated for credit. Enrollment limited to 15. Instructor permission required.

Fall MUSC0640 S01 16912 W 5:00-7:20 (M. Obeng)

MUSC 0641. Ghanaian Drumming and Dancing Ensemble.
A dynamic introductory course on drumming, dancing, and singing of Ghana and the diaspora. Students learn to perform diverse types of African music, including Ewe, Akan, Ga, and Dagomba pieces on drums, bells, and shakers. No prerequisites. May be repeated for credit. Enrollment limited to 15. Instructor permission required.

MUSC 0642. World Music Ensemble.
This ensemble focuses on global percussive and song traditions, especially those of the African diaspora (based on instructor's vast musical experiences). Here western instrumentalists fuse with traditional musicians from every culture: bongo, gyil, ukulele, tabla, etc. Students will grow and develop their musical skills by learning new techniques on their own instrument, exploring a range of repertoire representing genres such as highlife, reggae, salsa, afrobeat, Afro-jazz, and global fusions. There will be unique opportunities to work on improvisation taking influence from Steve Reich, Tito Puente, Randy Weston, Hugh Masekela, Paul Simon, Miriam Makeba, Ghanaba, and Milton Nasimieto.

Fall MUSC0642 S01 16913 M 7:00-9:00PM (M. Obeng)

MUSC 0650. Javanese Gamelan.
Half credit each semester. Instruction, rehearsals, and performances in the gamelan music of Java, on instruments owned by the department. No prerequisites. Enrollment limited to 18 students.

Fall MUSC0650 S01 16914 T 6:30-8:30PM (M. Perlman)

MUSC 0651. Javanese Gamelan.
See Javanese Gamelan, MUSC0650, for course description. Enrollment limited to 18 students.

MUSC 0670. Old-Time String Band.
Half course each semester. Instruction and ensemble playing. Music taught by ear. American (southern Appalachian Mountain) traditional music on violin (fiddle), 5-string banjo, mandolin, and guitar. Enrollment limited to 20 students.

Fall MUSC0670 S01 16917 T 7:00-8:30PM (S. Astrausky)

MUSC 0671. Old-Time String Band.
See Old-Time String Band (MUSC 0670) for course description. Enrollment limited to 20 students.

MUSC 0680. Chamber Music Performance.
Half credit each semester. The practical study of the literature of chamber music through participation in a small ensemble. Regular rehearsals, coaching by department staff, and performances are required. Enrollment is by audition. Students will be notified of audition results within the first ten days of the semester. Restricted to skilled instrumentalists. May be repeated for credit.

Fall MUSC0680 S01 16918 Arranged (L. Finkel)

MUSC 0681. Chamber Music Performance.
See Chamber Music Performance (MUSC 0680) for course description.

Half credit each semester. Restricted to skilled musicians. Openings are limited. Enrollment and re-enrollment is by audition and jury. Lessons are given by consultants to the Applied Music Program. A fee is charged for enrollment. Copies of the Applied Music Program Guidelines giving detailed information are available online at www.brown.edu/music. May be repeated up to four times for credit.

MUSC 1010. Advanced Musicianship I.
Training in advanced musicianship skills relevant to Western art music from the sixteenth Century to the present, including sight singing, ear training, score reading, keyboard harmony, improvisation, and musical transcription. Prerequisite: MUSC 0560 or MUSC 0570, or permission of the instructor.

Fall MUSC1010 S01 16843 MWF 2:00-2:50(10) (A. Cole)

MUSC 1011. Advanced Musicianship II.
Continuation of MUSC 1010. Prerequisite: MUSC 1010 or permission of the instructor.

MUSC 1050. Advanced Music Theory II.
A study of theories of Western art music since Debussy. Exercises in analysis and composition, focusing on works of Debussy, Stravinsky, Schoenberg, Webern, Bartok and Ives. Students give presentations on selected later composers. Prerequisite: MUSC 0560 with grade of B, or the equivalent.

Fall MUSC1050 S01 16847 TTh 10:30-11:50(13) (E. Nathan)

MUSC 1100. Introduction to Composition.
Composition students begin by using technical resources developed in their previous theoretical studies. Analysis and discussion of contemporary music provides examples of alternatives to traditional compositional strategies, which students integrate into later assignments. A study of contemporary notational practices and computer-based manuscripting and sequencing is also included. Prerequisite: MUSC 0560 or MUSC 0570 or permission of the instructor. Enrollment limited to 20 students.
Fall MUSC1100 S01 16844  TTh  2:30-3:50(12) (E. Nathan)

MUSC 1110. Seminar in Composition. This is a seminar-based course with a creative component focusing on specific compositional techniques such as writing transitions and motivic development, and writing for specific kinds of ensembles. These techniques are applicable to all kinds of music, from concert music to popular genres. The course will also address aesthetic issues, trends and influences and how they affect living composers’ individual voices. Besides studying notated repertoire from the concert tradition, we will also examine approaches to film scoring, improvisation, and environmental sound worlds outside of the traditional concert hall.

MUSC 1200. Seminar in Electronic Music: Recording Studio as Compositional Tool. A study of advanced studio techniques taught in parallel with topics in psychoacoustics. Students will create original studio work while developing listening and technical skills for audio production. Technical topics include recording, signal processing and mixing software, microphone technique, and live sound engineering. Class size is limited. Preference will be given to students who have completed MUSC 0200. Students will be evaluated for potential future work in the MEME program (Multimedia and Electronic Music Experiments) and past participation in MEME. Admission is determined by an entrance questionnaire completed at the first class meeting. Prerequisite: MUSC 0200

MUSC 1210. Seminar in Electronic Music: Real-Time Systems. Seminar in Electronic Music is a study of music employing electronic media, including real-time digital signal processing, multimedia, and live performance. Technical aspects of the focus on programming using Max/MSP to create interactive projects and algorithmic compositions. Permission of instructor required. Interested students must come to the first class. Preference will be given to students who have completed MUSC 0200.

MUSC 1240M. Composing with Ableton. In Composing with Ableton, we will study and use the well known music-making software Ableton Live and its subsidiary Max for Live (M4L). We will consider sound in Live and M4L from a variety of perspectives, from popular music vocabularies to experimental sound practices. This project-based class teaches production techniques in tandem with critical investigation of genre and development of personal style. Topics include: DAW-style production, control information, interactivity, and digital signal processing. Override codes required; interested students must attend first day and complete questionnaire, only after which will override codes be distributed.

Fall MUSC1240/S01 18303  TTh  10:30-11:50(13) (K. Warren)

MUSC 1240V. Becoming a Bedroom Producer: History and Practice. Billie Eilish swept the Grammy’s with an album produced in a small bedroom studio. Bon Iver’s breakthrough album For Emma, Forever Ago was recorded in a remote cabin using an SM57 microphone. And Steve Lacy prefers an iPhone-based production style. Each of these artists could be classified as ‘bedroom producers’, but what does that mean? How does one become a bedroom producer? This course engages the historical developments, technological innovations, and cultural conditions that enabled the rise of the bedroom producer. Participants will set-up a home studio and acquire the skills to record, mix, master, and release their own music.

Fall MUSC1240/S01 18442  T  4:00-6:30 (A. Vistein)

MUSC 1260. Seminar in Electronic Music: Advanced Studio Techniques. This course will focus on developing and reinforcing technical skills, musical concepts, and critical listening abilities associated with the practice of composition in an electronic music studio. These studies will be tied to a broad range of aesthetic approaches and discussions of sound synthesis and processing, spatialization, and recording techniques.

Through a series of projects and focused study, students will expand their knowledge and craft, and will provide each other with a forum for exploring their creative studio work. MUSC 1200 is a prerequisite, and preference will be given to students who have also taken MUSC 1210, and/or 1250.

Fall MUSC1260 S01 18375 TTh 2:30-3:50(12) (J. Moses)

Fall MUSC1500A S01 18373 TTh 10:30-11:50(13) (L. Jodry)

MUSC 1500A. Major Masters and Repertoires of Music: Bach. An examination of the life and work of Bach, including its place in German church music, views of his contemporaries and explanation of his manuscript and publishing history.

MUSC 1500B. Messiaen. Oliver Messiaen is one of the most influential and eclectic musicians of the 20th century, yet he remains a highly enigmatic figure. This seminar explores Messiaen’s life, theoretical writings, and above all his music. Critical listening and analysis will focus on Messiaen’s idiosyncratic harmonic and rhythmic language as well as performance practice issues. We will investigate Messiaen’s use of color, plainsong, “modes of limited transposition,” birdsong, serialism, and rhythm via representative works. We will also examine Messiaen’s formation and his legacy as teacher/composer/performer. Prerequisite MUSC 0560.

MUSC 1677. Music and Culture in Third Republic France. This course explores musical and cultural life in France during the Third Republic (1870-1940). Topics include: works by Bizet, Saint-Saëns, Debussy, Ravel, and Stravinsky; folk music in the French provinces; cabarets, music halls, and music in everyday life; and jazz in interwar Paris. More broadly, we will consider the relationship between music and broader cultural phenomena and events, such as: the Franco-Prussian War and the Paris Commune; the Dreyfus Affair; nationalism, colonialism, and internationalization; gender politics; and “modernity” and “modernism” in their various manifestations. Prerequisite: MUSC 0550 (Theory of Tonal Music I) or permission of the instructor.

Fall MUSC1677 S01 18411 W 3:30-5:30 (M. Seto)

MUSC 1710. Choral Conducting. An introduction to the art of conducting, with emphasis on choral training. A study of the relationship of gesture to sound will be combined with a survey of the choral repertoire, beginning with Gregorian Chant and covering renaissance motets, masses and madrigals, Baroque works with instruments, excerpts from Mozart’s vespers, 19th-century Romantic part-songs, and selected 20th-century. Issues of basic vocal production, warm-ups, rehearsal planning, editing, programming and concert production will also be included. Prerequisite: MUSC 0400 or 0550. Written permission required. May be repeated for credit.

MUSC 1810. Applied Music Program: Instruction in Vocal or Instrumental Music. Half credit each semester. Restricted to skilled musicians. Restricted to skilled musicians demonstrating mastery of an advanced repertory in their fields. Openings are limited. Enrollment and re-enrollment is by audition and jury. Lessons are given by consultants to the Applied Music Program, MUSC 0830, 0840 is prerequisite to this course. A fee is charged for enrollment. Copies of the Applied Music Program Guidelines giving detailed information are available online at www.brown.edu/music. Prerequisite: MUSC 0400, or MUSC 0550, MUSC 0560. Written permission required. May be repeated up to four times for credit.

MUSC 1910. Music and Mind. Explores music perception in terms of auditory and cognitive processes such as auditory perception, memory, and learning. Lectures, discussions, and demonstrations review and analyze a body of scientific research on the psychology of music. Problem sets and a collaborative laboratory project. Prerequisites: PSYC0010 and MU 1 (MUSC 0010) or permission of the instructor.

MUSC 1960. Advanced Ghanaian Drumming and Dancing Ensemble. Students with experience in African and related musical traditions perform drumming, dancing, and singing of Ghana and the diaspora. Focus on a more challenging repertoire with emphasis on multi-part, lead, and improvisational playing. Prerequisite: audition. May be repeatable for credit. Instructor permission required. Enrollment limited to 15 students.

Fall MUSC1960 S01 18501 W 7:30-9:50PM (M. Obeng)

MUSC 1970. Individual Independent Study. Directed undergraduate research for advanced students. Prerequisite: permission of the instructor. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.
COURSE DESCRIPTIONS

This seminar investigates digital media practices at the intersection of virtual and embodied experience, exploring overlapping genres of play, performance, pedagogy, and participatory culture. Topics include digital games, viral videos, online music and dance lessons, and the performative aspects of virtual communities. Theoretical approaches draw on scholarship in media ethnography, performance studies, human-computer interaction studies, gender studies, and ethnomusicology. We will give equal attention to production, circulation, and reception practices, and consider their contemporary convergence. The course requires critical engagement with a diverse range of media, genres, and cultural contexts, encouraging students to examine their own media practices. Registration permission granted based on questionnaire distributed at first class meeting.

Directed undergraduate research for advanced students. Prerequisite: permission of the instructor. Section numbers vary by instructor. Please see the registration staff for the correct section number to use when registering for this course.

This half-credit workshop for seniors completing Music Honors / Capstones addresses questions including: What comprises musical research? How do different research practices - critical, creative, empirical, performative, etc - inflect one another and juxtapose to promote productive discourse? Through study of substantial music research projects, and discussing and working on student projects, we will examine the meaning of contemporary musical research. Preference given to music concentrators working on senior projects not linked to another class, but other students working on specific musical projects welcome. Interested students must attend first class; override codes are required and will be distributed after first class. Fall MUSC1985 S01 18305 T 4:00-6:30 (K. Warren)

This core seminar offers a graduate-level survey of the discipline of ethnomusicology and its history, building on previous coursework in ethnographic methods and the history of anthropological theory. Students will complete independent research projects as well as shorter assignments geared to professional development (e.g., exam field proposal, scholarly book review, historical investigation of the Society for Ethnomusicology). Prerequisites: MUSC 1900 and ANTH 2000 or instructor permission.

MUSC 2080D. Music, Nation, and Nationalism.
This course explores the relation between music and nationhood, as a historically particular form of collective identity, and a dominant political category in late modern societies. Students will work with key texts in the study of nationhood and nationalism, applying them to musical case studies from different world regions. Touching upon art and popular music, these cases will explore the use of nationalist rhetoric to draw citizens into state projects; the appropriation of minority expressions in defining a national self; efforts by postcolonial societies to forge national sentiment from the fragments left by decolonization; and the nation’s fate after globalization. Fall MUSC2080DS01 18470 M 3:00-5:30 (J. Tucker)

Ethnomusicology has always been interdisciplinary, and is becoming more so. The student today may encounter concepts from semiotics, linguistics, cultural studies, literary theory, political economy, sociology, cognitive psychology, media studies, sound studies, science and technology studies, organizational studies, and material culture studies, and other disciplines as well. We will examine some of the key concepts of these fields and consider their possible uses in the study of the performing arts. From ‘affordances’ to the ‘type/token distinction,’ from ‘actor-network theory’ to the ‘third-person effect,’ we will learn to apply (and criticize) concepts presupposed by much current socio-cultural theorizing.

MUSC 2120. The Jazz Orchestra and Orchestral Approaches to Jazz.
This course offers several views of what it means to write for the “jazz orchestra.” As the history of jazz tends to prioritize the contributions of individuals and small groups, what does it mean for composers who have ambitions that extend beyond typical expectations of instrumental forces, duration, and form? We will focus on specific examples that have challenged conventions and redefined idioms. From the innovations in orchestration and scale of the Duke Ellington Orchestra and the classic Gil Evans/Miles Davis albums, to the “progressive” experiments of Stan Kenton (and later Don Ellis), to the intergalactic theater of the Sun Ra Arkestra, to works for full symphony orchestra, we will examine complex issues of tradition, community, and race that have accompanied these collaborations, and the compatibility (or not) of musical challenges regarding improvisation, notation, and pedagogy. Fall MUSC2120 S01 18464 W 3:00-5:30 (A. Cheung)

MUSC 2180. Issues of Time and Space in New Music.
Time and space in music are rich and complex subjects of study. This seminar examines how these concepts complement and intertwine with one another in the music of contemporary composers such as Murail, Xenakis, and Brant. We will explore how composers have attempted to redefine musical temporalities and how they create acoustic and environmental spaces. We will consider how space is orchestrated, ways of engaging with the physicality of instruments, and how composers can use electronics to further convey and manipulate space and dimensionality. This seminar also considers the ways new experiments with increasingly complex timbral palettes changed compositions. Fall MUSC2180 S01 17270 M 3:00-5:30 (L. Wang)

MUSC 2210. Digital Performance.
A production seminar examining the artistic impact and creative potential of digital media in the context of live performance. Readings and analysis of work examine innovations in performance practice from dance, theatre, performance art and music. Collaborative assignments investigate video projection, sound design and interactive sensor technology, culminating in a final large-scale performance. Permission will be granted based upon a questionnaire given in the first class. Fall MUSC2210 S01 16848 W 3:00-5:30 (T. Winkler)

MUSC 2280. Designing Large-Scale Projects.
A production seminar designed for students to create a single, large project in Multimedia, Video, Performance and/or Electronic Music. The course covers planning and implementation strategies, including brainstorming sessions, visual storytelling, and sketching. Each project receives group feedback at several points in the process, such as initial proposals, prototype presentations and work-in-progress. The proposal includes an annotated bibliography of research materials that students present on in class. The course culminates a public presentation of the projects. The class is open to graduate students and seniors working on a capstone or thesis project. Permission will be granted after the first class.

MUSC 2300A. Critical Improvisation Studies.
Advanced seminar exploring improvisation from various perspectives: historical, anthropological, philosophical, ethical, and creative. We study improvisation in diverse musical traditions, in other arts, and in problem-solving contexts such as business, technology, and games. Discussion topics include individual vs. group improvisation, the status of “freedom” in creative processes, and the social and artistic functions of improvisation. Instructor permission required. Fall MUSC2300AS01 16935 Th 4:00-6:30 (D. Gooley)

MUSC 2450. Exchange Scholar Program.
Fall MUSC2450 S01 15507 ‘To Be Arranged’
Fall MUSC2450 S02 15508 ‘To Be Arranged’

MUSC 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination. Fall MUSC2970 S01 15509 Arranged ‘To Be Arranged’

MUSC 2980. Reading and Research.
Directed graduate research. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

MUSC 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall MUSC2990 S01 15510 ‘To Be Arranged’
Philosophy

PHIL 0010. The Place of Persons.
We’ll concentrate on some fundamental moral and metaphysical issues concerning ourselves as persons: What (if anything) gives us a moral status different from that of other animals? Do we have the sort of free will required for us to be morally responsible for our actions? What makes you one individual person or self at a particular time? What makes you today the same individual person as that obnoxious 5-year old who went by your name a few years back?

PHIL 0100. Critical Reasoning.
Critical reasoning is the art of recognizing, analyzing, composing and evaluating arguments. In this course, students will acquire skills that are needed not only to understand and evaluate complex arguments, but also to construct strong arguments themselves. Topics that will be covered include: validity and soundness, argument decomposition and construction, deductive and inductive arguments, and fallacious reasoning. After solidifying their critical reasoning skills, students will apply those skills to a number of challenging philosophical debates, touching on themes such as free will, skepticism, and morality.

PHIL 0200H. Contemporary Ethical Issues.
Are we morally obligated to reduce greenhouse gas emissions? Do we have moral obligations toward nature, animals and other people, for instance future generations and refugees? Is abortion morally wrong? Is legalization of drugs the right thing to do? In this course we will explore these and other contemporary ethical issues in the context of important moral theories; utilitarianism, virtue ethics, and the social contract theory. This course will serve as an introduction to applied ethics and normative ethics.

PHIL 0350. Ancient Philosophy.
This course will introduce students to the major concerns of Greek philosophy, and how they are addressed by the Presocratics, Plato, Aristotle, and the Stoics. We will have two related ends: historical and critical. On the one hand, we will get clear so far as we are able what it is that these thinkers thought; on the other, it is important to evaluate their arguments. This course will emphasize the identification of the problems and the solutions to them that seemed pressing to these thinkers, especially if such problems seem alien to us.

PHIL 0360. Early Modern Philosophy.
An introduction to central themes in Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Major topics include: reason, experience, and knowledge; substance and the nature of the world as it really is; induction, causation, and the origin of our ideas; skepticism, realism, and idealism. Connections are made with the scientific revolution of the 17th century. There will be discussion and advice on ways to approach philosophical reading, research and writing.

PHIL 0540. Logic.
An introduction to perhaps the most fundamental tool of rational thought: deductive logic. Course begins with basic sentential logic, then moves on to deduction, quantification, and predication. Argumentation and reasoning may also be addressed at times. No previous experience with logic or philosophy is required.

PHIL 0560. Political Philosophy.
An analytic investigation of some central problems and topics in political philosophy, including political obligation and civil disobedience, liberty, rights, equality, and democracy. Readings are drawn from recent work in the field, along with a few classics.

PHIL 0650. Psychology and Philosophy of Happiness.
The course explores four fundamental questions about happiness: What is happiness—pleasure, life satisfaction, something else? How is happiness achieved—what are the myths and realities about what conduces to happiness? Can happiness be achieved—are we naturally well suited to be happy? Why pursue happiness—is it sufficient, or even necessary, for a good life? The course examines classic contributions from philosophy and psychology, the two disciplines that have studied happiness most extensively. Team-taught by professors from both philosophy and psychology, it invites students to compare and combine both approaches.

PHIL 0751. Problems of Irrationality: Self-Deception and Weakness of Will.
This course is an introduction into self-deception and weakness of will. Self-deception is believing something in the teeth of evidence to the contrary, when this belief is sustained by some psychological motivation. Weakness of will is acting against one’s better judgment or breaking one’s considered resolutions. But there is little agreement among philosophers about the correct description. Historically, self-deception and weakness of will have been approached primarily as moral failings or flaws of character. In recent times, philosophers have focused on conceptual issues. We will think about how self-deception and weakness of will are prime examples of philosophical puzzlement and wonder.

PHIL 0880. Ethical Themes in the Contemporary American Short Story.
Consideration of contemporary American short stories in terms of their treatment of such philosophical themes as love, loyalty, envy, belief, despair, and charity. This course has no prerequisites. T Th 1:00-2:20. This class will be conducted entirely as online synchronous sessions via Zoom. All sessions will be recorded for asynchronous access as well.

PHIL 0990F. Perception.
 Begins with a reading of some classic works, and then moves on to contemporary work. Topics include: naive realist versus representational theories of sensory experience, the possibility that sensory experience is an illusion (so that we already occupy a kind of “virtual reality”), the role of the brain in shaping sensory experience, and the alleged foundational role of sensory experience in knowledge. The focus will be on vision but we will also discuss other sense-modalities. Suggested prerequisite: at least one course in philosophy (2 or more preferred).

PHIL 0990M. Descartes’ Meditations.
This seminar will focus on the main arguments and overall goals of Descartes’ Meditations, read in conjunction with the Objections and Replies and some of Descartes’ other writings. Also discussed will be some philosophically engaging studies of the Meditations by contemporary writers such as Harry Frankfurt and Bernard Williams.

PHIL 1100D. Conditionals.
In this course, we will look at different theories of what “if” means. Is it a truth-functional connective, like the material conditional used in logic? Do sentences of the form “if P, then Q” even have truth conditions? Some logic will be very helpful; some familiarity with philosophy of language also helpful.

PHIL 1118. Plato’s Republic.
In Plato’s Republic, Socrates and his companions inquire into why it is better to be just than unjust. The ensuing conversation ranges widely, addressing the best way to set up a city, the parts of the soul, knowledge and its objects, pleasure, poetry, and many more topics besides. This class is a close reading of the dialogue, supplemented with recent secondary literature.

PHIL 1282A. Hellenistic Ethics.
Seminar on Hellenistic Ethics

PHIL 1283. Philosophy of Quantum Mechanics.
An examination of philosophical issues informed by elementary quantum mechanics; topics include the measurement problem, superposition, non-locality, and competing "interpretations" of the textbook formalism.

PHIL 1300. Philosophy of Mathematics.
This course provides an introduction to the philosophy of mathematics. We will discuss the nature of mathematical objects: Are they mental constructions, do they inhabit some Platonic realm, or are there no mathematical objects at all? We will also discuss the status of our knowledge of mathematics: How is that we are justified in reasoning as
we do in mathematics? The first part of the course will be devoted to discussing the history of the philosophy of mathematics. The second part of the course will focus on contemporary debates in the philosophy of mathematics.

Fall PHIL1300 S01 16896 TTh 1:00-2:20(08) (J. Schechter)

PHIL 1400. Ethics in the Novel.
Consideration of novels in terms of their treatment of such ethical themes as love, friendship, envy, death, courage, faith, integrity, betrayal, responsibility to others, revenge, justice, and mercy. The course deals with twentieth-century and twenty-first-century novels and also with Malory. No pre-requisites. This class will be conducted entirely as online synchronous sessions via Zoom. All sessions will be recorded for asynchronous access as well.

Fall PHIL1400 S01 18267 TTh 2:30-3:50(12) (F. Ackerman)

PHIL 1520. Consciousness.
Topics will include: (i) the different features of various types of consciousness; (ii) dualist, physicalist, and representationalist theories of experience; (iii) the nature of pain and other bodily sensations; (iv) the nature of conscious thought; (v) the qualitative dimension of perception; (vi) introspection; (vii) the roles of attention and working memory in perceptual consciousness; (viii) blindsight, inattentional blindness, hemineglect, and related phenomena; (ix) the unconscious; and (x) what it is for a state of consciousness to be unified.

Fall PHIL1520 S01 16904 TTh 2:30-3:50(12) (C. Hill)

PHIL 1600. Philosophy of Law.
Philosophical examination of the chief classical and contemporary theories of the nature and function of law. Topics include the definition of law, the nature of legal systems, the logic of legal reasoning, the analysis of basic legal conceptions (e.g., of right and duty), legal rules and principles, law and justice, and law and morality.

Fall PHIL1600 S01 16900 TTh 10:30-11:50(13) (J. Dreier)

PHIL 1640. The Nature of Morality.
Investigates major theories and issues concerning the nature of moral value. Readings from 20th-century authors. Issues include naturalism, supervenience, moral motivation, subjectivity/objectivity of value, skepticism, moral relativism, and moral realism.

Fall PHIL1640 S01 16900 TTh 10:30-11:50(13) (J. Dreier)

PHIL 1650. Moral Theories.
A systematic examination of the main alternative normative moral theories: consequentialism; moral rights; moral duties; moral virtues. Focuses on the principal issues in the formulation of the different theories, on the main points of conflict between them, and on the critical evaluation of each. Readings are drawn mainly from contemporary work in moral philosophy.

Fall PHIL1650 S01 16901 TTh 10:30-11:50(13) (J. Broackes)

PHIL 1660. Metaphysics.
A survey of some major topics in metaphysics, with a particular focus on radical metaphysical arguments — arguments that call into question our most basic beliefs about the world. Topics covered may include: What is personal identity? Does personal identity matter? Do personal identity and consciousness matter? Is there right and wrong and objective value? Is there free will? Are there any good arguments for God? Prerequisite: at least one course in philosophy (2 or more preferred).

PHIL 1700. Locke, Berkeley, Hume and Others.
A detailed study, both historical and critical, of central issues in Locke, Berkeley, and Hume. Topics include a selection from: innate ideas; substance; personal identity; abstract ideas; theory of language; perception, materialism, and idealism; induction and causation; and skepticism. Also includes some discussion of later critics of classical empiricism.

Fall PHIL1700 S01 16911 TTh 10:30-11:50(13) (J. Broackes)

PHIL 1760. Philosophy of Language.
How is language used both to express and to communicate our beliefs and other thoughts? What is the relation between the meaning of a sentence and the meanings of the words that comprise it? We will discuss philosophical work on these and related questions including, potentially: the meanings of metaphors; the way meaning depends upon context; the nature of slurs and hate speech.

PHIL 1850. Philosophical Logic.
An examination of various philosophical issues arising in the foundations of logic, such as the following: existence, definite description, reference and truth, semantic paradoxes, implication and presupposition, modalities and “possible worlds,” logical truth, the nature of logical knowledge, and logic in natural language.

Fall PHIL1850 S01 18256 MWF 12:00-12:50(15) (E. Guindon)

PHIL 1890H. Sartre.
The course will focus on Sartre's Being and Nothingness, one of the great works of twentieth-century philosophy. Attention will also be given to some of his literary texts (Nausea, No Exit) that complement this work.

PHIL 1900. Philosophy of Biology.
This course introduces philosophy of biology through engagement with historical and contemporary philosophical and scientific texts. We will ask epistemological questions about evolutionary biology, that seek a broader understanding of the status of biology as a science, and about fundamental concepts and categories of biological theory. We will ask whether and how biological knowledge (e.g. about health, “human nature,” or ecosystems) might be relevant to philosophical or ethical claims. Relatedly, we will ask questions about the roles of social values in biology. For example: How have concepts of ‘race’ and racial difference been theorized in philosophy and biology, and how has scientific racism mischaracterized human diversity? Students will leave the course with an appreciation for the relevance and importance of philosophical debates both within and about the life sciences.

Fall PHIL1900 S01 17594 M 3:00-5:30 (D. Frank)

An elective for students with at least six previous courses in philosophy. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

An elective for students writing a thesis. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

PHIL 2020Q. Perception.
A survey of contemporary philosophical views about the nature of perception, with occasional lingering looks at relevant parts of the scientific literature. Topics will include appearance and reality, colors, the nature of perceptual representation, perceptual consciousness, the relationship between perception and cognition, the controversy about whether perceptual content is thick or thin, and the relationship between perceptual experience and epistemic rationality.

Fall PHIL2020Q S01 17018 W 3:00-5:30 (A. Pautz)

PHIL 2030B. Moral Responsibility and Free Will.
Introduction to the free will debate through 20th century classics (is freedom compatible with determinism? What kind of freedom, if any, is required for moral responsibility?). Exploration, through more contemporary discussions, of issues relating to credit and blame for actions, among which are: the significance and nature of autonomy, the significance of desert, the relationship of all that to character, challenges from scientists to the existence of pretty much all these things, how to think of addiction, and such meta-questions as the place in the discussion of empirical results and of extremely artificial examples.

PHIL 2100P. Structural Injustice.
What is structural injustice, and what is unjust about it? “Structural racism” (or sexism) is often said to be a kind of racism that can be present even without any racists (or sexists). Natural disasters can obviously bad, but they are not (it seems) wrong. If structural injustice is not a species of (any configuration of) individual moral wrongs, then how is it wrong and not (only) bad in the manner of a natural disaster? In this class we will study these and related questions through discussion of recent philosophical literature.

Fall PHIL2100P S02 18208 Th 4:00-6:30 (D. Estlund)

PHIL 2140J. The Metaphysics and Epistemology of Modality.
In this seminar, we will discuss the nature and epistemology of facts about possibility and necessity. The aim of the course is to discuss interesting work on the subject, including classic texts, under-discussed older texts, and recent contributions. Topics include (i) Can modal properties be
PHIL 2200. Graduate Proseminar.
Will cover classics of philosophy from the end of the 19th century to the end of the 20th; including ethics as well as metaphysics, epistemology and philosophy of language.
Fall PHIL2200 S01 16890 MWF 9:00-9:50(01) (N. Arpaly)

PHIL 2450. Exchange Scholar Program.
Recommended for those concentrating, who do not have adequate preparation for PHYS 0070; or students without prior exposure to physics who require a less rigorous course than PHYS 0050, 0060. Lectures, conferences and laboratory. Six hours of attendance. Prerequisite: PHYS 0050 or 0060. Recommended: MATH 0180 or 0200. S/NC

PHIL 2700. Third Year Workshop.
Students will receive training and practice in writing papers for publication in philosophy journals. Each student will complete a paper that has significantly greater scope and depth than a normal seminar paper. The paper will normally have some relevance to an envisioned dissertation, but there will be more emphasis on the quality of work than on relevance to future projects.

PHIL 2800. Dissertation Workshop.
No description available. Course for graduate students during their 4th year or above.
Fall PHIL2800 S01 16891 MWF 8:00-8:50(01) (J. Schechter)

PHIL 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall PHIL2970 S01 15516 Arranged 'To Be Arranged'

PHIL 2980. Research in Philosophy.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

PHIL 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall PHIL2990 S01 15517 Arranged 'To Be Arranged'

PHIL XLIST. Courses of Interest to Philosophy Concentrators.

Physics

PHYS 0030. Basic Physics A.
Survey of mechanics for concentrators in sciences other than physics-including premedical and life science students. Students with more advanced math training are advised to take PHYS 0050, which covers the same topics in physics. Lectures, conferences, and laboratory. Six hours of attendance.
Fall PHYS0030 S01 16618 Arranged(15) (J. Tang)

PHYS 0040. Basic Physics B.
Survey of electricity, magnetism, optics, and modern physics for concentrators in sciences other than physics-including premedical students or students without prior exposure to physics who require a less rigorous course than PHYS 0050, 0060. Lectures, conferences and laboratory.
Fall PHYS0040 S01 16632 MWF 12:00-12:50(15) (G. Tucker)

An introduction to Newtonian mechanics that employs elementary calculus. Intended for science concentrators. Potential physics concentrators, who do not have adequate preparation for PHYS 0070, may enroll, but are urged to continue with PHYS 0160 rather than PHYS 0060. Lectures, conferences and laboratory. Six hours of attendance. Recommended: MATH 0090 or MATH 0100.
Fall PHYS0050 S01 16639 MW 8:30-9:50(01) (U. Heintz)

An introduction to the principles and phenomena of electricity, magnetism, optics, and the concepts of modern physics. Recommended for those who wish to limit their college physics to two semesters but seek a firm grounding in the subject, including but not limited to those with some previous knowledge of physics. Lectures, conferences, and laboratory. Six hours of attendance. Prerequisite: PHYS 0050. Recommended: MATH 0100.

PHYS 0160. Introduction to Relativity, Waves and Quantum Physics. A mathematically rigorous introduction to special relativity and quantum mechanics. The second course in the three-semester sequence (PHYS 0470 being the third) for those seeking the strongest foundation in physics. Also suitable for students better served by an introduction to modern physics rather than electromagnetism. Lectures, conferences, and laboratory. Six hours of attendance. Prerequisite: PHYS 0070 or 0050. Recommended: MATH 0180 or 0200. S/NC

PHYS 0200. Astronomy.
An introduction to basic ideas and observations in astronomy, starting with the observed sky, coordinates and astronomical calendars and cycles, the historical development of our understanding of astronomical objects. Particular emphasis is placed on the properties of stars, galaxies, and the Universe as a whole, including the basic ideas of cosmology. The material is covered at a more basic level than PHYS 0270. Knowledge of basic algebra and trigonometry is required, but no experience with calculus is necessary. The course includes evening laboratory sessions.

PHYS 0270. Astronomy and Astrophysics.
A complete survey of basic astronomy, more rigorous than is offered in PHYS 0200. Requires competence in algebra, geometry, trigonometry, and vectors and also some understanding of calculus and classical mechanics. Laboratory work required. This course or an equivalent required for students concentrating in astronomy. The course includes conferences and evening laboratory sessions.
Fall PHYS0270 S01 16659 TTh 8:00-2:20(08) (D. Cutts)

PHYS 0470. Electricity and Magnetism. Electric and magnetic fields. Motion of charged particles in fields. Electric and magnetic properties of matter. Direct and alternating currents. Maxwell's equations. Laboratory work. Prerequisites: PHYS 0040, 0060, or 0160; and MATH 0180, 0200 or 0350. Labs meet every other week.
Fall PHYS0470 S01 16660 MWF 10:00-10:50(14) (S. Koushikappas)

PHYS 0500. Advanced Classical Mechanics. Dynamics of particles, rigid bodies, and elastic continua. Normal modes. Lagrangian and Hamiltonian formulations. Prerequisites: PHYS 0070, 0160 or 0050, 0060 and MATH 0180 or 0200; or approved equivalents.

PHYS 0560. Experiments in Modern Physics.
Introduction to experimental physics. Students perform fundamental experiments in modern quantum physics, including atomic physics, nuclear and particle physics, and condensed matter physics. Visits to research labs at Brown acquaint students with fields of current research. Emphasizes laboratory techniques, statistics, and data analysis. Three lecture/discussion hours and three laboratory hours each week. Required of all physics concentrators. Prerequisites: PHYS 0070, 0160 or 0050, 0060; 0470.

PHYS 0720. Methods of Mathematical Physics. This course is designed for sophomores in physical sciences, especially those intending to take sophomore or higher level Physics courses. Topics include linear algebra (including linear vector spaces), Fourier analysis, ordinary and partial differential equations, complex analysis (including contour integration). Pre-requisites: PHYS 0060 or 0160, MATH 0180, 0200 or 0350, or consent of the instructor.
Fall PHYS0720 S01 16667 TTh 1:00-2:20(08) (A. Volovich)

PHYS 0790. Physics of Matter. An introduction to the principles of quantum mechanics and their use in the description of the electronic, thermal, and optical properties of materials. Primarily intended as an advanced science course in the engineering curriculum. Open to others by permission. Prerequisites: ENGN 0040, APMA 0340 or equivalents.
Fall PHYS0790 S01 16668 TTh 9:00-10:20(02) (D. Feldman)

PHYS 1100. General Relativity. An introduction to Einstein's theory of gravity, including special relativity, spacetime curvature, cosmology and black holes. Prerequisites: PHYS
0500 and MATH 0520 or MATH 0540 or equivalent, or permission of the instructor. Recommended: PHYS 0720. Offered every other year.

**PHYS 1280. Introduction to Cosmology.**
The course presents an introduction to the study of the origin, evolution, and contents of the Universe. Topics include the expansion of the Universe, relativistic cosmologies, thermal evolution, primordial nucleosynthesis, structure formation and the Cosmic Microwave Background. Prerequisites: PHYS 0160, MATH 0190, MATH 0200, or MATH 0350, or instructor permission.

Fall PHYS1280 S01 16669 MWF 2:00-2:50(10) (R. Gaiteski)

**PHYS 1410. Quantum Mechanics A.**
A unified treatment of quanta, photons, electrons, atoms, molecules, matter, nuclei, and particles. Quantum mechanics developed at the start and used to link and explain both the older and newer experimental phenomena of modern physics. Prerequisites: PHYS 0500 and 0560; and MATH 0520, 0540 or PHYS 0720; or approved equivalents.

Fall PHYS1410 S01 16670 MWF 9:00-9:50(01) (C. Tan)

**PHYS 1420. Quantum Mechanics B.**
See Quantum Mechanics A, (PHYS 1410) for course description.

**PHYS 1510. Advanced Electromagnetic Theory.**
Maxwell's laws and electromagnetic theory. Electromagnetic waves and radiation. Special relativity. Prerequisites: PHYS 0470; and MATH 0180, 0200, or 0350; or approved equivalents.

Fall PHYS1510 S01 16671 TTh 2:30-3:50(12) (J. Fan)

**PHYS 1530. Thermodynamics and Statistical Mechanics.**
The laws of thermodynamics and heat transfer. Atomic interpretation in terms of kinetic theory and elementary statistical mechanics. Applications to physical problems. Prerequisites: MATH 0180 or 0200 or 0350. Corequisite: PHYS 1410.

Fall PHYS1530 S01 16672 TTh 10:30-11:50(13) (K. Plumb)

**PHYS 1560. Modern Physics Laboratory.**
A sequence of intensive, advanced experiments often introducing sophisticated techniques. Prerequisites: PHYS 0470, 0500 and 0560; and MATH 0520, 0540 or PHYS 0720; or approved equivalents.

**PHYS 1600. Computational Physics.**
This course provides students with an introduction to scientific computation, primarily as applied to physical science problems. It will assume a basic knowledge of programming and will focus on how computational methods can be used to study physical systems complementing experimental and theoretical techniques. Prerequisites: PHYS 0070, 0160 (or 0050, 0060) and 0470 (or ENGN 0510); MATH 0180 or 0200 or 0350; the ability to write a simple computer program in Fortran, Matlab, C or C++.

**PHYS 1610. Biological Physics.**
Introduction to structures of proteins, nucleotides, and membranes; electrostatics and hydration; chemical equilibrium; binding affinity and kinetics; hydrodynamics and transport; cellular mechanics and motions; biophysical techniques including sedimentation, electrophoresis, microscopy and spectroscopy. Suitable for undergraduate science and engineering majors and graduate students with limited background in life science. Prerequisites: MATH 0180.

Fall PHYS1610 S01 16676 MWF 1:00-1:50(06) (D. Stein)

**PHYS 1720. Methods of Mathematical Physics.**
Designed primarily for sophomore students in physical sciences. Basic elements of and practical examples in linear algebra, the solution of ordinary and Partial Differential Equation, Complex Analysis and Application to Contour Integrals. Intended to prepare students for the mathematics encountered in PHYS 0500, 1410, 1420, 1510 and 1530. Pre-requisites: PHYS 0060 or 0160, MATH 0180, 0200 or 0350, or consent of the instructor.

Fall PHYS1720 S01 16675 TTh 1:00-2:20(08) (A. Volovich)

**PHYS 1980. Undergraduate Research in Physics.**
Designed for undergraduates to participate, individually or in small groups, in research projects mentored by the physics faculty. Students must have taken one year of college level physics. An average of 8 to 10 hours per week of guided research is required as are weekly meetings with the supervising faculty member. Students should consult with faculty to find a mutually agreeable research project and obtain permission to enroll. Section number varies by instructor (students must register for the appropriate section).

**PHYS 1990. Senior Conference Course.**
Preparation of thesis project. Required of candidates for the degree of bachelor of science with a concentration in physics. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**PHYS 2010. Techniques in Experimental Physics.**
No description available.

Fall PHYS2010 S01 16674 W 3:00-5:30 (G. Landsberg)

**PHYS 2020. Mathematical Methods of Engineers and Physicists.**
An introduction to methods of mathematical analysis in physical science and engineering. The first semester course includes linear algebra and tensor analysis; analytic functions of a complex variable; integration in the complex plane; potential theory. The second semester course includes probability theory; eigenvalue problems; calculus of variations and extremum principles; wave propagation; other partial differential equations of evolution.

Fall PHYS2020 S01 16685 TTh 2:30-3:50(12) (J. Kosterfizt)

**PHYS 2030. Classical Theoretical Physics I.**
No description available.

Fall PHYS2030 S01 16678 TTh 9:00-10:20(02) (J. Marston)

**PHYS 2040. Classical Theoretical Physics II.**
No description available.

**PHYS 2050. Quantum Mechanics.**
No description available.

Fall PHYS2050 S01 16679 MWF 10:00-10:50(14) (V. Mitrovic)

**PHYS 2060. Quantum Mechanics.**
No description available.

**PHYS 2070. Advanced Quantum Mechanics.**
No description available.

Fall PHYS2070 S01 16680 TTh 10:30-11:50(13) (D. Lowe)

**PHYS 2100. General Relativity.**
Given every other year.

**PHYS 2140. Statistical Mechanics.**
No description available.

**PHYS 2170. Introduction to Nuclear and High Energy Physics.**
No description available.

**PHYS 2280. Astrophysics and Cosmology.**
This course serves as a graduate-level introduction to modern cosmology, including current topics of research on both observational and theoretical fronts. Topics include relativistic cosmology, inflation and the early Universe, observational cosmology, galaxy formation. Prerequisites for undergraduates: PHYS 1280 and PHYS 1530.

**PHYS 2300. Quantum Theory of Fields I.**
No description available.

**PHYS 2320. Quantum Theory of Fields II.**
No description available. Instructor permission required.

Fall PHYS2320 S01 16681 TTh 10:30-11:50(13) (M. Spradlin)

**PHYS 2340. Group Theory.**
Offered every other year.

**PHYS 2410. Solid State Physics I.**
No description available.

Fall PHYS2410 S01 16682 MWF 2:00-2:50(10) (A. Gromov)

**PHYS 2420. Solid State Physics II.**
No description available.

**PHYS 2450. Exchange Scholar Program.**
Fall PHYS2450 S01 15520 Arranged 'To Be Arranged'

Fall PHYS2450 S02 15521 Arranged 'To Be Arranged'
PHYS 2470. Advanced Statistical Mechanics.
No description available.

PHYS 2600. Computational Physics.
This course provides students with an introduction to scientific computation at the graduate level, primarily as applied to physical science problems. It will assume a basic knowledge of programming and will focus on how computational methods can be used to study physical systems complementing experimental and theoretical techniques. Prerequisites: PHYS 2030, 2050, 2140; the ability to write a simple computer program in Fortran, Matlab, C or C++.

PHYS 2630. Biological Physics.
The course is the graduate version of Phys 1610, Biological Physics. The topics to be covered include structure of cells and biological molecules; diffusion, dissipation and random motion; fluid and friction in fluids; entropy, temperature and energy; chemical reactions and self-assembly; solution electrostatics; action potential and nerve impulses. The graduate level course has additional pre-requisites of Phys 0470 and 1530, or equivalents. It requires homework assignments at the graduate level.

POLS 0010. Introduction to the American Political Process.
This course is designed to be an introduction to the American political process, broadly defined. We will cover topics including but not limited to: Constitution, Federalism, Federal Budget, Congress, Presidency, Bureaucracy, Judiciary, Civil Rights, Civil Liberties, Public Opinion, Media, Interest Groups, Political Parties, Campaigns, Elections, and Participation.

POLS 0020. Drug War Politics.
This seminar examines the politics, practice, and consequences of government efforts to regulate mind-altering substances since the early 20th century. Although much of the focus is on the contemporary United States and Latin America, the coverage is broadly historical, comparative, and global. The main drugs focused on are cocaine, opium, and cannabis, but will include alcohol, tobacco, and synthetics. The course also evaluates policy alternatives and the obstacles to policy reform. The course draws on readings from fields such as political science, anthropology, criminology, and history. The seminar is reading intensive, and is designed to cultivate critical writing and presentation skills. Enrollment limited to 19 first year students.

POLS 0040. Forensic Political Thought.
The Greeks stand at the beginning of the Western tradition of political thought beginning with an examination of five modern political thought movements. This course will examine political thought from the best of the "right" with the best of the "left?" Why do libertarians emphasize private property? Why are they skeptical of political agency? Are libertarians anti-democratic? Can they care about social justice? How do libertarians approach problems such as racism, sexism, militarism, state surveillance, global inequality, and environmental sustainability? This course will consider such questions from a variety of texts in the libertarian tradition, contemporary and classical.

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POLS 0920A. Bleeding Heart Libertarianism.
What is libertarianism? In what sense can libertarians claim to combine the best of the "right" with the best of the "left?" Why do libertarians emphasize private property? Why are they skeptical of political agency? Are libertarians anti-democratic? Can they care about social justice? How do libertarians approach problems such as racism, sexism, militarism, state surveillance, global inequality, and environmental sustainability? This course will consider such questions from a variety of texts in the libertarian tradition, contemporary and classical.

POLS 1010. Topics in American Constitutional Law.
This course will examine major constitutional controversies within the context of wider debates in political and legal theory. Readings from Supreme Court cases and prominent texts in political/legal theory. Each year we will focus on a different theme and set of constitutional issues. Topics might include a mix of federalism, separation of powers, privacy, free speech, and abortion. We will also focus how political and legal theory helps us to consider these topics in tandem.

This seminar examines the politics, practice, and consequences of government efforts to regulate mind-altering substances since the early 20th century. Although much of the focus is on the contemporary United States and Latin America, the coverage is broadly historical, comparative, and global. The main drugs focused on are cocaine, opium, and cannabis, but will include alcohol, tobacco, and synthetics. The course also evaluates policy alternatives and the obstacles to policy reform. The course draws on readings from fields such as political science, anthropology, criminology, and history. The seminar is reading intensive, and is designed to cultivate critical writing and presentation skills. Enrollment limited to 19 first year students.

POLS 1040. Ancient Political Thought.
The Greeks stand at the beginning of the Western tradition of political thought, yet their thought is somehow foreign. What was the special perspective from which they viewed political life? In what ways does their perspective vitalize, contest, deepen, or affirm our own thinking on justice, politics, and the good life? This course will examine these and other questions with a special emphasis on the works of Plato and Aristotle.

POLS 1050. Ethics and Public Policy.
What are the ethical dimensions of public service? How should people act when faced with ethical dilemmas in public life? This course will engage those broad questions beginning with an examination of five modern day political scandals: Watergate, Iran-Contra, the Keating Five, the Clinton impeachment, and the investigation of Russian interference in the 2016 elections. We will then consider various issues in regulating ethics from nepotism and conflicts of interest to the revolving door and financial disclosure. Finally, we will consider several ethical values that are relevant to public service, including loyalty, honesty, and the role of official disobedience.

POLS 1060. Polarized Politics.
Focus will be on growing partisan polarization in American politics. Existence of polarization in institutions like House of Representatives, Senate, the presidency, federal courts, media, and religion will be
examine. Emphasis will include the roles of political elites, non-elites, lobbyists, money in politics, red states/blue states, House and Senate rules, particular pressures created by budget, domestic, foreign policy, defense and homeland security issues. Requires extensive reading, detailed paper, take-home final exam and active class participation. Expectation to remain informed about current events as they apply to partisan polarization and to weigh the impacts of polarized politics on a democratic nation.

**POL.S 1120. Campaigns and Elections.**
This course will focus on both historical and contemporary elections at the congressional, state and local and presidential levels, emphasizing the 2020 elections. Topics include campaigns, parties, candidates, voting behavior, public opinion, polling, campaign finance, voting rights, the electoral college, gerrymandering and the media.

Fall POL.S1120 S01 15632 MWF 11:00-11:50(16) (R. Arenberg)

**POL.S 1200. Reimagining Capitalism.**
Debates over capitalism and its alternatives date back centuries. Proponents say that market institutions have enabled extraordinary productivity growth and life-saving innovations. Trade and the division of labor have been central to human progress in recent centuries. Capitalism’s critics point out that the growth of market economies has often had unacceptable consequences. The course is organized around four main challenges facing market economies today: environmental degradation, labor exploitation, inequality, and crisis. Can capitalism be reformed to solve the problems that it has helped generate, or is a market system unequipped to grapple with social and environmental challenges?

Fall POL.S1200 S01 16170 TTh 8:30-10:00(06) (R. Locke)

**POL.S 1240. Politics, Markets and States in Developing Countries.**
How can we explain fundamental differences in economic performance and policy across developing countries in the face of Globalization? Why are some countries praised as economic “miracles,” yet others seem mired in inescapable stagnation? This course addresses these questions by introducing the basic topics, concepts, and theoretical approaches that comprise the field of political economy of development. The course draws on case studies from Asia, Africa, and Latin America.

**POL.S 1250. The Politics of European Democracies.**
Topics covered include the state and challenges to the state of social class, ethnicity, immigration and religion; political parties and the formation of governing coalitions; new social movements and new political identities; voting behavior and other forms of mass politics; the European Union.

**POL.S 1285. Quality of Democracy in Latin America.**
Focus on democratic quality in modern Latin America, its failures as well as its successes. Topics include police violence, the rule of law, indigenous movements, gender and gay rights, anti-poverty policy, and direct democracy. Will draw on material from across the Spanish and Portuguese speaking democracies in the region. We will engage with different theories that make democracies representative and accountable to their citizens. Not open to first years.

Fall POL.S1285 S02 17486 MWF 11:00-11:50(16) (R. Weitz-Shapiro)

**POL.S 1290. The Rise of China.**
This course examines the causes and consequences of China’s societal transformation and emergence as a global power. Employing perspectives from comparative politics, international relations, and economics, the course explores the connections between China’s domestic transformation and its integration with the global system. Lectures and readings cover the historical antecedents of China’s rise, the contemporary relationship between state and citizen, the nature of China’s global competitiveness, and likely future avenues for socio-political change.

Fall POL.S1290 S01 15620 TTh 9:00-10:20(02) (E. Steinfield)

**POL.S 1315. Social Groups in American Politics.**
In this course, students examine the politics of social groups in order to gain a broader perspective of the American political process. Topics can vary, and include a review of the major developments in American politics for historically discriminated groups including women.

**POL.S 1325. Political Organizations and Social Change in America.**
Will examine efforts to create significant policy change in contemporary political and social life in United States. We examine strategies of social change; explore the characteristics of advocacy organizations; and consider how organizations can expand their political toolkits as they seek to create social change. In addition, we will examine the relationship between organizations, members, and activists. Why do so many organizations lack active members? What does it take to turn members into activists? Among the cases we examine are the Civil Rights Movement, the Tea Party, Alinsky organizations, Black Lives Matter, the Koch Brothers Network, Dreamers, and organized labor.

Fall POL.S1325 S01 15628 MWF 2:00-2:50(10) (M. Weir)

**POL.S 1350. Asian American Politics.**
Examination of the historical and contemporary political experiences of Asian Americans and their respective pursuits for immigration, equality, citizenship, political identity, racial justice, cross-racial/ethnic coalition-building, and incorporation into the U.S. political system. The course will also explore the effectiveness of the “pan-ethnic” identity in contemporary US politics.

**POL.S 1390. Global Governance.**
Examines the institutions and the processes by which states and other actors seek to provide “governance” in the international system. The class explores the history of, and various theoretical perspectives on, the role of the UN and other international organizations in the state system. It also considers their roles in a range of political, military, economic, environmental, and humanitarian issues. Pre-requisite: POL.S 0400

Fall POL.S1390 S01 15621 MWF 10:00-10:50(14) (N. Tannenwald)

**POL.S 1415. Classics of Political Economy.**
Traces the most important classical statements of political economy through consideration of the major contributions to the “political” study of the economy from the seventeenth century to the present; Locke, Ricardo, Smith, Rousseau, Mill, Bentham, Marx, Mill, Marshall, Keynes, Hayek, Friedman, and Lucas. By mapping the parallel evolution of the liberal/capitalist economy and the liberal/democratic notion of the individual, both a product of and a producer within this economy, the course will demonstrate the political nature of economics and the economic bases of politics. First year students require instructor permission.

Fall POL.S1415 S01 15599 TTh 2:30-3:30(12) (A. Gouveiritch)

**POL.S 1420. Money and Power in the International Political Economy.**
Examines how the interaction of states and markets create distinct global monetary and political orders. Class analyzes the shift from the classical liberal Gold Standard through the Post-War Bretton Woods arrangements through to the globalized IPE of today.

**POL.S 1435. Politics of Climate Change.**
Climate change is arguably the most important global challenge in the 21st century. It will reshape weather patterns, storms, sea levels, and agricultural output worldwide. Mitigating climate change will require massive economic transformations, affecting energy, transportation, and industrial sectors. What are the politics of that transformation? What are the political forces obstructing it? How do social movements, institutions, and state-level interests interact to shape the national and global response to climate change? This course offers answers and insights, primarily from the perspective of political science. It also draws on knowledge from other disciplines.

Fall POL.S1435 S01 17389 TTh 1:00-2:20(08) (J. Colgan)

**POL.S 1465. Introduction to Political Economy.**
This class provides an introduction to topics in political economy with a focus on using basic models to understand both individuals and groups facing a variety of social dilemmas. Simple formal models will provide a framework for understanding problems in politics and political economy, including the collective action problem, prisoner’s dilemma, coordination problems, and more generally the importance of formal and informal institutions in guiding social outcomes. The class surveys major thinkers in political economy and uses their ideas to understand major changes in society, markets, and states from an historical perspective.

**POL.S 1500. The International Law and Politics of Human Rights.**
Introduces students to the law and politics of international human rights; examines the construction of an international human rights regime and its influence on international politics. Will survey the actors and organizations involved in the promotion of human rights around the globe, as well as the obstacles. Will review competing conceptions of human rights, whether human rights are universal, problems of enforcement, and the role of
human rights in foreign policy. Major topics include civil and political rights; economic, social and cultural rights; genocide, torture, women's rights, humanitarian intervention, and the international criminal court. POLS 0400 strongly encouraged as a prerequisite.

**POLS 1530. Gender, Slavery, and Freedom.**
Will examine how gender shaped slavery in the Americas. How did the experiences of enslaved men and women differ? Did the experiences of enslaved women result in specific practices that formed the basis for resistance to slavery and dehumanization? How did gendered experiences of slavery in turn affect the notions of freedom that were developed in post-emancipation societies? We will also consider how practices or ideas developed during slavery have contributed to the “afterlife” of slavery after official emancipation. We will analyze slavery as a concrete set of practices that were experienced and negotiated differently by enslaved men and women.

Fall POLS1530 S01 15602 TTh 10:30-11:50(13)  (J. Hooker)

**POLS 1820H. Contraband Capitalism: States and Illegal Global Markets.**
This course explores the clandestine side of the global economy (including flows of drugs, people, weapons, and money) and state policing efforts. We will examine the organization of these activities, how they intersect with the state and legal economy, their relationship to armed conflicts, and how they shape (and are shaped by) domestic and international politics. Enrollment limited to 20 juniors and seniors concentrating in Development Studies, Political Science, or International Relations. Course is not open to students who have taken POLS 1020.

**POLS 1820X. Democratic Erosion.**
This course explores the causes and consequences of democratic erosion in comparative and historical perspective. The course will provide an opportunity for students to engage, critically and carefully, with the claims they have doubtlessly already heard about the state of democracy in the US and Europe; to evaluate whether those claims are valid; and, if they are, to consider strategies for combating democratic erosion here and abroad. The course will be taught simultaneously at roughly two dozen universities, with a number of cross-campus collaborative assignments. Interested students should attend the first day of class to apply for admission.

Fall POLS1820XS01 15583 W 3:00-5:30  (R. Blair)

**POLS 1821I. Issues in Democratic Theory.**
This seminar engages contemporary issues in democratic theory. Topics explored include the meaning of democracy (and the political consequence of different answers to that question); representation and citizenship; democracy and rights, (free speech, religious freedom, and privacy); democracy and judicial review; deliberative democracy. We will read works of political theory and United States Supreme Court cases. Enrollment limited to 20 juniors and seniors concentrating in Political Science.

**POLS 1821N. Political Journalism.**
Exploration of the development of political reporting and analysis of contemporary public affairs reporting. Will address key elements of the best political journalism, as well as the manner in which political journalism affects public opinion, political attitudes, and campaigns and elections. Enrollment limited to 20 junior and senior Political Science concentrators.

**POLS 1821O. Politics of Economic Development in Asia.**
It is accepted that development is not an economic phenomenon. Political processes are tied with economic development. Does the political system affect development? Does democracy slow down economic growth? If countries embrace political freedoms and market-oriented economic reforms, should one expect both to succeed equally? Since the Second World War, an enormous amount of intellectual effort has gone into understanding these issues. Asia has been at the heart of much of this literature. Emphasis will be on China, India and South Korea. Enrollment limited to 20 juniors and seniors concentrating in Political Science or International Relations.

**POLS 1821V. Democracy and Inequality in American Cities.**
Explores the relationship between democracy and inequality in contemporary American cities. The seminar considers different kinds of inequality - economic, political and group/horizontal – from the standpoint of national politics in the United States. The focus then shifts to the literature on urban politics in the United States, assessing the major contrasting theoretical perspectives on the causes of local inequalities in American cities. Finally, we focus on unequal access to public safety and justice. Over the course of the semester, students will be expected to carry out "fieldwork" involving first-hand observation of local inequalities in the Greater Providence area.

Fall POLS1821VS01 15619 M 3:00-5:30  (R. Snyder)

**POLS 1822H. Corruption and Governance Across Democracies.**
In recent years, the issue of "governance" has attracted increasing attention. Why are some countries more corrupt than others? Why do some governments distribute government programs equitably, while others manipulate them for political ends? The purpose of this class is to characterize, examine, and, to the extent possible, explain the persistence of these "bad governance" practices in many democracies in the developing world. We will draw on examples from Latin America, Africa, and Asia, and we will also make comparisons with appropriate current and historical cases from Western Europe and the United States. Enrollment limited to 20 junior and senior Political Science concentrators.

Fall POLS1822HS01 17488 W 3:00-5:30  (R. Weitz-Shapiro)

**POLS 1822I. Geopolitics of Oil and Energy.**
Oil is the single most valuable commodity traded on global markets. This course is designed to introduce students to the international political economy and security dimensions of oil and energy. The course explores the industry’s many impacts on politics and economics, including: Dutch disease and the resource curse; the relationship between oil, authoritarianism, and civil wars; the role of the rentier state; the influence of oil on international warfare; global energy governance (e.g., OPEC); political differences within OPEC; US energy policy and energy security. The materials focus primarily on the political economy of oil-exporters, especially those in the Middle East.

**POLS 1822U. War and Human Rights.**
This seminar will begin by studying the rise and spread of the notion of human rights, examining some of the core debates over human rights, including their enforcement in times of war. It will then turn to the laws of war, focusing especially on the 1949 Geneva Conventions and the challenges posed to the Conventions by the rise of non-state actors wielding significant violence. Topics include child soldiers, war crimes, humanitarian intervention, torture, targeted killings, humanitarism, and the international justice. Enrollment limited to 20 juniors and seniors concentrating in Political Science or International Relations.

Fall POLS1822US01 15622 M 3:00-5:30  (N. Tannenwald)

**POLS 1822W. Congressional Investigations.**
This seminar will explore the role that Congressional investigations have historically played at the intersection of politics, public policy, tension between the executive and legislative branches, law and media, focusing on certain of the seminal Congressional investigations that both reflected and re-shaped the politics of the day. These will include the Pecora investigation into the 1929 stock market crash, the Truman Committee investigation into defense contracting during World War II, the House Un-American Activities Committee, the McCarthy hearings, Watergate, the Iran-Contra hearings and the Senate Permanent Subcommittee on Investigations hearings into the financial services industry.

Fall POLS1822WS01 15634 T 4:00-6:30  (J. Robbins)

**POLS 1823I. Urban Politics and Policy.**
In this course, students examine the politics of urban America, and the causes and consequences of urban poverty and inequality. Enrollment limited to 20.

Fall POLS1823IS01 15623 Th 4:00-6:30  (K. Tate)

**POLS 1823J. Freedom, Work, Leisure.**
When are we most free, at work or at leisure? Is work the same as paid employment? Is leisure the same as idleness? When, in turn, are we unfree at work, and what kinds of unfreedom are we subject to that are peculiar to modern life? Such questions press with particular urgency at a time when both unemployment and overwork are major complaints, and when many people find that work takes up the majority of their day yet is unsatisfying. Readings will include philosophers like Aristotle, Bertrand
Russell, G.A. Cohen and Charles Taylor, and writings from the sociology of work. Enrollment limited to 20 juniors and seniors.

**POL 1823Z. Gender and Public Policy.**
This course explores when and how gender matters to U.S. policymaking, and how views about gender affect the development and implementation of different kinds of public policies. The course will examine gender in the context of key parts of the policymaking process including agenda-setting, group mobilization, issue framing, institutional decision-making (in the executive, legislative and judicial branches), and policy implementation. Class readings will cover four different public policy domains including social welfare policy, health policy, abortion rights, and marriage equality. Students will be able to examine other policy domains in the course of classroom discussions and in their written work.

Fall POLS1823Z S01 17280 W 3:00-5:30 (W. Schiller)

**POL 1824C. Political Communication.**
This course will focus on the importance of written and oral communication in public decision-making, particularly in the Congressional context. The course will examine the impact on political interactions, and the influencing of public policy decisions and outcomes. The course will emphasize some of the practical tools for producing relevant, useful material in the professional policy and the political communications arenas. The course requires several writing assignments focusing on different public policy analyses and political communications tools as well as active class participation including oral presentations.

**POL 1824Q. The International Politics of Climate Change.**
Addresses the problem of climate change from the perspective of political science, and in particular its international dimensions. Will provide students a chance to discuss the current state of affairs and to ultimately be able to form an opinion of what can and should be done to address the problem. Broadly, the course has two parts. The first part is a three-week introduction to the subject matter, addressing basic themes, mechanisms, and institutions. The second part is a seven week set of three units, each addressing a set of issues: common solutions to climate change, geopolitical debates, and future controversies.

**POL 1825i. The Politics of the Harlem Renaissance.**
The Harlem Renaissance was a social and cultural movement that attempted to gain recognition of the humanity and equal dignity of African Americans through arts and letters. Leaders argued over whether self-expression or propaganda ought to be the priority of artists in the movement, while figures opposing offered competing political visions. We will evaluate the intersections between key artists and figures of the movement and political activism in the time period. Will look at the role of civil rights organizations such as the NAACP and the Urban League as well as the shape that ideas for those in marginalized positions took.

Fall POLS1825i S01 17588 T 4:00-6:30 'To Be Arranged'

**POL 1826J. The History of Liberalism.**
Liberalism, we often hear today, is in crisis. Yet, do we know what 'liberalism' is? In this course, we will study liberalism's origins, development and legacy. Students will encounter a series of well-known and less well-known figures such as Montesquieu, Benjamin Constant, Tocqueville, Mill, Hayek and Raymond Aron. Four questions will guide our thinking: (1) are there different ways of justifying individual liberty? (2) What are the institutional conditions under which liberty can be preserved? (3) Is liberalism 'democratic'? (4) Do liberals require a certain type of morality from citizens?

Fall POLS1826j S02 18553 T 4:00-6:30 (A. Ghins)

**POL 1910. Senior Honors Thesis Preparation.**
Concentrators who have given evidence of superior work in political science may be admitted to honors seminar on the basis of an application submitted in the spring of their junior year. Application and guidelines may be obtained on the Department of Political Science website. Prerequisite: Fulfillment of Methods requirement. Enrollment limited to 20 senior Political Science concentrators. Instructor permission required.

Fall POLS1910 S01 15597 W 3:00-5:30 (R. Cheit)

**POL 1920. Senior Honors Thesis Preparation.**
This course is a continuation of POLS 1910. Political Science Honors students who are completing their theses should enroll. Prerequisite: POLS 1910. Instructor permission required.

**POL 1970. Individual Reading and Research.**
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**POL 1971. Individual Reading and Research.**
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**POL 2020. American Political Development.**
No description available.

**POL 2025. American Social Policy in Comparative Perspective.**
This course provides a graduate-level survey of the politics that shape social and redistributive policies in the United States. We will consider what is distinctive about American social policy compared with social protection in other advanced economies. Will begin with different approaches to understanding variation in welfare states. We will examine distinctive features of American policy including reliance on tax benefits, federalism, racial politics, politics of gender, strategies of privatization, and housing in economic security. We conclude by considering factors that will shape the future of social policy including the politics of retribution, social investment, and racial and ethnic diversity.

**POL 2040. Institutions, Crime, and Violence.**
Will examine relationships and interactions among institutions, criminal actors, and violence. State-based institutions play an important role in explaining the level of organized or organized crime. Organized crime groups, in turn, influence both state-based institutions (for example, through corrupting officials) and other criminal activity, often by creating the "rules of the game" by which other criminals can act. Finally, both state-based and criminal actors and institutions influence the level of violence in society. Each of these three influences, and is influenced by, the others. This course offers the opportunity to better understand how these three factors relate to each other.

Fall POLS2040 S01 15618 Th 1:30-4:00 (D. Skarbek)

**POL 2050. Preparing the Prospectus I.**
This course covers selected topics in research design and methodology and is designed to help students enrolled in the Political Science PhD program to write and defend a prospectus in their third year of study.

Fall POLS2050 S01 15611 Th 4:00-6:30 (J. Morone)

**POL 2051. Preparing the Prospectus II.**
This course covers selected topics in research design and methodology and is designed to help students enrolled in the Political Science PhD program to write and defend a prospectus in their third year of study. Prerequisite: POLS 2050.

**POL 2070. U.S. Public Opinion.**
This class provides an introduction to the major theoretical approaches and applied research in the study of U.S. public opinion. We examine opinion on a variety of topics. Enrollment limited to 14 Political Science graduate students.

Fall POLS2070 S01 15624 W 1:30-4:00 (K. Tate)

**POL 2090I. American and Comparative Political Behavior.**
This course is designed for graduate students to explore the core theoretical concepts and empirical research in the fields of political behavior and political participation in the American and Comparative context.

**POL 2120. Proseminar in Political Theory.**
An overview of central debates in political theory today. Readings include contemporary writings on justice, liberalism, democratic theory, critical theory, feminism, power, multiculturalism, and citizenship and political economy. Enrollment limited to 14 graduate students in Political Science; advanced undergraduates may enroll with permission of the instructor.

Fall POLS2120 S01 15601 F 8:30-11:00(06) (A. Gourevitch)

**POL 2150. Democratic Theory, Justice, and the Law.**
This course will examine contemporary and historical work in the area of democratic political and legal theory. Topics include the relationship between democracy and individual rights, deliberative vs. aggregative conceptions of democracy, the substance/procedure controversy, and the role of judicial review in a democracy. Open to graduate students only.

Fall POLS2150 S01 15594 M 3:00-5:30 (C. Bretschneider)
POLS 2160. International Political Economy.
Graduate seminar that surveys the subfield of international political economy. Outlines the historical development of the subfield as it moved from questions of US decline to issues of international cooperation and compliance and back to issues of US decline. Places the US research agenda in comparison with schools of IPE in the rest of the world. Topics covered include globalization and distribution, development, NGOs and NGOS in the IPE, Public and Private Authority, the rise and fall of nations. Open to graduate students only.
Fall POLS2160 S01 15590 M 1:30-4:00(06) (M. Blyth)

POLS 2220. Urban Politics.
Covers a number of topics linked to urban politics and urban public policy. Topics include the politics of urban education, affordable housing, downtown development. Examines how state and federal policy actions have contributed to the nature of the urban condition; and how race, class and ethnicity are interwoven with urban politics and urban public policy. Enrollment limited to 14. Graduate Students only; all others by permission only.

POLS 2245. The International Political Economy of Global Finance.
Although global finance is back in vogue since the 2008 crisis, it remains a frontier of research in mainstream political science. It is an excellent area to conduct research since it remains an ‘open range’ of inquiry. The course is divided into three parts. First covers classic accounts of the politics of global finance from within political science and related areas. Second focuses in on the best accounts of the 2008 crisis. Third discusses areas such as Risk Management, Hedge Funds, Money Laundering, Quantitative Finance, and Sovereign Debt that occupy the new frontier of political science research.

POLS 2300. Latin American Political Thought.
Latin American political thinkers, who have been tremendously influential in their own region, remain marginal to the canon of Western political thought. This course is an overview of the various traditions in the history of Latin American political thought. It examines the answers Latin American thinkers have given to some of the fundamental preoccupations of political theory from the perspective of the region’s social and political realities. The course will introduce students to figures in Latin American political thought—such as Bartolomé de las Casas, Simón Bolivar, Domingo F. Sarmiento, José Martí, José Vasconcelos, José Carlos Mariátegui, and contemporary Latino political theorists.

POLS 2320. Ethnic Conflict.
What is ethnicity? What does it share with nationalism and in what respects is it different? Why do ethnic groups fight violently and kill wantonly, especially after living peacefully for a long time? Under what conditions do they manage their relations peacefully? Do people participate in ethnic insurgencies because of greed or grievance? Will ethnic groups disappear as modernity proceeds further? These questions will guide our intellectual journey over the semester. Graduate students only; qualified undergraduates with instructor's permission. Enrollment limited to 14.
Fall POLS2320 S01 15627 W 3:00-5:30 (A. Varshney)

Through close readings of Du Bois's texts, we will explore the relationship between his political philosophy and his conceptualization of race at different stages of his intellectual and activist career as well as his understanding of democratic politics, the place of the black masses therein, and the status of women. We will also pay attention to Du Bois's retrospective self-criticism, to his reliance on fictional and other artistic genres of writing to advance philosophical claims. Drawing on reflections by Du Bois and Locke, we will reflect on how to think about art as a site of moral and political transformation in matters of race.
Fall POLS2340 S01 15614 W 4:00-6:30 (M. Rogers)

POLS 2360. Ancients and Moderns: Quarrels and Continuities.
Examines the political thought of Plato and Aristotle together with three modern thinkers whose work was especially influenced (or animated) by engagement with these ancient views of politics: Machiavelli, Rousseau, and Nietzsche. In exploring these moderns in particular, we also get a view of early modern, high modern, and postmodern receptions of the ancients. Enrollment limited to 14. Open to graduate students.

POLS 2400. Qualitative and Mixed Methods Research.
This graduate seminar offers an introduction to the design and implementation of social science research that deploys qualitative data and analysis in conjunction with other methods of inquiry. We explore the set of tools that is conventionally considered to comprise qualitative methods, including case studies, small-N comparisons, process tracing, sequential analysis, interviews and participant observation. Starting from the premise that each research method has its strengths and weaknesses, we also consider how qualitative methods can be combined productively with other methods of inquiry, including “large-N” quantitative analysis, experiments, spatial/geographic analysis, and multilevel analysis spanning different scales.

POLS 2450. Exchange Scholar Program.
Fall POLS2450 S01 15526 'To Be Arranged'
POLS 2580. Introduction to Quantitative Research Methods.
This course introduces students to statistical theory and quantitative methods commonly used in political science and public policy. The course focuses on statistical inference using multiple techniques of regression analysis and gives students opportunities to become proficient users of the statistical software package Stata as they develop statistical models and analyze their data. Enrollment limited to 14. Open to graduate students in Political Science only.
Fall POLS2580 S01 15615 M 4:00-6:30 'To Be Arranged'
POLS 2590. Quantitative Research Methods.
An intermediate statistics course for graduate students. Topics include multiple regression, statistical inference, categorical dependent variable models, instrumental variable models, and an introduction to time series. Course readings and applications examine models used in different fields of political science and public policy including American institutions, comparative politics, and international relations. Open to graduate students concentrating in Political Science or Public Policy.

POLS 2975. Field Survey and Research Design.
An independent study directed by a tenure-line faculty member of the Department of Political Science. Only third-year graduate students may register for the course; it is intended to provide a framework for producing a formal research design modeled on the dissertation prospectus.

POLS 2976. Field Survey and Research Design.
An independent study directed by a tenure-line faculty member of the Department of Political Science. Only third-year graduate students may register for the course; it is intended to provide a framework for producing a formal research design modeled on the dissertation prospectus.

POLS 2980. Individual Reading and Research.
An independent study course directed by a tenure-line faculty member in the Department of Political Science. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

POLS 2981. Individual Reading and Research.
An independent study course directed by a tenure-line faculty member in the Department of Political Science. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

POLS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall POLS2990 S01 15527 'To Be Arranged' (R. Cheit)
POLS 2991. Thesis Research and Preparation.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Portuguese and Brazilian Studies

POBS 0105. Accelerated Portuguese.
This course serves as an accelerated introduction to Portuguese, one of the most widely spoken languages in the world. It is an introduction to the diverse cultures of Portuguese-speaking societies. Specifically, the course will look into the ethnic, racial, social, and gender diversity in these cultures. Designed for students who have no prior knowledge of Portuguese, POBS 0105 meets five hours per week.
Fall  POBS0105  S01  18512  TTh  1:00-2:20(08)  (P. Sobral)

POBS 0400. Writing and Speaking Portuguese.
Designed to improve the students’ ability in contemporary spoken and written Portuguese. Using such cultural items as short stories, plays, films, videos, monthly magazine and newspaper articles, and popular music, students discuss a variety of topics with the aim of developing good communication skills. Attention is given to preparing writing ability. A systematic review of Portuguese grammar is included. Prerequisite: POBS 0200, or POBS 0110, or placement. Conducted in Portuguese. Completion of POBS 0400 is the minimum requirement for participation in the Brown-in-Brazil Program. Offered every semester.
Fall  POBS0400  S01  16708  MW  10:00-10:50(13)  (P. Sobral)
Fall  POBS0400  S01  16708  TTh  10:30-11:50(13)  (P. Sobral)

POBS 0620. Mapping Portuguese-Speaking Cultures: Portugal and Africa.
Selected literary and cultural texts that serve as vehicles for a deeper understanding of Portuguese and Luso-African societies. Literary materials will be taken from several genres and periods with special attention to contemporary writings. Other media such as film and music will also be included. Considerable emphasis on strengthening speaking and writing skills. Prerequisite: POBS 0400, placement or instructor’s permission. Conducted in Portuguese.
Fall  POBS0620  S01  17377  TTh  2:30-3:50(12)  (L. Simas-Almeida)

We will analyze how a new mindset that would later be called modernity slowly emerged from the medieval world and how the trials and errors of the 15th and 16th century navigators helped shape that transformation. The seminar is interdisciplinary as the readings will include developments in astronomy, geography, shipbuilding, mathematics, philosophy, as well as what could be called early anthropology, as stepping stones to the first scientific revolution. Conducted in English. Enrollment limited to: 19. Reserved for First Year students.
Fall  POBS0910  S01  16732  M  3:00-5:30  (O. Almeida)

POBS 1030. Portuguese Stylistics: Advanced Language Study and Creative Writing.
An intensive writing course covering basic genres: letter, short essay, diary, short story, and poetry. Students write five pages per week on five different preassigned topics that range over a wide variety of subjects. Exposes students to idiomatic and stylistic writing in a multitude of areas. In class, students read and comment on each other’s writings. Enrollment limited to 20. Conducted in Portuguese.

Examines both fictional narratives written in Portuguese by African authors and fictional works by Portuguese authors that focus on the colonial experience of Angola, Mozambique, and Cape Verde. Aims in particular at the critical analysis of Portuguese colonialism as a means to verify its specificity or lack thereof within the larger context of overarching European colonialisms. Conducted in Portuguese.
Fall  POBS1501A S01  16730  W  3:00-5:30  (L. Simas-Almeida)

POBS 1740. Artful Teaching: Intersecting the Arts with Foreign and Second Language Acquisition.
How can we create meaningful experiences for those learning a foreign or second language? What makes the creative arts (art)culate so powerfully and naturally with foreign and second language acquisition? How do the arts enable students to become aware of surrounding cultures while simultaneously acquiring a new language? This course will explore connections between the arts—visual, literary and performing—and language acquisition in a combined workshop and seminar approach. Readings will include authors Sheridan Blau, Augusto Boal, Shirley Brice Heath, Paulo Freire, Jan Mandell, Twyla Tharp, Jeffrey D. Wilhelm and others.

This independent study course is designed for students working on honors projects. Written permission of the concentration advisor (Prof. Sobral) is required. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.
Fall  POBS1990  S01  15524  Arranged  'To Be Arranged'

POBS 2020B. Cross-Cultural Growth and Development.
Explores physical, cognitive, social and emotional human development from a cross-cultural perspective. Part one analyzes child-rearing practices in agrarian and industrialized societies. Part two is based on case studies involving the ethnolinguistic groups in the Providence area, which are studied and discussed with implications for teaching and learning. Conducted in English.

POBS 2120A. ESL Methodology Assessment and Evaluation.
An overview of the current principles, practices and approaches that inform assessment and evaluation for English language learners. Participants engage in class activities that duplicate selected assessment approaches and identify strategies for integrating assessment with planning and instruction appropriate to the language proficiency of students. Participants explore assessment research and theoretical background for an understanding of the complexity of evaluating student achievement. Conducted in English.
Fall  POBS2120A S01  17540  T  4:00-6:30  (M. Pacheco)

POBS 2120B. Practicum in English as a Second Language.
The practicum in ESL is an integrating and culminating experience in the Master's Program in ESL and Cross Cultural Studies. The course provides a review of the theories and concepts related to English as a Second Language. Throughout the course students apply what they have learned about teaching English language learners and reflect on their assessment, planning and implementation of second language teaching through group discussions and seminars. To participate in this course students must have access to ELs in a classroom setting.
Fall  POBS2120B S01  17539  Th  4:00-6:30  (M. Pacheco)

POBS 2500B. Portuguese Overseas Encounters.
The critical analysis of some classic Portuguese travel writings from the 15th to the 20th century. The readings include Zurara, Camões, Fernão Mendes Pinto, História Trágico-Marítima, Ramalho Ortigão, Raul Brandão, as well as the contemporary Pedro Rosa Mendes. Conducted in Portuguese.
Fall  POBS2500B S01  16710  T  6:40-9:00PM  (O. Almeida)

POBS 2500F. Tales of the "Sertão".
The reality and mythology of the "sertão" have long been a source of inspiration for Brazilian writers, visual artists, and filmmakers. This seminar considers the transformations of the "sertão" motif since the second half of the nineteenth century. Fiction by José de Alencar, Euclides da Cunha, Graciliano Ramos and João Guimarães Rosa. Films by Glauber Rocha and Sandra Kogut. Conducted in Portuguese.
Fall  POBS2500F S01  16709  M  3:00-5:30  (L. Valente)

POBS 2500K. Senses and Sensibilities in the Nineteenth Century Portuguese Novel.
The works to be read are representative of the main literary trends in 19th century Portuguese literature. They will be analyzed with a focus on literary aesthetics, but also on meanings (or senses), both culturally and personally, by exploring the textual construction of emotions, i.e., the engagement of sensibilities in the written word. Authors to be studied include Almeida Garrett, Camilo Castelo Branco and Eça de Queirós. Conducted in Portuguese.

POBS 2600C. Foundations of Literary Theory.
Designed to provide a solid foundation on the development of literary theory from its ancient roots in Plato, Aristotle, Horace and Plotinus to the contemporary period. Includes Kant, the Russian Formalists, Lukács, Jakobson, Bakhtin, Barthes, Derrida, Ricoeur, Said and others. Conducted in English.

POBS 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.
Fall  POBS2970  S01  15524  Arranged  'To Be Arranged'
POBS 2980. Reading and Guided Study
Reading in Portuguese language, literature, civilization, and bilingual studies. Conducted via Portuguese readings and discussions. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

POBS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.
Fall POBS2990 S01 15525 Arranged 'To Be Arranged'

Public Affairs

This course is designed to teach the political, theoretical and administrative aspects of contemporary public budgeting and management in the United States. You will examine the central role of budgeting in policy formulation and implementation and come to an understanding of the budget as a statement of competing for political priorities. In addition, the various roles of key institutions in the budgeting process will be studied.
Fall MPA2020 S01 17298 W 4:00-6:20(10) 'To Be Arranged'

Broad overview of public policy analysis and program evaluation with emphasis on methodological issues involved in the analysis and assessment of government programs. Illustrations are drawn from a variety of substantive policy areas.
Fall MPA2040 S01 17542 Arranged (N. Thakral)

MPA 2055. The Politics of Policymaking in Comparative Perspective.
This course provides a broad introduction to political forces which policymakers operate. Policymaking and politics are often held as separate spheres. There is a tendency to view politics as something to be recognized and controlled. In reality, policymakers are often faced with unavoidable political issues. Issue areas that relate to the political context of policymaking include: Why do some countries have stable institutions while others are subject to frequent regime change? Why do some institutional arrangements facilitate compromise and negotiation, while others impose obstacles to effective governance? Why do some policies privilege certain groups and marginalize others?
Fall MPA2055 S01 17244 MW 9:30-11:50(06) (J. Ziegler)

MPA 2065. Introduction to Data Science and Programming.
We live in the era of data-driven decision making in all aspects of our lives. The features on your iPhone, the images in an ad campaign, even the background colors on many websites are all carefully tested and chosen against their measurable impact on customer satisfaction, purchasing, clicks, or some other goal. In this course, we will be learning to use and apply those same principles to public policy and government programs. Our goal is to equip MPA students with the tools required to set up experiments, gather data, and begin to evaluate and design public policy and government programs.
Fall MPA2065 S01 17297 Arranged (P. Stey)

MPA 2222. Introduction to Health Policy.
The United States health care system is responsible for delivering high-quality care to millions of people. It is also a major and growing part of the national economy, employing many workers while commanding an ever-growing share of government budgets and employee paychecks. For decades, Americans have debated the best ways to reform the system to better care for more people for the same or lower spending levels. This course will focus on developing a strong understanding of the system’s dynamics as well as its players, both government and private so that students will be able to develop policy recommendations for how these players can best work toward their goals.
Fall MPA2222 S01 18496 Th 5:00-7:30 'To Be Arranged'

This course introduces students to concepts and tools relevant to making public decisions informed by social values. It equips students to define problems and to systematically develop and compare policy options available to public actors. In short, the course teaches students to "think like a policy analyst" and reason in the public interest. In addition, the course is attentive to the political and institutional context in which policy decisions are made.
Fall MPA2445 S01 17243 TTh 10:30-11:50(13) (P. Stey)

MPA 2450. Economics of Government Intervention.
This course considers the cases for and implications of government intervention in the economy. When is government intervention desirable? Why is it desirable? What are its consequences?
Fall MPA2450 S01 17541 Arranged (A. Poterack)

MPA 2455. Statistics for Public Policy.
Covers social and economic statistics and their role in public policy research. Among the topics explored are descriptive and inferential statistics, measurement, sampling, and multivariate analysis.
Fall MPA2455 S01 17543 Arranged (J. Friedman)

MPA 2460. Economics for Public Policy.
Examines issues in government spending and tax policy. Conceptual topics include the normative assignment of responsibility with federal systems and the equitable distribution of income. Specific policy applications are covered.
Fall MPA2460 S01 17544 Arranged (B. Steinberg)

MPA 2605. How do you conduct research that changes Public Policy?
This course is a hands-on exploration of how evidence is used—and not used—in the real-world trenches of day-to-day government, with the aim of teaching you how to conduct and use research in ways more likely to have a meaningful impact on public affairs. We’ll explore by way of applied exercises and contributing work on real projects. Projects span from the world’s largest field experiment of a police body-worn camera program, to algorithms that predict the location of city rats, to a Form-a-Palooza that seeks to systematically redesign all government forms based on insights from the behavioral sciences.
Fall MPA2605 S01 17325 Arranged (D. Yokum)

MPA 2710. GIS and Public Policy.
This seminar presents an introduction to the theory and practice of social geography. Geographic Information Systems (GIS) as applied to public policy analysis. We will cover a variety of topics, such as the geographical basis of policy issues, spatial mapping, and use of ArcGIS software to study a wide range of policy issues. The course will involve discussions, hands-on computer laboratory exercises, take-home problem sets and a Practical Exam.
The goals of the class are: 1) learning how to use GIS software and techniques, 2) database development and editing 3) spatial modeling techniques, and 4) using GIS to study policy issues.
Fall MPA2710 S01 17334 T 4:00-6:30 'To Be Arranged'

MPA 2981. Independent Graduate Study.
This is an independent study course for the MPA program.

Public Health

PHP 0310. Health Care in the United States.
Introduction to the health care delivery system. An overview of the U.S. health care financing, delivery and regulatory system. Considers the interaction between paying for and providing and assuring the quality of health services; changes in one component of the system inevitably affect the others. Addresses the balance between employer funded health insurance, publicly funded health insurance and the consequences of not being insured. Seven discussion sections arranged during the semester. Open to undergraduates only.

PHP 0650. From Manufacturer to Patient: Why is the Cost of Prescription Drugs So Darn High?
In 2015, estimates of drug spend in the United States was about $457 billion and could be as high as $610 billion by 2021. The reasons for the continued escalating costs of prescription drugs are unclear. In this course we will examine the complex chain of discounts, rebates and markups that impact the price of a prescription drug from the manufacturer’s list price to the time it is dispensed to the patient. We will examine the role of major stakeholders in the drug supply chain including the manufacturer, wholesalers and distributors, pharmacy benefit managers and health plans. PHP 0310, Healthcare in the United States, is a prerequisite.
Students who feel they have adequate background but have not taken PHP 0310 should contact instructor for override. Students must have basic knowledge of terms associated with managed care and healthcare issues routinely written about or featured in the news.

Fall PHP0650 S01 17978 TTh 10:30-11:50(13) (R. Aubert)

PHP 0850. Fundamentals of Epidemiology. As the cornerstone of public health, a strong foundation in epidemiology provides students with the ability to investigate, clarify and critique claims of disease causation. This course provides students with a foundation in basic epidemiologic concepts and methods. Key measures of disease occurrence and effects used in epidemiology will be discussed; strengths and weaknesses of alternative epidemiologic study designs will be examined. Interpreting epidemiologic evidence to inform public health policy and practice will be emphasized throughout the course.

Open to Public Health concentrators and others by permission; Class limit 80.

Fall PHP0850 S01 15962 TTh 2:30-3:50(12) (S. Buka)

PHP 1070. The Burden of Disease in Developing Countries. Defines and critically examines environmental, epidemiologic, demographic, biomedical, and anthropological perspectives on health and disease in developing countries. Emphasis on changes in the underlying causes of morbidity and mortality during economic development. Focuses on the biosocial ecology of diseases. Required major term paper worth 50% of final grade is scholarly centerpiece of course. Weekly discussion sections and small group research projects supplement the two exams and term paper. Guest lecturers cover different diseases and public health perspectives. Enrollmnet limited to 65.

Fall PHP1070 S01 16749 MW 8:30-9:50(01) (S. McGarvey)

PHP 1100. Comparative Health Care Systems. Focuses on principles of national health system organization and cross-national comparative analysis. Emphasizes application of comparative models to the analysis of health and health-related systems among nations at varying levels of economic development and health care reform. Addresses research questions related to population health and systems' performance. Questionnaire completion required for Freshman and Sophomore students. Enrollment limited to 30.

Fall PHP1100 S01 16765 MW 10:00-11:20(06) (O. Galarraga)


Covers concepts and methods used to study mental illness at the population level, including definitions of “normality” and “pathology”, current classification systems and multilevel approaches to assess psychopathology and severity and cross-cultural issues. Covers the prevalence, risk factors, and etiology of major disorders of children, adolescents and adults, including autism spectrum disorders, attention deficit disorders, mood and anxiety disorders, schizophrenia and substance use disorders. PHP 0850 OR prior coursework in psychology, epidemiology, sociology or related fields.

Fall PHP1500 S01 16747 TTh 1:00-2:20(08) (R. Gutman)

PHP 1510. Principles of Biostatistics and Data Analysis. This course is intended to provide a basic foundation in the methods and applications of biostatistics, and is geared towards the students whose fields of study include a substantial statistical or quantitative component. Ideally, this course is the first in a two-part sequence (the sequel being PHP 1511: Applied Regression), designed to provide students in the public health, biological and life sciences with broad-based exposure to modern methods of biostatistical inference, in addition to an understanding of underlying mathematical principles and motivations. Priority given to students concentrating in Public Health and Statistics. All others with instructor permission.

Fall PHP1510 S01 18287 TTh 9:00-10:20(02) (S. Dunsiger)

PHP 1560. Statistical Programming in R. Statistical computing is an essential part of analysis. Statisticians need not only be able to run existing computer software but understand how that software functions. Students will learn fundamental concepts - Data Management, Data types, Data cleaning and manipulation, databases, graphics, functions, loops, simulation and Markov Chain Monte Carlo through working with various statistical analysis. Students will learn to write code in an organized fashion with comments. This course will be taught in a “flipped” format. Students will watch a series of videos and work through some simple coding examples before coming to class.

Fall PHP1560 S01 16766 TTh 10:30-11:50(13) 'To Be Arranged'

PHP 1600. Obesity in the 21st Century: Causes, Consequences and Countermeasures. The scope of obesity knowledge is too large to cover during one single course, therefore we will focus primarily on obesity-related health outcomes, assessment of obesity, obesity epidemiology, social and behavioral correlates of obesity, obesity and stigma, policy and interventions across population groups. The readings for this course are multi-disciplinary in nature and integrate epidemiological, biological, sociological, political and philosophical perspectives. This course is specific to the United States and thusly all readings will reflect this contextual focus. Enrollment limited to 30.

PHP 1680L. Intersectionality and Health Inequities. This course examines health inequities in the U.S from an intersectionality perspective. Intersectionality is both a theory and methodology focused on the power dynamics between oppression and privilege and how various axes of social categories and systems interrelate on various and simultaneous levels. This framework critically examines how systemic injustice and social inequality transpires on a multidimensional basis. This course provides a broad overview of health disparities in the U.S, specifically, examining them through intersecting structural and social factors (e.g., race and ethnicity; gender; immigration status; socioeconomic position; age; sexual orientation; and the promise and limitations of public policy).

Fall PHP1680S S01 16751 W 3:00-5:30 (S. Skeels)

PHP 1690. Technology and Health Behavior Change. Lifestyle behaviors like poor diet, low physical activity, drug/alcohol use, and poor medication use contribute to some of the top causes of morbidity and mortality globally, including heart disease, diabetes and many cancers. Changing these behaviors is difficult and requires substantial, long-term effort and commitment on the part of both patients and providers. This course is a survey of computing systems and technologies that are designed to help users make healthier choices. We will explore how and why these systems work, the theories behind them, and how to find/evaluate the evidence supporting them, using both popular industry products and more experimental programs as examples. Students interested in gaining hands-on experience with these technologies and learning more about the processes behind their features should take this course.

Fall PHP1690 S01 18058 Th 4:30-6:30 (T. Wray)

PHP 1700. Current Topics in Environmental Health. This course is designed to introduce students to the field of environmental health, and demonstrate how environmental health is integrated into...
various aspects of our lives, both directly and indirectly. Topics to be covered include: toxic metals, vector-borne disease, food safety, water quality, radiation, pesticides, air quality, hazardous waste, risk assessment, and the role of the community in environmental health. Several topics will be presented by guest speakers so that students can learn from the expertise of professionals in the field. Enrollment limited to 65.

PHP 1820. Designing Education for Better Prisoner and Community Health.
This course will provide the needed background and context for understanding the multiple issues and challenges facing prisoners and the national justice and health systems that impact their fate. In addition to contextual background, students in this course will attain the knowledge and skills needed to develop a final practical, real world health communication/intervention project that addresses one or more health literacy challenges facing people who are incarcerated. Students interested in taking the course must contact the professor directly for information about obtaining an override.

PHP 1854. The Epidemiology and Control of Infectious Diseases.
Course objectives are to introduce students to methods and concepts in the study and control of infectious diseases. By the end of this course, students will have a solid foundation in the distribution, transmission, and pathogenesis of major infectious diseases that affect human populations. We will investigate methods to design and evaluate public health strategies to prevent or eliminate infectious diseases, including: outbreak investigation, disease surveillance, infection control, screening, and vaccination. The course is open to undergraduate students who have completed PHP 0320 or PHP 0850, and to graduate students who have completed or are concurrently enrolled in either PHP 2120 or PHP 2150.

PHP 1880. Meditation, Mindfulness and Health.
This course provides an overview on the relation of meditation and mindfulness (the ability to attend in a nonjudgmental way to one’s own physical and mental processes during ordinary, everyday tasks) with physical and mental processes during ordinary, everyday tasks) with mechanisms by which mindfulness may influence health will be addressed. The course will assess studies in the field for methodological rigor, and students will be taught strengths and weaknesses of current research. Students will be taught various mindfulness practices including direct experience with mindfulness meditation.

PHP 1900. Epidemiology of Disorders and Diseases of Childhood and Young Adulthood.
Students will learn about diseases and disorders of childhood and young adulthood, including allergies, autism, eating disorders, obesity, endometriosis, and migraines. Students will learn how these disorders are defined, how many youth are impacted, and the age-appropriate epidemiologic methods to study disorders and diseases during childhood, adolescence, and young adulthood, respectively. For the final project, students will pick a disease or disorder of interest that occurs during childhood, adolescence, or young adulthood, synthesize the results from multiple epidemiological studies, and concisely present this information in both a written report and an oral presentation.

This dynamic course will provide an overarching public health capstone experience. Students will gain an in-depth knowledge by utilizing and strengthening oratory skills, written skills, and skills needed to work in teams. The instructor is formally trained in Internal Medicine, public health, health policy and clinical epidemiology, with experience which will be brought to the classroom. Topics will span public health successes, things that didn’t work, and things that need more work and effort. This seminar course will emphasize class discussion, interaction and debate regarding differing perspectives on each topic area, as well as in-depth discussion of the assigned readings.

The course provides an overview of social determinants of health. Examples of topics include health effects of educational attainment, social integration, neighborhood socioeconomic characteristics, racial discrimination, gender, income inequality, childhood socioeconomic circumstances, parental neglect, and job strain. Mixed teaching methods are used, including small group discussions, problem-based learning and guest lectures. Open to graduate students and advanced undergraduates.

This course is aimed at enhancing the knowledge and skills central to the application of epidemiologic methods to cancer screening, prevention, and control. We will examine cancer incidence and trends in the U.S. and globally, interpret their implication for cancer etiology, and critically analyze current evidence regarding the role of various major risk factors on human cancer risks. The class will focus on the impact of major environmental, occupational, and lifestyle risk factors on cancers of high public health significance.

A special project may be arranged in consultation with an individual faculty sponsor. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

Two semesters of PHP 1980, Honors Thesis Preparation, will be devoted to the development and implementation of an Honors project, and of the writing of the Honors Thesis for the Public Health Concentration.

This is a graduate level course focused on maternal and child health in the United States. While some reference will be made to the experience in other countries, the focus of the course will be on the United States. A broad range of health conditions will be covered, with an emphasis on leading causes of mortality and morbidity. In addition, we will examine the range of programs designed to prevent or address important health threats.

PHP 2030. Clinical Trials Methodology.
We will examine the modern clinical trial as a methodology for evaluating interventions related to treatment, rehabilitation, prevention and diagnosis. Topics include the history and rationale for clinical trials, ethical issues, study design, protocol development, sample size considerations, quality assurance, statistical analysis, systematic reviews and meta-analysis, and reporting of results. Extensively illustrated with examples from various fields of health care research. Recommended prerequisites: introductory epidemiology and statistics. Pre-requisites: (PHP 2120 or PHP 2150) and either PHP 2508, 2510, or 2520. Open to graduate students only.

PHP 2040. Survey Research Methods.
Emphasizes the theory of sampling and survey methods and their application to public health research. Topics include: survey design and planning; principles of sampling and survey terminology; questionnaire construction; protection of human subjects; data collection (including interviewing and data coding procedures); and application, presentation, and evaluation of results. Suggested prerequisites: PHP 2120, and PHP 2508 or 2510. Open to graduate students only.
PHP 2060. Qualitative Methods in Health Research. 
Introduces qualitative approaches to data collection and analysis in health research. Methods covered include: participant observation, key-informant interviews, focus groups, innovative data collection strategies, and non-obtrusive measures. Students will use applied projects to develop skills in: qualitative data collection and management, interviewing, transcript analysis using computerized software, triangulation between qualitative and quantitative data, and report preparation for qualitative studies. Enrollment limited to 20 graduate students. Fall PHP2060 S01 16771 W 3:00-5:30 (E. Belanger)

Applied Public Health is a two-semester sequence of courses designed to give students the skills and experiences they need to master understanding public health and health care systems, policy in public health, leadership, communication, interprofessional practice, and systems thinking. This will be achieved through a combination of lectures, in class exercises, homework assignments, and practical experience in a public health setting. The first course in the sequence (PHP 2071) is taken in the Spring of your first year. Fall PHP2071 S01 16774 TTh 10:30-11:50(13) (B. Marshall)

PHP 2072. Applied Public Health: Policy, leadership and communication. 
Applied Public Health is a two-semester sequence of courses designed to give students the skills and experiences they need to master understanding public health and health care systems, policy in public health, leadership, communication, interprofessional practice, and systems thinking. This will be achieved through a combination of lectures, in class exercises, homework assignments, and practical experience in a public health setting. The second course (PHP 2072) is taken in the Fall of your second year. Fall PHP2072 S01 16754 T 1:00-2:20(08) (A. Gjelsvik)

PHP 2090. Research Grant Writing for Public Health. 
This course focuses on providing knowledge and experience in creating high quality public health research grant applications. Course objectives include developing significant and innovative scientific hypotheses, learning principles of effective written communication, and developing a research grant application suitable to submit for funding. Designed for Public Health School PhD students, post-doctoral fellows, and Masters students with advanced degrees (e.g. MD, PhD). Prerequisite: PHP 2120 or PHP 2150 or instructor permission. Fall PHP2090 S01 16772 W 9:30-12:00(06) (J. Braun)

Epidemiology quantifies patterns and determinants of human population health, with a goal of reducing the burden of disease, injury, and disability. An intensive first course in epidemiological methods, students learn core principles of study design and data analysis through critiques of published epidemiological studies as well as hands on practice through weekly exercises and assignments. This is a graduate-level course aimed at masters and PhD students. The course is not open to first year students or sophomores but may be available for advanced undergraduates with the instructor's permission. Fall PHP2120 S01 16773 TTh 10:30-11:50(13) (M. Lurie)

This course provides basic principles of human biology and its applications to public health. Examples of biology topics include the cardiovascular system, endocrine system, immune system, nervous system, genetics, cancer, cardiovascular disease, HIV/AIDS, and depression. Examples of applied topics include strengths and weaknesses of using biomarkers, accuracy and precision of biological measures, quality assurance and quality control methods for using biomarkers for public health research. Mixed teaching methods are used, including small group discussions, problem-based learning and guest lectures. Prerequisite: PHP 2120 (may be taken concurrently) or instructor permission. Enrollment limited to 20 graduate students. Fall PHP2130 S01 16773 TTh 10:30-11:50(13) (M. Lurie)

The overall objective of this course is to provide students with a strong foundation in epidemiologic research methods. This is the first of a two- or four-course sequence in epidemiologic methods aimed at students who expect to eventually conduct their own epidemiologic research. There will be a strong quantitative focus in this course. By the end of the foundations course, students should be sufficiently familiar with epidemiologic research methods to begin to apply these methods to their own work. Prerequisite: PHP 2507 or 2510 (either may be taken concurrently); the typical student will also have some introductory knowledge of epidemiology. Fall PHP2150 S01 16774 TTh 10:30-11:50(13) (B. Marshall)

Provides an introduction to the classification, epidemiology, etiology, treatment and potential prevention of psychiatric disorders from a population perspective. Reviews the magnitude and social burden associated with mental disorders worldwide and opportunities to enhance prevention and treatment. Covers concepts and methods used to study mental illness at the population level, including definitions of “normality” and “pathology”, current classification systems and measurement approaches to assess psychopathology and severity and cross-cultural issues. Covers the prevalence, risk factors, and etiology of major disorders of children, adolescents and adults, including autism spectrum disorders, attention deficit disorders, mood and anxiety disorders, schizophrenia and substance use disorders.

PHP 2180. Interpretation and Application of Epidemiology. 
This course builds upon the foundation of introductory epidemiology and a basic understanding of quantitative and conceptual methods, with a focus on the interpretation of the strength and meaning of epidemiologic findings. The goal is to help students develop critical thinking skills in order to become more sophisticated interpreters of epidemiologic evidence for guiding policy, clinical practice, and individual decisions, combining subject matter knowledge and epidemiologic methods to wisely evaluate the available research findings. We will focus on judging causality and identifying gaps that future research would need to fill to strengthen our understanding. Prerequisite required or permission of instructor.

This second course in epidemiologic methods reinforces the concepts and methods taught in PHP 2150, with in-depth instruction in issues of study design, assessing threats to study validity including confounding and selection bias, and analyzing data with standard regression models. The course emphasizes hands-on learning and includes a combination of didactic lectures, discussions of methodologic papers, and a required laboratory component where students will learn to apply the concepts learned in class to real-world problems. Prerequisites: PHP 2150 and either 2510 or 2507, or permission of the instructor. Co-requisite: PHP 2511 or 2508.

PHP 2220B. Nutritional Epidemiology. 
This course provides a comprehensive and systematic review of contemporary issues in human nutrition that require the application of principles of study design and data analysis to support the development of recommendations for public health policies for foods and dietary supplements. This course is designed for graduate trainees in public health or the division of biology and medicine, visiting fellows, and advanced undergraduates who want to understand or conduct research in human nutrition and dietary assessment related to health and diseases. Fall PHP2220B S01 18034 W 9:30-12:00(06) (S. Liu)

PHP 2220C. Perinatal Epidemiology: Women and Infants' Health during Pregnancy in a Global Context. 
This course introduces students to major topics that affect the health of women and their infants during pregnancy and the perinatal period. We will address issues relevant to both high and low-resource settings, but will pay particular attention to low-resource settings. The course covers pregnancy loss and pregnancy outcomes, chronic and infectious diseases during pregnancy, and key methodological issues when studying health outcomes during the perinatal period. The course will include course lectures, informal discussions with experts, and student-led discussions and journal clubs. Student will complete a course paper and brief presentation on a selected research topic. This course is open to masters and PHD students in any concentration or program who have
PHP 2220F. Reproductive and Perinatal Epidemiology
This course provides an overview of topics related to reproduction, pregnancy, maternal and child outcomes of pregnancy, and long-term consequences related to reproductive health. Methodological issues unique to reproductive and perinatal epidemiology are discussed, as well as general epidemiologic methods as applied to topics in reproductive and perinatal health. Class sessions will include lectures and discussions of published research studies, with active student participation expected. After several introductory lectures, students will select topics and be responsible for organizing a presentation and discussion under the instructor’s supervision.

Fall PHP2220F S01 18112 Th 2:30-5:00 (V. Danilack)

PHP 2250. Advanced Quantitative Methods in Epidemiologic Research.
This course provides students with conceptual and quantitative tools based on counterfactual theory to make causal inference using data obtained from observational studies. Causal diagrams will be used to provide alternative definitions of and inform correcting for common biases. Non-, semi-, and fully parametric methods for addressing these biases will be discussed. These methods include standard regression, instrumental variables, propensity scores, inverse probability weighting, and marginal structural models. Settings when such methods may not be appropriate will be emphasized. Prerequisite: PHP 2200 and 2511; or PHP 2200 and 2508; or instructor permission. Enrollment limited to 25 graduate students.

Fall PHP2250 S01 16777 TTh 1:00-2:20(08) (G. Howe)

PHP 2260. Applied Epidemiologic Data Analysis
This course will lead students through the process of writing a journal-style manuscript based on performing applied epidemiologic data analysis using statistical software (i.e., SAS). This course is best suited for students who already have a research idea in mind and data in hand prior to the start of the course or are able to develop a research question based on de-identified publicly available population-based datasets that will be recommended in the course. Course enrollment is restricted to graduate students.

Fall PHP2260 S01 18036 Arranged (S. Rosenthal)

This course provides students with fundamental principles of behavioral and social research methodology for understanding the determinants of public health problems, and for executing and testing public health interventions. We will focus on experimental methods, observational studies, and qualitative approaches. We will develop skills in understanding and interpreting data—both quantitative and qualitative. Throughout the course we will emphasize ethical, cultural, and professional issues for designing public health interventions. Prior coursework in research methodology and quantitative methods is recommended but not required. Open to graduate students and advanced undergraduates. Enrollment limited to 15.

Fall PHP2300 S01 16778 Th 4:00-6:30 (D. Operario)

PHP 2330. Behavioral and Social Approaches to HIV Prevention.
This course examines concepts, approaches, and empirical findings from behavioral and social research to prevent HIV transmission. Students will become familiar with behavioral theories, social epidemiological principles, intervention design, and debates within the field of HIV prevention. A particular focus of this course is on the linkages between science and HIV prevention practice/policy. Students will conduct weekly readings, engage actively in seminar discussions, and participate in small-group presentations and research activities. Prior coursework in public health research methodology is recommended. Prerequisites: Graduate student or senior public health concentrator. Enrollment limited to 15 advanced undergraduate, graduate and medical students.

PHP 2340. Behavioral and Social Science Theory for Health Promotion.
This course will help students become familiar with behavioral and social science theories commonly used for planning disease prevention/health promotion interventions. In addition to review of specific theories, topics to be discussed include: how theories are developed and tested; challenges and potential pitfalls in using theory for intervention planning; and creation of causal diagrams based on concepts from theories. Undergraduates need permission of instructor; priority will be for Public Health concentrators. Enrollment limited to 25.

Fall PHP2340 S01 16779 T 12:00-2:30(06) (D. Williams)

PHP 2355. Designing and Evaluating Public Health Interventions.
Previously listed as PHP 1740. Examines health behavior decision-making and elements for design of health promotion interventions. Covers theories of health behavior (focusing on primary and secondary prevention), principles of intervention design, and reading of research literature. Emphasizes psychological, social, and proximate environmental influences on individuals’ health-related behaviors. Restricted to undergraduates in the AB/MPH program, and graduate students. Prerequisite: PHP 0320 or equivalent. Enrollment limited to 35.

Fall PHP2355 S01 16780 MW 1:00-2:20(06) (P. Risica)

PHP 2360. Developing + Testing Theory-Driven, Evidence Based Psychosocial and Behavioral Health Interventions.
This is a graduate-level course designed to provide students with the knowledge and research skills necessary to develop and ultimately test a theory-driven, evidence-based psychosocial or health behavior change intervention. Drawing on research, theory, and practice, students learn how to conduct formative research to inform the content, structure, and format of an intervention, set goals/objectives, develop intervention materials/messages, and evaluate outcomes—all while taking into account factors such as gender, sexuality, race/ethnicity, poverty, culture, social-support/social-capital, etc. Research methods that are relevant for examining efficacy, including study-design, power/sample size calculations, fidelity monitoring, randomization, control conditions, measures selection/assessment, data collection, etc. are covered.

PHP 2361. Proseminar in Health Behavior Intervention Research.
This course is required for doctoral students in Behavioral and Social Health Sciences. Students will consider advanced topics related to designing, implementing, and evaluating behavioral and social interventions to promote health. The course is designed as a proseminar, emphasizing discussion of primary readings and presentations by experienced intervention researchers.

Fall PHP2361 S01 16781 W 2:30-5:00(06) (K. Carey)

PHP 2371. Psychosocial and Pharmacologic Treatment of Substance Use Disorders.
Intended to provide an overview of the history of the treatment of substance use disorders; assessment methods designed to determine progress in substance use treatment; and the current most common types of psychosocial and pharmacologic treatments for substance use. Enrollment limited to 20 graduate and medical students. Instructor permission required.

Fall PHP2371 S01 16755 F 1:15-3:45(06) (P. Monti)

This class will explore Health Communication, with a focus on behavioral and social science interventions delivered through health communication programs. The course is structured so that basic building blocks (i.e., definitions of health communication, public health context for health communications interventions, theories of health communication and health behavior change) are presented sequentially early in the semester. Students will synthesize knowledge and demonstrate their understanding of the role of health communication through a final research project. Seniors with concentration in Public Health may enroll with instructor’s permission. Enrollment limited to 20 graduate and medical students.

Reviews the development of the health care delivery, financing and regulatory control systems in the U.S. and reviews the literature on the relationship between health system structure and the services used and health outcomes that populations experience. A case-study approach is used to understand the inter-relationship between financing, delivery and regulatory components of the health system and their implication for public health by drawing on epidemiological, economic, political and sociological
PHP 2410E. Medicare: A Data Based Policy Examination. This course will explore the role of Medicare as America’s health insurer for the elderly and disabled through the use of real Medicare insurance claims data, examining how Medicare policy changes in financing and regulation have affected the delivery and receipt of medical services. At the end of the course students will: 1) know the history of important Medicare policy changes; 2) be able to construct aggregated patient case mix acuity adjusted measures of provider quality using insurance claims data; 3) be able to conduct policy analyses using Medicare claims data that are sensitive to standardized coding schemes. Enrollment limited to 15 graduate students. Prerequisite: PHP 2120, 2508, or 2510. Instructor permission required.

Fall PHP2410E S01 16782 Th 12:00-2:30(06) (V. Mor)

PHP 2415. Introduction to Evidence-based Medicine. Unbiased assessments of the scientific literature by means of research synthesis methods are critical for formulating public health policy, counseling patients or prioritizing future research. We focus on the methods and uses of systematic reviews and meta-analyses and their applications in medicine and health policy. After course completion, and with some direction, students will be able to undertake a basic systematic review or meta-analysis. Enrollment limited to 15. Prerequisites: PHP 2120, 2150, or 2460; and PHP 2507/08 or 2510/11 (2508 and 2511 may be taken concurrently); and clinical background or training in basic concepts in medicine (must discuss with instructor).

PHP 2436. Conflicting Priorities? Prescription Profits + the Public's Health. The US spends more on pharmaceuticals than any other nation, reflecting higher use of medications and higher prices. US pharmaceutical firms are leaders in innovation and drug development. The purpose of this course is to provide an introduction to the study of the biopharmaceutical industry using an economic and policy analysis framework. This course is intended to broaden students’ understanding of the health policy process as it relates to pharmaceuticals. Students should have completed at least one year of biostatistics (PHP 2510 and PHP 2521) or equivalent coursework. Consent of the instructor may be sought as well.

Fall PHP2436 S01 16757 T 9:30-12:00(06) (T. Shireman)

PHP 2440. Introduction to Pharmacoepidemiology. The course will focus on substantive topics in pharmacoepidemiology, including relevant principles of pharmacology, inference from spontaneous case reports, study design considerations, premarketing pharmacoepidemiologic studies, drug utilization review, adherence, and the development, implementation, and assessment of therapeutic risk management policies. The course will also focus on issues in pharmacovigilance, including the legal and historical basis of pharmacovigilance, evaluation of individual adverse drug events, signal detection, active safety surveillance, and medication errors. A clinical background is not required. Prerequisites are PHP 2507, PHP 2508, PHP 2510, or PHP 2511, AND PHP 2120 or PHP 2150, or permission.

PHP 2450. Measuring and Improving the Quality of Health Care. The quality of health care in the United States is in urgent need of improvement. This course will focus on the science of measuring and improving the quality of health care. Topics will include quality assessment, patient safety, medical errors, public reporting, financial incentives, organizational change, and health care disparities. Students will engage in a team-based quality improvement project. Open to graduate and medical students only.

Fall PHP2450 S01 16758 M 3:00-5:30 (A. Trivedi)

PHP 2451. Exchange Scholar Program.

Fall PHP2451 S01 15518 Arranged 'To Be Arranged'

PHP 2455A. Health Services Research Methods I. Health services researchers use theories, models, and data to understand the health care system, assess the effectiveness of interventions (at multiple levels of the healthcare system), and inform health policy decisions. This course reviews the application of statistical and epidemiological principles to the design and analysis of health services research studies. The goal is to familiarize students with common study designs and methods in health services research, so that they can critically review the published literature and use these approaches in their own research.

Fall PHP2455A S01 16783 F 9:30-1:00(06) (L. Dahabreh)

PHP 2455B. Health Services Research Methods II. This course covers commonly used statistical (regression) models for health services research, including survival analysis; examines the problem of missing data and strategies for addressing it; and provides a basic introduction to causal inference methods for time-varying exposures (including non-adherence). The goal is to familiarize students with important methods in applied work, so they can critically review the published literature and use the methods in their own research. The topics covered should be of interest to students in Health Services, Policy + Practice, Epidemiology, Economics, and beyond. Prerequisites: Successful completion of PHP 2455A or instructor permission. Interested students who have not taken PHP 2455A should contact issa_dahabreh@brown.edu to make arrangements. Those with adequate background in basic health services research or epidemiologic methods and regression analysis will be able to gain from this course, even if they have not taken PHP 2455A.

PHP 2465A. Introduction to Health Decision Analysis. Many decisions in health are value-laden, involve competing objectives, or must be made under uncertainty. Health decision analysis is a structured approach to thinking through such decisional problems. This course introduces decision analysis and cost-effectiveness analysis for public health and clinical problems. It covers basic theory for decisionmaking: principles and techniques for mathematical modeling; and implementation, by analyzing archetypical decisional problems in health. Pre Requisites: Some facility with mathematical notation and basic concepts in probability (advanced undergraduate students can enroll after instructor approval). Recommended course: DATA 1010, MATH 1810, or APMA 1690.

Fall PHP2465A S01 16760 W 1:00-3:30(06) (T. Trikalinos)

PHP 2470. Topics in Clinical, Translational and Health Services Research. Through a combination of mini-courses and seminars, students will explore concepts, gain knowledge and develop skills in a variety of public health areas. To receive a half credit for this course, students will be required to successfully complete 70 units. Units must be pre-determined by the course instructor and the unit instructor. Units are generally based on the number of in-person contact hours and the number of outside of class/homework hours required for a mini-course or seminar. Students must receive special permission from the instructor or be accepted to the Clinical and Translational Research Summer Institute to enroll.

PHP 2507. Biostatistics and Applied Data Analysis I. The objective of the year-long, two-course sequence is for students to develop knowledge, skills and perspectives necessary to analyze data to answer public health questions. The year-long sequence focuses on statistical principles as well as the applied skills necessary to answer public health questions using data, including: data acquisition, data analysis, data interpretation and the presentation of results. Using lectures, labs and small group discussions, we focus on evaluating data sources, refining research questions, univariate and bivariate analyses, and presentation of initial results. Prerequisite: understanding of basic math concepts and terms. Enrollment limited to 50 students. Instructor permission required.

Fall PHP2507 S01 16741 Arranged (A. Gjelvok)

PHP 2508. BioStatistics and Data Analysis II. Biostatistics and Applied Data Analysis II is the second course in a year-long, two-course sequence designed to develop the skills and knowledge to use data to address public health questions. The sequence is completed in one academic year, not split across two years. The courses focus on statistical principles as well as the applied skills necessary to answer public health questions using data, including: acquisition, analysis, interpretation and presentation of results. This spring semester course focuses on regression, interpretation of results, and communication of results. Prerequisite: PHP 2507. Enrollment limited to 50. Instructor permission required.
**PHP 2510. Principles of Biostatistics and Data Analysis.**
Intensive first course in biostatistical methodology, focusing on problems arising in public health, life sciences, and biomedical disciplines. Summarizing and representing data; basic probability; fundamentals of inference; hypothesis testing; likelihood methods. Inference for means and proportions; linear regression and analysis of variance; basics of experimental design; nonparametrics; logistic regression. Open to advanced undergraduates with permission from the instructor.
Fall PHP2510  S01  16785  TTh  9:00-10:20(02)  (S. Dunsiger)

**PHP 2511. Applied Regression Analysis.**
Applied multivariate statistics, presenting a unified treatment of modern regression models for discrete and continuous data. Topics include multiple linear and nonlinear regression for continuous response data, analysis of variance and covariance, logistic regression, Poisson regression, and Cox regression. Prerequisite: APMA 1650 or PHP 2510. Open to advanced undergraduates with permission from the instructor.

**PHP 2514. Applied Generalized Linear Models.**
This course provides a survey of generalized linear models (GLMs) for outcomes including continuous, binary, count, survival and correlated data. This course will be on understanding the implications of this theory and the applications to solving real data problems. Extensive use of computer programming will be required to analyze the data in this class. This course is designed for graduate and advanced undergraduate students who will be analyzing data and want to develop a practical hands on toolkit as well as understanding of the theoretical underpinnings of regression.
Fall PHP2514  S01  17271  TTh  1:00-2:20(08)  (A. Eloyan)

**PHP 2515. Fundamentals of Probability and Statistical Inference.**
This course will provide an introduction to probability theory, mathematical statistics and their application to biostatistics. The emphasis of the course will be on basic mathematical and probabilistic concepts that form the basis for statistical inference. The course will cover fundamental ideas of probability, some simple statistical models (normal, binomial, exponential and Poisson), sample and population moments, nite and approximate sampling distributions, point and interval estimation, and hypothesis testing. Examples of their use in modeling will also be discussed.
Fall PHP2515  S01  16991  MW  9:00-10:20(06)  (R. DeVito)

**PHP 2516. Applied Longitudinal Data Analysis.**
This course provides a survey of longitudinal data analysis. Topics will range from exploratory analysis, study design considerations, GLM for longitudinal data, covariance structures, generalized linear models for longitudinal data, marginal models and mixed effects. Data and examples will be drawn from medical/pharmaceutical applications, public health and social sciences.
This course is designed for graduate and advanced undergraduate students who will be analyzing data and want to develop a practical hands on toolkit as well as understanding of the theoretical underpinnings of regression. Students in this class will need an understanding of how to work with Stata. Prerequisite is: PHP 2511 or PHP 2514; PHP 2508 with Permission from Instructor.

**PHP 2517. Applied Multilevel Data Analysis.**
This course provides a survey of multilevel data analysis. Topics will range from structure of multilevel data, basic multilevel linear models, multilevel GLM, Model testing and evaluation and missing data imputation. Data and examples will be drawn from medical, public health and social sciences. Students will be using real data throughout this course.
This course is designed for graduate and advanced undergraduate students who will be analyzing data and want to develop a practical hands on toolkit for multilevel analysis. Students in this class will need an understanding of how to work with R. Prerequisite is: PHP 2511 OR PHP 2514; PHP 2508 with Permission from Instructor.

**PHP 2520. Statistical Inference I.**
First of two courses that provide a comprehensive introduction to the theory of modern statistical inference. PHP 2520 presents a survey of fundamental ideas and methods, including sufficiency, likelihood based inference, hypothesis testing, asymptotic theory, and Bayesian inference. Measure theory not required. Open to advanced undergraduates with permission from the instructor.

**PHP 2520. Statistical Inference II.**
This sequence of two courses provides a comprehensive introduction to the theory of modern inference. PHP 2520 covers such topics as nonparametric statistical inference, permutation tests, re-sampling techniques, statistical learning, and methods for high-dimensional Bioinformatics data. Prerequisite: PHP 2520. Open to advanced undergraduates with permission from the instructor.

**PHP 2550. Practical Data Analysis.**
Covers practical skills required for successful analysis of scientific data including statistical programming, data management, exploratory data analysis, simulation and model building and checking. Tools will be developed through a series of case studies based on different types of data requiring a variety of statistical methods. Modern regression techniques such as cross-validation, bootstrapping, splines and bias-variance tradeoff will be emphasized. Students should be familiar with statistical inference as well as regression analysis. The course will use the R programming language.
Fall PHP2550  S01  16787  MW  10:30-11:50(06)  (C. Schmid)

**PHP 2560. Statistical Programming with R.**
Statistical computing is an essential part of analysis. Statisticians need not only be able to run existing computer software but understand how that software functions. Students will learn fundamental concepts – Data Management, Data types, Data cleaning and manipulation, databases, graphics, functions, loops, simulation and Markov Chain Monte Carlo through working with various statistical analysis. Students will learn to write code in an organized fashion with comments. This course will be taught using both R and Julia languages in a flipped format.
Fall PHP2560  S01  16788  TTh  9:00-10:20(02)  'To Be Arranged'

**PHP 2561. Methods in Informatics and Data Science for Health.**
The goal of this course is for students to develop a solution that uses data science and informatics approaches to address a biomedical or health challenge. This course will teach informatics and data science skills needed for public health and biomedicine research. Emphasis will be given to algorithms used within the context of biomedical research and healthcare, including those used in biomolecular sequence analysis, electronic health records, clinical decision support, and public health surveillance. This course has been developed as a Course-based Undergraduate Research Experience (CURE), where students will gain experience with the scientific method, its application, and presentation.

**PHP 2580. Statistical Inference II.**
This course will focus on the theory and applications of linear models for continuous responses. Linear models deal with continuously distributed outcomes and assume that the outcomes are linear combinations of observed predictor variables and unknown parameters, to which independently distributed errors are added. Topics include matrix algebra, multivariate normal theory, estimation and inference for linear models, and model diagnostics. Prerequisites: APMA 1650 or 1660, or taking PHP 2520 concurrently.

**PHP 2601. Linear Models.**
This course will focus on the theory and applications of linear models for continuous responses. Linear models deal with continuously distributed outcomes and assume that the outcomes are linear combinations of observed predictor variables and unknown parameters, to which independently distributed errors are added. Topics include matrix algebra, multivariate normal theory, estimation and inference for linear models, and model diagnostics. Prerequisites: APMA 1650 or 1660, or taking PHP 2520 concurrently.

Note: The course will cover fundamental and advanced topics in linear models, and concepts related to the generalized linear models will not be covered during the course.
Fall PHP2601  S01  16789  T  1:00-3:30(06)  (L. Crawford)

**PHP 2602. Analysis of Lifetime Data.**
Comprehensive overview of methods for inference from censored event time data, with emphasis on nonparametric and semiparametric approaches. Topics include nonparametric survival techniques, semiparametric proportional hazards models, frailty models, multiple
event processes, with application to biomedical and public health data. Computational approaches using statistical software are emphasized. Prerequisites: PHP 2510 and 2511, or equivalent. Open to advanced undergraduates with permission from the instructor.

Fall PHP2602 S01 18016 TTh 2:30-3:50(12) (J. Steingrimsson)

**PHP 2605. Generalized Linear Models.**
This course will focus on the theory and application of generalized linear models (GLM), a unified statistical framework for regression analyses. Specifically, we will focus on using GLMs to model the categorical outcomes. The GLM for categorical outcomes include logistic regression, proportional odds model, and Poisson regression. Maximum likelihood estimation and inference will be introduced in the GLM context. The students are expected to have knowledge of probability and inference (at the level of APMA1650, APMA1660, or PHP2520), knowledge of matrix algebra (at the level of MATH0520), knowledge of regression analysis (at the level of PHP2511) and knowledge of R.

**PHP 2610. Causal Inference and Missing Data.**
Systematic overview of modern statistical methods for handling incomplete data and for drawing causal inferences from "broken experiments" and observational studies. Topics include modeling approaches, propensity score adjustment, instrumental variables, inverse weighting methods and sensitivity analysis. Case studies used throughout to illustrate ideas and concepts. Prerequisite: MATH 1610 or PHP 2511 or PHP 2580.

Fall PHP2610 S01 16790 TTh 9:00-10:20(02) (J. Hogan)

**PHP 2620. Statistical Methods in Bioinformatics, I.**
Introduction to statistical concepts and methods used in selected areas of bioinformatics. Organized in three modules, covering statistical methodology for: (a) analysis of microarray data, with emphasis on application in gene expression experiments, (b) proteomics analysis, (c) analysis of biological sequences. Brief review and succinct discussion of biological subject matter will be provided for each area. Available software will be introduced. Intro level statistics (PHP 2507/2508 or PHP 2510/2511) recommended. Other students should contact instructor. Intro to software R and Bioconductor tools provided in lab. Open to advanced undergraduates with permission from the instructor.

**PHP 2630. Statistical Learning and Big Data.**
This course introduces modern statistical tools to analyze big data, including three interconnected components: computing tools, statistical machine learning, and scalable algorithms. It introduces the principal techniques: extract and organize data from complex sources, explore patterns, frame statistical problems, build computational algorithms, and disseminate reproducible research. Topics include web data extraction, database management, exploratory data analysis, dimension reduction, convex optimization algorithms, high-dimensional linear/nonlinear models, tree/ensemble methods, and predictive modeling. These techniques are illustrated using big data examples from many scientific disciplines. This course is open to graduate students and advanced undergraduate students pursuing degrees in science, technology, engineering, or mathematics. Students should have taken: either one course from: PHP 2510, PHP 2511, PHP 2550, APMA 2610; OR one course from: APMA 1690, APMA 1720, APMA 1920Q, CSCI 0150, CSCI 0170; AND one course from: MATH 0520, MATH 0540. Students may ask permission from the instructor for waiving this requirement. Students are also required to have some experience with any scripting language.

**PHP 2710. Interdisciplinary Perspectives on Disability and Death in the Global South.**
The course fosters interdisciplinary critical and integrative thinking and writing about the leading causes of disease, disability and death in low and middle income countries, and potential solutions to prevent and ameliorate these burdens of disease. The first part focuses on measures of population health, health disparities, multi-causal and multi-level thinking, social epidemiology, community interventions and implementation research. These topics provide the fundamental intellectual frameworks for global public health. The second part presents scholars from key disciplinary areas contributing to global health research and practice from many academic units at Brown University. To conclude students present their potential research ideas.

Fall PHP2710 S01 16791 M 1:00-3:30(06) (S. McGarvey)

**PHP 2720. Implementing Public Health Programs and Interventions in the Global South.**
This course will focus on the theory and methods related to increasing the impact of evidence-based public health interventions and the effectiveness of healthcare delivery in diverse resource-limited settings across the globe. This course will focus on the influence of social, structural, political, and organizational processes on the development, adaptation, implementation, and evaluation of public health interventions in the Global South. We will review the emerging field of implementation science and critically analyze approaches for the evaluation of ongoing global public health programs.

Fall PHP2720 S01 18017 F 9:00-11:30(06) (J. Pellowski)

**PHP 2740. Learning Global Health by Doing Global Health: Global Health Thesis Seminar.**
This course prepares students for constructive engagement in cross-cultural research. The course aims to familiarize students with global funding priorities and research approaches, and to ask questions about meaningful cross-cultural engagement. Part I (Weeks 1-5) covers global health research priorities and writing a small grant proposal. Part II (Weeks 6-12) focuses on acquiring skills and knowledge to plan and implement a global health project, including strategies for community and stakeholder engagement, the challenges and opportunities of cross-cultural research, and tools for project implementation. This course is a research fieldwork preparation seminar intended to prepare students for global field-based research.

**PHP 2760. Critical Perspectives in Global Health.**
An overview of social theory and analytical approaches relevant to the study of global health topics and their social context. Students learn writing skills and analytical tools and methods for in-depth analyses of global health topics, including social science critiques of global health policy and practice. The goal is for students to learn the skills to conduct critical social analysis of global health issues using qualitative or quantitative data, or mixed methods approaches, on topics ranging from patterns of disease prevalence, to health systems functioning, to community-level project implementation and evaluation. Suitable for students writing theses or papers for publication.

Fall PHP2760 S01 17272 W 9:00-11:30(06) (A. Harrison)

**PHP 2950. Doctoral Seminar in Public Health.**
The purpose of this seminar is to facilitate discussions of current scientific literature in epidemiology, biostatistics, health services, behavioral and health sciences, and public health in general. The main goal is to expose students to current methodological issues and controversies, in an effort to integrate knowledge across disciplines. This seminar is only open to doctoral students in Epidemiology, Behavioral and Social Health Sciences, Biostatistics and Health Services Research.

Fall PHP2950 S01 16834 M 12:00-12:50(06) (Z. Wu)
Fall PHP2950 S02 16836 F 1:00-1:50(06) (C. Kahler)
Fall PHP2950 S03 16837 T 12:00-12:50(06) (T. Zheng)
Fall PHP2950 S04 16838 M 12:00-12:50(15) (I. Wilson)

**PHP 2980. Graduate Independent Study and Thesis Research.**
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**PHP 2981. Graduate Independent Study and Thesis Research (half-credit).**
Half-credit independent study research course consisting of 90 credit hours of supervised independent work intended for master's students. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**PHP 2985. MPH Independent Study for Thesis Preparation and Research.**
This optional half credit course may be taken up to two times during preparation for the MPH degree. It provides MPH students with self-directed thesis research and preparation time under the guidance of a thesis advisor. Prior to taking this course the student and advisor must reach agreement as to what constitutes satisfactory completion of the course (e.g., completion of a satisfactory literature review, attainment of specific thesis benchmarks, or completion of the thesis). Please check Banner for the correct section number and CRN to use when registering for this course.
Eastern spirituality, exemplifies the power and authority of mantra. What
no semantic meaning. The sacred syllable OM, now a global symbol of
Buddhism, Sufism, and Sikhism. Some mantras are made up of words
A mantra is a syllable or formula used in ritual and meditation. Mantras
religious, social, and political ramifications in many different contexts.
COST 0526. This Whole World is OM: Mantras in Indian Religions
were known and are used today. They have had cultural, religious, and
earliest texts to its status in the modern world, addressing its historical,
spirit, yoga has taken many forms—meditation, chanting, breath control,
spirit, yoga has a rich and complex history. As a practice of the mind, body,
supernatural powers, strength, pleasure, peace, wellness. As its reputation
sex, asceticism, ritual, possession, and performance, we will examine
how has sensory culture shaped lives, practices, and doctrines? What place do the senses
have in South Asian traditions? Drawing on premodern law codes, erotic
handbooks, and medical treatises; and integrating new media from
ethnographic films to graphic novels, we will plunge into the rich sense
worlds of religions in South Asia.
COST 0100. Introduction to Contemplative Studies.
Introduction to the new field of Contemplative Studies focusing on
identifying methods human beings have found, across cultures and across
time, to concentrate, broaden and deepen conscious awareness. We
will study what these methods and experiences entail, how to critically
appraise them, how to experience them ourselves, and how they influence
the development of empathy, health, and well-being. Prerequisites: None.
Enrollment limit is 40.
Why study food? What can food tell us about religion, politics, and culture?
Food in South Asia often shapes identity, social status, ritual
purity, religious belonging, and political activism—the notion that you are
what you eat has wide currency. Whatever form it takes, food embodies
histories of migration, trade, empire, colonialism, and ethics. Through
reading primary texts and ethnographic articles, watching films, and (of
course) eating delicious food, we will explore the rich foodways of South
Asia and their social, religious, and political ramifications.
Fall COST0140 S01 16343 T 4:00-6:30 (F. Moore-Gerety)
COST 0200. Meditation and the Brain.
This course provides an exploration and critique of psychological
and neuroscientific research on meditation by situating the current
applications of meditation in the West in the broader historical context of
the development of Buddhism. In this course, we will critically evaluate
the findings of scientific and clinical studies of meditation in terms of
their methodological rigor, implicit assumptions, and biases. We will
also study the transmission of Buddhism from Asia to the West in order
to understand the influence of Buddhism norms and worldviews on
contemporary applications of meditation. This course will also feature first-
person experiential learning in select meditation practices.
Fall COST0200 S01 17625 Th 4:00-6:30 (J. Lindahl)
COST 0525. The History and Practice of Yoga in India and Beyond.
From its roots in premodern India to its current popularity worldwide,
yoga has a rich a complex history. As a practice of the mind, body, and
spirit, yoga has taken many forms—meditation, chanting, breath control,
postures—in order to achieve a range of goals: liberation from rebirth,
supernatural powers, strength, pleasure, peace, wellness. As its reputation
and commodification have increased, yoga has attracted deep interest,
debate, and even controversy. In this course we will study yoga from its
earliest texts to its status in the modern world, addressing its historical,
religious, social, and political ramifications in many different contexts.
COST 0526. This Whole World is OM: Mantras in Indian Religions.
A mantra is a syllable or formula used in ritual and meditation. Mantras
are central to Indian religions—not only Hinduism, but also Jainism,
Buddhism, Sufism, and Sikhism. Some mantras are made up of words and
language—usually in Sanskrit—while others are sound fragments with
no semantic meaning. The sacred syllable OM, now a global symbol of
Eastern spirituality, exemplifies the power and authority of mantra. What
are mantras? What do they accomplish? How do they shape identities,
beliefs, and practices? Engaging with sacred utterance in various media,
this course explores the world of mantras in India and beyond.
Fall COST0526 S01 16346 TTh 1:00-2:20(08) (F. Moore-Gerety)
“Zen” has become a common trope in modern North American Culture but
few people know what the term really means. This course will study Zen’s
origins in Indian Perfection of Wisdom teachings, follow its meanderings
through China from the legend of Bodhidharma through the Five Houses of
Chan, and chart its arrival and developments in Japan and eventual
transplanting to the West. We will focus on several important Zen
teachers: Huieng and Linji in China, Dogen, Bankei and Hakuin in Japan.
We will also explore the essential technique of koan meditation and the
practice of “just sitting.”
Fall COST0555 S01 16349 M 3:00-5:30 (H. Roth)
COST 1090. The Craving Mind.
We are creatures of habit. Driven by biological processes set up to help us
survive, our minds are constantly craving experiences and substances—
from smartphones to romance to alcohol—and this craving leads to habit
formation. This course will explore the behavioral and mental processes
that foster craving and consequent habit formation, the impact these
have on individual and societal health, and how we can “hack” our own
neurobiological reward circuitry using practices such as mindfulness, to
foster greater health and wellbeing.
Fall COST1090 S01 18255 W 3:00-5:30 (J. Brewer)
COST 1705A. Principles and Practices of Contemplative Studies.
Advanced study of the distinctive methods of the field of Contemplative
Studies that includes third-person, second-person, and critical first-person
perspectives. Will focus on the study of meditative practices in their
historical contexts and on essential scientific research on their nature and
effects. Prerequisite: COST 0100 or Permission of Instructor. Meditation
Lab to be scheduled
Fall COST1705AS01 18258 Arranged (H. Roth)
COST Individual Study Project Semester 1, directed reading and research
arranged with individual faculty. Section numbers vary by instructor.
Please check Banner for the correct section number and CRN to use when
registering for this course.
COST 1920. Individual Study Project - Semester 2.
COST Individual Study Project Semester 2, directed reading and research
arranged with individual faculty. Section numbers vary by instructor.
Please check Banner for the correct section number and CRN to use when
registering for this course.
Required of seniors in the honors program, (second semester of two-
semester sequence that includes COST 1950 in first semester). Open
to others only by permission of the Director. Section numbers vary by
instructor. Please check Banner for the correct section number and CRN to use when
registering for this course.
Religious Studies
RELS 0014. Jesus.
Who was, and is, Jesus? Who decides? What can we know about the
historical Jesus and who he became? In this course, we will begin with
the earliest accounts of Jesus as recounted in the canonical gospels and
outside it (e.g., the Gospel of Judas). Then we will turn to the many ways
that later generations of Christians (both heretical and orthodox) and non-
Christians depicted Jesus, especially in art, literature, theology, politics,
and entertainment. We will read canonical and non-canonical Christian
texts, Jewish accounts of Jesus, the Quran, modern Christian apologetic
literature, and analyze films like the Life of Brian.
RELS 0037. Sensing the Sacred: Sensory Culture in South Asian
Religions.
This course explores South Asian religions through the body, the senses,
and aesthetics. Drawing on Hindu, Buddhist, and Jain traditions, and
concentrating on embodied practices such meditation, chanting, eating,
sex, asceticism, ritual, possession, and performance, we will examine
experiences of the sacred in India, past and present. How has sensory

Brown University 133
RELS 0045. Buddhism and Death.

Death is universal but seldom discussed in contemporary culture. In this class we will address how the varieties of Buddhist religion represent and understand dying, death, and the afterlife. Using images, films, and texts, we will ask, How should we die? How does death influence the living? Is there an afterlife? What should be done with dead bodies? The class will move between theories and practices, and past and current events. Coming to terms with these diverse materials may reveal to us some of our own assumptions about death, dying, and the afterlife.

RELS 0060E. Angels and Demons Past and Present (JUDS 0064).

Interested students must register for JUDS 0064.

Fall RELS0060E S01 17218 Arranged 'To Be Arranged'

RELS 0060F. Ancient Israelite and Jewish Narrative and Artistic Image (JUDS 0065).

Interested students must register for JUDS 0065.

Fall RELS0060F S01 17219 Arranged 'To Be Arranged'

RELS 0085B. Blues People: Topics in African American Religion and Culture.

African American religious practices and cultural expressions have been a significant force in American culture and a sustaining force for African-Americans. Some have argued there is nothing distinctive about African-American cultures, others contend that African American religion is merely a response and a regurgitation of European forms of Christianity, while others have erected strict boundaries about what does and does not constitute black culture and religion. This introductory course will investigate what constitutes African American religion and culture, the social and political impact of African American religion and culture, and their relationship, among other things.

RELS 0090A. Women and Gender in Ancient Religions.

What was religion like for women in the ancient Mediterranean world? What experiences, emotions, and constraints characterized women's religious lives? What was public and what was private? What were the family issues involved? How were religions gendered? Were there major differences between religions that included goddesses and priestesses, and those that did not? Were notions of gender fixed or fluid? Could they enable religious freedoms for women? We will explore these and other questions through a consideration of religions Greek, Roman, Jewish, and Christian between roughly 500 BCE and 500 CE, with a focus on the Roman Empire. Discussion

Fall RELS0090A S01 18249 Th 4:00-6:30 (S. Harvey)

RELS 0090M. Islam, Violence and Media.

One of the most controversial issues in contemporary political discourse is the question of Islamist violence and its relationship to Islamic religion and practice. In this course, we will explore the phenomenon and media representation of radicalization, and their relationship to a number of institutions and issues, including but not limited to: religious texts, global politics, colonialism, war, and nationalism. The goals of this course are to familiarize students with the historical and discursive issues pertaining to radicalism and religious violence in Islamic and non-Islamic contexts, and to pose questions about what constitutes “radicalism” in a given tradition or cultural context.

Fall RELS0090M S01 18250 W 3:00-5:30 (N. Khalek)


Why study food? What can food tell us about religion, politics, and culture? Food in South Asia often shapes identity, social status, ritual purity, religious belonging, and political activism—the notion that you are what you eat has wide currency. Whatever form it takes, food embodies histories of migration, trade, empire, colonialism, and ethics. Through reading primary texts and ethnographic articles, watching films, and (of course) eating delicious food, we will explore the rich foodways of South Asia and their social, religious, and political ramifications.

Fall RELS0140 S01 16344 T 4:00-6:30 (F. Moore-Gerety)

RELS 0420. Sacred Bodies.

How did ancient Christians understand physical holiness? What did the bodies of saints demonstrate or reveal? How was bodily sanctity represented in actual practices, and in literary, artistic, or ritual expressions? We will consider three broad categories of saints: desert heroes, holy women, and virtuosos (pillar saints, holy fools).

RELS 0525. The History and Practice of Yoga in India and Beyond.

From its roots in premodern India to its current popularity worldwide, yoga has a rich and complex history. As a practice of the mind, body, and spirit, yoga has taken many forms—meditation, chanting, breath control, postures—in order to achieve a range of goals: liberation from rebirth, supernormal powers, strength, pleasure, peace, wellness. As its reputation and commodification have increased, yoga has attracted deep interest, debate, and even controversy. In this course we will study yoga from its earliest texts to its status in the modern world, addressing its historical, religious, social, and political ramifications in many different contexts.

RELS 0526. This Whole World is OM: Mantras in Indian Religions.

A mantra is a syllable or formula used in ritual and meditation. Mantras are central to Indian religions—not only Hinduism, but also Jainism, Buddhism, Sufism, and Sikhism. Some mantras are made up of words and language—usually in Sanskrit—while others are sound fragments with no semantic meaning. The sacred syllable OM, now a global symbol of Eastern spirituality, exemplifies the power and authority of mantra. What are mantras? What do they accomplish? How do they shape identities, beliefs, and practices? Engaging with sacred utterance in various media, this course explores the world of mantras in India and beyond.

Fall RELS0526 S01 16347 TTh 1:00-2:20 (F. Moore-Gerety)


“Zen” has become a common trope in modern North American Culture but few people know what the term really means. This course will study Zen’s origins in Indian Perfection of Wisdom teachings, follow its meanderings through China from the legend of Bodhidharma through the Five Houses of Chan, and chart its arrival and developments in Japan and eventual transplanting to the West. We will focus on several important Zen teachers: Huineng and Linji in China, D#gen, Bankei and Hakuin in Japan. We will also explore the essential technique of koan meditation and the practice of “just sitting.”

Fall RELS0555 S01 16351 M 3:00-5:30 (H. Roth)

RELS 0600E. Islamic Modernities: Religion, Culture, and Power.

In this class, we will explore the culture and practice of contemporary Islam in a variety of geographical contexts. From the United States to South Asia, from Europe to the Middle East, we will look at how Islam is practiced, discursively shaped, and represented across a variety of media. We will also introduce and learn about major phenomena including orientalism, colonialism modernity, and the post-modern—what do these terms mean, and why are they relevant to understanding the Islamic world? No previous study of Islam or religious studies is required for this course, and it is open to all undergraduates.

Fall RELS0600E S01 18252 TTh 10:30-11:50(13) (N. Khalek)

RELS 0700C. Race, Religion, and the Secular (JUDS 0603).

Interested students must register for JUDS 0603.

Fall RELS0700C S01 17216 Arranged 'To Be Arranged'


Intensive introduction to classical and contemporary theories of religion and the principal methods for the study of religion. Junior seminar for religious studies concentrators. Enrollment limited to 25.

Fall RELS1000 S01 16353 M 3:00-5:30 (S. Bush)

RELS 1050H. Problems in Israelite History (JUDS 1635).

Interested students must register for JUDS 1635.

Fall RELS1050H S01 17220 Arranged 'To Be Arranged'

RELS 1380C. Law and Religion.

In our arguably "post-secular" age, conflicts over the relationship between religion and law have again moved to the forefront of international debate. In a multicultural and globalized world, such conflicts often provoke contestation over the very possibility of universal definitions of either “religion” or “law,” let alone their proper relationship. Our interdisciplinary inquiries on these questions will include concrete legal
disputes in domestic and international courts; theoretical debates over the
construction of “religion” in fields such as anthropology, religious studies,
and philosophy; and historiographical controversies about the relationship
between “secularization” and sovereignty, particularly in light of the legacy
of colonialism.

Fall RELS1380CS01 16354  TTh  10:30-11:50(13)  (N. Berman)
RELS 1390A. Religion and Critical Theory.
This course will give a critical overview of the Frankfurt School, particularly
its contributions to the study of religion. Tracking the insights and
blindnesses of Adorno, Horkheimer, Habermas and Benjamin (among
others), we will consider how technological developments in the
‘culture-industry’, late-modern capitalist forms of socialization, and post-
Enlightenment philosophical claims regarding religion and theology bear
on the ways we talk about autonomy, power and authority. Covering
topics such as negative theology, the non-secular critique of religion,
communicative praxis, and divine violence, our inquiry will emphasize
the social features of theology, the aesthetic content of belief, and the
communal aspects of religion.

Fall RELS1390A S01 17060  TTh  6:40-8:00PM(10)  (A. Willis)
RELS 1425. Buddhist Poetry.
This course surveys Asian and Anglophone literary cultures that emerged
in response to Buddhist teachings and practices. Through close reading,
we will engage epic poetry celebrating the Buddha’s life; verses in
Buddhist scripture; the landscape poetry of Chinese hermits; the poetry
of early nuns; Japanese poems of spiritual travel; American beats;
and contemporary Taiwanese poetry. All readings are available in
English. Students may complete a creative or imitative project, an original
translation, or a research paper for the final project.

Fall RELS1440A S01 16355  W  3:00-5:30  (J. Sawada)
RELS 1610. Sacred Sites: Law, Politics, Religion.
Sacred sites have long been flashpoints for inter-communal conflict the
world over, as well as posing challenges to sovereign State authority.
Such sites range from natural landscapes to architectural masterpieces.
They often come to symbolize the perennial clash between the religious
and the secular, the sacred and the political, tradition and modernity.
We will discuss a diverse array of specific disputes and ask whether one
may even speak of “sacred sites” cross-culturally. Can legal frameworks
embrace different notions of the sacred? We will also examine the
historical contexts that provoke such disputes, particularly the aftermath
of colonialism.

RELS 1990. Individual Study Project.
Directed reading and research arranged with individual faculty. Section
numbers vary by instructor. Please check Banner for the correct section
number and CRN to use when registering for this course.

RELS 1995. Senior Capstone Seminar.
This course is a culminating experience for the Religious Studies
concentration. While introductory gateway courses introduced
concentrators to the discipline and upper-level courses examined
particular topics or methodologies, this capstone seminar provides
concentrators with an opportunity to synthesize what they have learned,
while also delving more deeply into the themes and topics that they find
most central to their own interests. Thesis writers receive support including
small group interaction and supportive criticism. Non-thesis writers create
a capstone portfolio over the course of the semester. Through activities
and guest presentations, all concentrators will connect their studies to their
future goals.

Required of seniors in the honors program. Open to others only by
permission of the chair of the department. Section numbers vary by
instructor. Please check Banner for the correct section number and CRN
to use when registering for this course.

RELS 2100B. Exegesis at Qumran.
Focuses on Hebrew exegetical texts such as the Temple Scroll, MMT,
Phab, 4QJub, CD. Intended for doctoral students and others with sufficient
knowledge of Hebrew.

RELS 2101. The Court Narrative in Ancient Israel.
A number of ancient Israelite and Jewish narratives are set in the court of
the foreign king: the story of Joseph in Genesis 37-50, Esther, Daniel 1-6
(along with the additions from the Apocrypha: Susanna and Bel and the
Dragon), and the Prayer of Nabonidus from Qumran. These entertaining
narratives are often set off from the more strictly historical tradition, and
seem to have been part of a resilient and international genre of popular
stories. In this course we will read and analyze these narratives in their
original Hebrew, Aramaic, and Greek.

Fall RELS2101 S01 16357  W  3:00-5:30  (L. Willis)
RELS 2110C. Suspicion and Its Others.
From the hermeneutics of suspicion to post-critique, a range of thinkers
and theories have positioned suspicion as a central critical disposition
of the modern age. In this collaborative seminar we will explore the concept
and practice of suspicion both in relation to the classic objects over against
which it emerged—morality, religion, and tradition—and through the lens
of other modes of engagement more recently proposed, including charity,
reconstruction, attunement, quiet, resonance, and reparative practices
of reading. Readings will be drawn from philosophy, critical theory, race
and ethnicity studies, gender and sexuality studies, and literary theory and
criticism.

Fall RELS2110C S01 16357  W  3:00-5:30  (T. Lewis)
RELS 2380D. Chinese Buddhism.
This graduate level course offers an in-depth review of the academic
study of Buddhism in China. We read major works and students explore
their own position in the field. Weekly monographs will introduce
Chinese Buddhism as historical phenomena and an object of knowledge.
Discussions emphasize methods, sources, and scholarly assumptions. We
revisit foundational debates from the 20th century, such as the ‘Sinification
of Buddhism,’ and read recent publications that study Buddhism in China
through lenses of cultural and material history. The course includes a
series of writing assignments, culminating in a seminar paper.

Fall RELS2380D S01 18253  F  3:00-5:30  (J. Protass)
RELS 2450. Exchange Scholar Program.
Fall RELS2450 S01 15528  Arranged  ‘To Be Arranged’
RELS 2460. Professionalization Seminar.
In addition to acquiring and practicing the arts of scholarship, teaching,
and service, graduate students need to learn how to relate to colleagues,
apply and interview for jobs, and submit proposals to conferences and
publishers. The details of these processes are often mysterious, even
to the initiated. The purpose of this seminar is to explore these various
features of academia and graduate studies in a well informed manner. It is
intended for fourth-year doctoral students in the Department of Religious
Studies. Instructor permission required.

Fall RELS2460 S01 17510  T  12:00-2:30(06)  (S. Bush)
RELS 2890. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are
paying the registration fee to continue active enrollment while preparing for
preliminary examinations.

Fall RELS2890 S01 15529  Arranged  ‘To Be Arranged’
RELS 2910. Independent Research.
The staff is willing to offer independent reading courses in selected areas.
See the Instructor for more information. Please check Banner for the
correct section number and CRN to use when registering.

RELS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are
continuing research on a full time basis.
**South Asian Studies**

**SAST 0037. Sensing the Sacred: Sensory Culture in South Asian Religions.**
This course explores South Asian religions through the body, the senses, and aesthetics. Drawing on Hindu, Buddhist, and Jain traditions, and concentrating on embodied practices such as meditation, chanting, eating, sex, asceticism, ritual, possession, and performance, we will examine experiences of the sacred in India, past and present. How has sensory culture shaped lives, practices, and doctrines? What place do the senses have in South Asian traditions? Drawing on premodern law codes, erotic handbooks, and medical treatises; and integrating new media from ethnographic films to graphic novels, we will plunge into the rich sense-worlds of religions in South Asia.

**SAST 0140. Food, Religion and Politics in South Asia.**
Why study food? What can food tell us about religion, politics, and culture? Food in South Asia often shapes identity, social status, ritual purity, religious belonging, and political activism—the notion that you what you eat has wide currency. Whatever form it takes, food embodies histories of migration, trade, empire, colonialism, and ethics. Through reading primary texts and ethnographic articles, watching films, and (of course) eating delicious food, we will explore the rich foodways of South Asia and their social, religious, and political ramifications.

**SAST 0525. The History and Practice of Yoga in India and Beyond.**
From its roots in premodern India to its current popularity worldwide, yoga has a rich complex history. As a practice of the mind, body, and spirit, yoga has taken many forms—meditation, chanting, breath control, postures—in order to achieve a range of goals: liberation from rebirth, supernatural powers, strength, pleasure, peace, and well-being. As its reputation and commodification have increased, yoga has attracted deep interest, debate, and even controversy. In this course we will study yoga from its earliest texts to its status in the modern world, addressing its historical, religious, social, and political ramifications in many different contexts.

**SAST 0526. This Whole World is OM: Mantras in Indian Religions.**
A mantra is a syllable or formula used in ritual and meditation. Mantras are central to Indian religions—not only Hinduism, but also Jainism, Buddhism, Sufism, and Sikhism. Some mantras are made up of words and language—usually in Sanskrit—while others are sound fragments with no semantic meaning. The sacred syllable Om, now a global symbol of Eastern spirituality, exemplifies the power and authority of mantra. What are mantras? What do they accomplish? How do they shape identities, beliefs, and practices? Engaging with sacred utterance in various media, this course explores the world of mantras in India and beyond.

**SAST 1970. Independent Study.**
Section numbers vary by instructor. Please check CAB for the correct section number and CRN to use when registering for this course.

**SAST XLIST. Courses of Interest to Concentrators.**

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**Science, Technology and Society**

**STS 0384. History of Medicine I: Medical Traditions in the Old World before 1700 (HIST 0286A).**

**SAST 1000. Introduction to Science and Society: Theories and Controversies.**
What is "science"? How do scientific ideas become knowledge? What is the nature of scientific objectivity, how can it be compromised? What is a scientific community, scientific consensus, and scientific authority? What roles does science play in our culture, and how is science related to other social institutions and practices? The interdisciplinary field of science studies is introduced through exploration of topics that include: gender and race, psychiatric classification, the drug industry, science and religion, and the use of nuclear weapons during World War II. Enrollment limited to 30 sophomores, juniors, seniors; others may enroll with permission of instructor.
STS 1220B. Cybersecurity Ethics (CSCI 1870). Interested students must register for CSCI 1870.
Fall STS1220B S01 17354 Arranged 'To Be Arranged'

STS 1700P. Neuroethics.
In this course, we will examine ethical, social, and philosophical issues raised by developments in the neurosciences. Topics will include: neurodevelopment and the emergence of persons; the impact of child abuse on brain development; aging, brain disease, and mental decline; life extension research; strategies and technologies for enhancement of human traits; "mind-reading" technologies; agency, autonomy, and excuse from responsibility; error and bias in memory; mind control; neuroscientific and evolutionary models of religious belief and moral judgement. Enrollment limited to 20. Instructor permission required.
Fall STS1700P S01 16808 T 4:00-6:30 (J. Poland)

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Fall STS1700P S01 16808 T 4:00-6:30 (J. Poland)

STS 1900. Senior Seminar in Science and Society.
This is an advanced seminar that uses a Problem Based Learning style pedagogy to explore real-world problems in STS. To solve assigned problems students will want to explore critical scholarship in areas such as laboratory studies, feminist science and technology studies, the rhetoric and discourse of science and technology, expertise and the public understanding of science. Course is intended for Science and Society senior concentrators, but is open to others with appropriate background. Enrollment limited to 20.
Fall STS1900 S01 16808 T 4:00-6:30 (J. Poland)

Independent reading and research work in Science and Society is available to students who have completed introductory and intermediate level work in Science and Society. A decision to enroll must be made via consultation with the concentration advisor and the faculty advisor for the course. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Prerequisite: STS 1400. Open to junior and senior concentrators in Science and Society; instructor permission required.

Independent reading and research work in Science and Society is available to students who have completed introductory and intermediate level work in Science and Society. A decision to enroll must be made via consultation with the concentration advisor and the faculty advisor for the course. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course. Prerequisite: STS 1400. Open to junior and senior concentrators in Science and Society; instructor permission required.

Slavic Languages
Czech

CZCH 0100. Introductory Czech.
Introduces the performance of basic tasks in Standard Czech, highlights of Czech culture, and a worldview of a nation uniquely located on the threshold of western and eastern Europe. Emphasis on oral communication. Five meetings per week and use of audio/visual materials. Enrollment limited to 18.
Fall CZCH0100 S01 16470 Arranged (M. Fidler)

CZCH 1000. Dimensions of Czech Animation: Contexts, Interpretations, and Dialogs with the East.
What are our expectations of animation films? This course will help you rethink and learn to "read" animation as an artistic and politically inspired form. Czech animation, with its long tradition and international reputation, is a vibrant branch of visual arts. Yet this artistic form has not only been extensively studied nor noticed until recently. We will study cultural-historical contexts that gave rise to the internationally acclaimed Czech animation by Trnka, Svankmajer and others. Fascination with Czech animation in Japan used as an example to illustrate the mechanism of cross-cultural reception of Czech animation. Readings of related Czech culture/metaphor/animation techniques. Selected Japanese animation films will also be discussed. Readings in English. Films are dubbed or subtitled in English. No prerequisites.

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Spring CZCH1000 S01 17351 Tb 12:00-1:50 (M. Fidler)

RUSS 0100. Introductory Russian Language and Culture.
Introduction to Russian language and culture. Oral and written communication in Russian; emphasis on the literary and everyday culture of Russia and the former U.S.S.R., including the changes that have reshaped everyday life for citizens of Russia. Five meetings per week, plus use of audio, video, and web materials. Enrollment limited to 18.
Fall RUSS0100 S01 16700 TTh 12:00-12:50 (S. Evdokimova)
Fall RUSS0100 S01 16700 MW 11:00-11:50 (S. Evdokimova)
Fall RUSS0100 S02 16701 TTh 12:00-12:50 (S. Evdokimova)
Fall RUSS0100 S02 16707 MW 12:00-12:50 (S. Evdokimova)

RUSS 0300. Intermediate Russian.
Continues development of language proficiency while broadening understanding of contemporary Russian culture via readings in literature and history. Expansion of vocabulary for dealing with conversational topics and review of Russian grammar. Features literary and nonliterary readings in Russian, as well as video and computer resources. Five class meetings per week. Prerequisite: RUSS 0110 or RUSS 0200 or RUSS 0250 or placement by exam. Enrollment limited to 18.
Fall RUSS0300 S01 16724 MWF 11:00-11:50 (F. Fenghi)
Fall RUSS0300 S01 16724 TTh 12:00-12:50 (F. Fenghi)
Fall RUSS0300 S02 16725 MWF 12:00-12:50 (F. Fenghi)
Fall RUSS0300 S02 16725 TTh 12:00-12:50 (F. Fenghi)

RUSS 0500. Advanced Russian.
Examines selected topics in Russian culture and history as depicted in readings, the media, and Russian and Soviet films. Language work emphasizes increasing facility with spoken Russian and developing writing skills. Includes work on advanced grammar and syntax. Five class meetings per week. Prerequisites: RUSS 0350 or RUSS 0400 or placement. Enrollment limited to 18.
Fall RUSS0500 S01 16726 MWF 12:00-12:50 (F. Fenghi)
Fall RUSS0500 S01 16726 TTh 12:00-12:50 (F. Fenghi)

RUSS 1110. Special Topics in Russian Studies I: Advanced Reading and Conversation.
An advanced course recommended for students who are either planning to go or are returning from abroad. Focus on Russian culture as seen through the prism of Russian poetry. Extensive classroom discussion and frequent writing assignments. Prerequisite: RUSS 0600 or written permission. May be repeated once with permission from the instructor. Enrollment limited to 18.
Fall RUSS1110 S01 16727 MWF 12:00-12:50 (V. Golstein)

RUSS 1220. Nationalism and Nationalities.
This course explores the meaning and significance of nationalism and national identity in modern culture and society, starting with the emergence of nation-states, up to the recent rise of nationalist and identitarian movements throughout the globe. We will study the main theories of nationalism, as well as some of the art and literary movements that this ideology inspired. By developing an open discussion about different incarnations of nationalism as an ideology and a social practice, we will retrace a cultural history of this concept, and shed light on its crucial role and impact on contemporary political processes.
Fall RUSS1220 S01 16728 MWF 1:00-1:50 (F. Fenghi)

RUSS 1290. Russian Literature in Translation I: Pushkin to Dostoevsky.
Survey of major works of Russian literature of the early and mid-19th century. Authors to be studied include Karamzin, Pushkin, Lermontov, Gogol, Turgeniev, Leskov, and Dostoevsky. Lectures and discussion. No knowledge of Russian required. Discussion sections to be arranged. Fall RUSS1290 S01 16080 TTh 1:00-2:00 (M. Fidler)

RUSS 1800. Pushkin.
For generations of Russian readers and writers, Pushkin has been a cult figure, a true "national poet." This course focuses on Pushkin as the progenitor of Russian national mythology and examines the seminal nature of his writing. Analysis of the dazzling array of genres which became his greatest achievement: lyric poetry, narrative poetry, novel in
verse, prose, drama, history, and other nonfictional narratives. Enrollment limited to 20.

RUSS 1820. Dostoevsky.
An examination of Dostoevsky’s major texts tracing his development as an artist, thinker, and religious visionary. The texts will be considered against the background of literary and cultural history of Dostoevsky’s period. No knowledge of Russian required.

Independent research project on topics related to Russian culture. Enrollment permitted only after the written proposal (instructions in the department office) is submitted to the Concentration Advisor and Chair of the department (deadline: the last day of Add a course without fee period during the semester when the project is undertaken). Please check Banner for the correct section number and CRN to use when registering for this course. Each section limited to 10 students; instructor permission required.

RUSS 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

RUSS 2980. Advanced Reading and Research.
Only for graduate students. Independent research project on topics related to Russian culture. Enrollment permitted only after the written proposal (instructions in the department office) is submitted to the DGS and Chair of the department (deadline: the last day of Add a course without fee period during the semester when the project is undertaken). Please check Banner for the correct section number and CRN to use when registering for this course. Each section limited to 10 students; instructor permission required.

RUSS 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Slavic

Independent research project on topics in Slavic Studies. Enrollment permitted only after the written proposal (instructions in the department office) is submitted to the Concentration Advisor and Chair of the department (deadline: the last day of Add a course without fee period during the semester when the project is undertaken). Please check Banner for the correct section number and CRN to use when registering for this course. Each section limited to 10 students; instructor permission required.

Independent research on various topics in Slavic cultures. Reading, discussion, research must be done in the chosen Slavic language (Czech/ Russian). Close work with faculty on project is expected. Prerequisites: minimum RUSSS600/CZCH 0610 (3rd year-level) or placement evaluation by Russian or Czech language coordinator. Enrollment permitted only after the written proposal (instructions in the department office) is submitted to the Concentration Advisor and Chair of the department (deadline: the last day of Add a course without fee period during the semester when the project is undertaken). Each section limited to 10 students; instructor permission required.

Only for Slavic concentrators writing their senior theses. For requirements and schedule, contact the department. Each section limited to 10 senior Slavic Studies concentrators.

This seminar intends to introduce graduate students to various scholarly approaches to the study of Russian literature and culture and to the diversity of themes and topics that inform Slavic Studies' intellectual community. The seminar will provide an overview of the current research in Slavic Studies and discuss an array of historical, comparative, theoretical, and disciplinary perspectives on the field. The main objective will be to help students to develop their projects into publishable essays. This course will also require students writing reviews.

SLAV 2450. Exchange Scholar Program.

SLAV 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

SLAV 2980. Advanced Reading and Research.
Only for graduate students. Independent research project on topics in Slavic Studies. Enrollment permitted only after the written proposal (instructions in the department office) is submitted to the DGS and Chair of the department (deadline: the last day of Add a course without fee period during the semester when the project is undertaken). Please check Banner for the correct section number and CRN to use when registering for this course. Each section limited to 10 students; instructor permission required.

SLAV 2990. Thesis Preparation.
For graduate students who have met the residency requirement and are continuing research on a full time basis.

SLAV XLIST. Courses of Interest to Concentrators in Slavic Languages.

Sociology

SOC 0010. Social Forces: An Introduction to Sociology.
Social forces constrain and empower us, bond us together and push us apart. Sociology explores the workings of societies large and small: nations, organizations, communities, families, and other groups. How do societies shape action and identity, and why are social pressures so hard to defy? How do societies distribute wealth and power, and why do inequalities so often coalesce around race, ethnicity, class, and gender? How do established practices persist, and when do movements arise to challenge them? Examining such themes across a range of issues and topics, this course provides a springboard for future study throughout the social sciences.

SOC 0020. Perspectives on Social Interaction: An Introduction to Social Psychology.
An introduction to the discipline of sociology examining the individual in society. Explores the social development of the person, the development of interpersonal relationships, and the problems of integrating the individual and social system. For each area, the personal and structural factors that bear upon the issue are investigated. The objective is to deepen understanding of the behavior of people in a social context.

Emphasis on understanding the interrelations among economic, political, and cultural aspects of change in developing countries. The experience of currently developing nations is contrasted to that of nations which industrialized in the 19th century. Compares the different development strategies which have been adopted by currently developing nations and their consequences for social change.

SOC 0230. Sex, Gender, and Society.
An introduction to the sociological study of sex and gender. More specifically, this course explores how sexuality is perceived, defined, and experienced in the context of society. How sexuality influences our lives, is reflected in social norms, attitudes and beliefs, through public and private policies and practices, and the social institutions is also investigated. This class also focuses on how prevalent gender differences really are in our society and examines the social construction of gender.

SOC 0300K. Inequalities and Health.
We start from the assumption that the social organization of society shapes definitions and experiences of health and illness, the distribution of diseases, and the responses to them. We explore the relevance of social structure and social interaction to health and well-being, emphasizing socioeconomic status, race, ethnicity, gender, and social contexts such...
as relationships, families, schools, and neighborhoods. This is not a "sociology of medicine" course. It will not emphasize the profession of medicine, health care policy, or health care organizations. Enrollment limited to 19 first year students. Instructor permission required.

**SOC 0310. Theory and Practice of Engaged Scholarship (ESP Seminar).**
Efforts are underway across university and college campuses -- in the United States and globally -- to increase opportunities for engaged learning and research. What is engaged scholarship and how does it challenge (and/or complement) more traditional concepts of scholarship and disciplinary knowledge? What are the ethical, practical, and other challenges associated with community-engaged scholarship? The course will use case studies, field work, team projects, and guest speakers from diverse disciplines and sectors to investigate these and other questions. Enrollment limited to Engaged Scholars Program participants. Limited to 40 students per section.

Fall 2017062 TTh 9:00-10:20 (13) (J. Pacewicz)

**SOC 0110. Classical Sociological Theory.**
How is modern society organized? What holds society together and what drives social change? Why is there such a large gap between the "modern" ideal of formal equality and the reality of factual inequality? Why do differences of class, race and gender persist? What is power and who has it? These questions have generated many sociologists, but many of the arguments continue to be informed by the foundational classical theorists: Karl Marx, Max Weber, Emile Durkheim and W.E.B Du Bois. Looking at the transformations around them -- the rise of capitalism, the modern nation-state, rational bureaucracy, the spread of colonialism, the decline of religion, struggles for emancipation and much more -- they developed arguments that allow us to better understand ourselves, our actions, and the contemporary political, economic and social transformations around us. We explore the defining contributions of these theorists and link them to current debates and theories on gender, race, and social movements and democracy.

Fall SOC1110 TTh 2:30-3:50 (12) (P. Heller)

**SOC 1020. Methods of Social Research.**
This course introduces students to the frameworks and methods of conducting sociological research -- from both a qualitative and quantitative perspective. The aim is that students develop the skills to ask and answer interesting and important questions about sociological phenomenon. The focus is on designing and executing research, from identifying an interesting question and reviewing the relevant literature, to collecting and analyzing data, to drawing reliable inferences and presenting meaningful results. There is a heavy focus on reading and discussing academic research and working in research teams. By the end of the semester students will complete their own research projects.

Fall 2017059 TTh 4:00-6:30 (To Be Arranged)

**SOC 1100. Introductory Statistics for Social Research.**
Introduction to descriptive and inferential statistics: measures of central tendencies and variability, sampling, tests of significance, correlation, and regression. Also includes the use of computers in data analysis. Knowledge of elementary algebra is assumed. Enrollment is limited to 144 students.

Fall SOC1100 TTh 9:00-10:20 (02) (D. Lindstrom)

**SOC 1118. Context Research for Innovation.**
This course brings design thinking into conversation with qualitative research methods, examining the elements of a comprehensive perspective of context. It introduces students to design research methods, ethnographic research methods, and how they work together. Students will learn how to use these methods to identify and engage in "deep hanging out" with the problem, gap or inefficiency in question. They will then move on to patient contextualized opportunity identification for meaningful innovation. By the end of the course, students will have developed a process for effective, through innovation context analysis. Relevant for designers of products, services, organizations, and experience.

Fall SOC1118 TTh 9:00-10:20 (02) (D. Lindstrom)

**SOC 1281. Migration in the Americas.**
Examines historical trends and determinants of migration from Latin America to the United States. Each stage of the migration process is examined: the decision to migrate, getting across international borders, settlement and integration in destinations, and return to places of origin. The course integrates theories and empirical studies of international migration with hands-on analysis of survey data from the Mexican and Latin American Migration Projects, the two largest survey databases for studying migration in the Americas. Students will learn how to formulate and operationalize research hypotheses, read, process, and analyze survey data files, and present and interpret research results.

Fall SOC1281 TTh 4:00-5:20 (10) (J. Itzigsohn)

**SOC 1270. Race, Class, and Ethnicity in the Modern World.**
Applies sociological analysis to understand present and historical cases of ethnic and race relations and conflicts. Topics addressed are the social construction of race and ethnicity; historical processes of racialization; ethnic conflict and the nation state; and the linkages between race, class, and social mobility. Focuses on racial and ethnic relations in the U.S., but also has a strong international comparative component.

Fall SOC1270 TTh 2:00-3:20 (14) (C. Spearin)

**SOC 1315. Macro-Organizational Theory: Organizations in Social Context.**
Macro-Organizational Theory focuses on the organization and its social/economic environment. This class will explore various definitions of the organization's environment, and the many types of macro-level organizational structures in which sets of organizations interact, function, compete, and cooperate. Important questions to be asked include the following:

- What is an organizational environment and how do organizations "deal" with what is outside of their boundaries?
- How are the boundaries of organizations defined/recognized/function?
- How do environments influence organizational strategy and performance?
- What are the major theories for assessing macro-level organizational phenomena?
- What are the many ways in which organizations relate to other organizations?

Fall SOC1315 TTh 1:00-2:20 (08) (M. SUCHMAN)

**SOC 1320. Progressive and Regressive Welfare States.**
An introduction to the philosophical justifications, history, and contemporary reality of welfare states and social programs around the world. The course focuses especially on the United States in contemporary perspective, examining the turning points in American political development and identifying consequences of policy for social stratification, racism and race relations, intergenerational transmission of wealth, and the capacity of local governments.

Fall SOC1320 TTh 10:30-11:50 (13) (J. Pacewicz)

**SOC 1330. Remaking the City.**
Cities are being reshaped by immigration, economic restructuring, and other forces. This course reviews these changes from several perspectives, including the patterns and causes of change, the role of politics and public policy, and how different groups of people (by class, race, and national origin) manage under the new conditions. Readings will emphasize historical and cross-national comparisons.

**SOC 1340. Principles and Methods of Geographic Information Systems.**
An introduction to the fundamental principles and methods of geographic information systems (GIS). Topics include (a) handling different types of geographic datasets, (b) geo-analytical and modeling tools in GIS, (c) conceptual and theoretical aspects of GIS application development, and (d) errors and uncertainty analysis of GIS applications. Laboratory assignments and the project work provide hands on experiences in GIS.

Enrollment limited to 21 juniors and seniors.

Fall SOC1340 TTh 12:00-12:50 (15) (K. Mwendla)
SOC 1870E. Alternatives to Violence.
We examine nonviolence as a method for resolving serious social conflict. We consider psychological and sociological approaches to understanding why people choose violence, as a precursor to studying theories of nonviolence. We investigate practioners of nonviolence throughout history and analyze nonviolence as a response to such issues as the death penalty, war, and terrorism.

SOC 1870K. Demographics and Development.
Assesses the social and economic determinants and consequences of changes in fertility, mortality, and migration and their impact on the size, distribution, and composition of population in developing societies. Implications of the evolving population structure for planning and policy. Enrollment limited to 20.

SOC 1871R. Knowledge Networks and Global Transformation.
How do refined knowledge and the social relations that organize and distribute it influence changes in the institutions, inequalities and cultural systems and practices that define particular world regions and global formations? And how do global transformations influence the trajectories of knowledge production themselves? We will examine particular knowledge-identified agents, including universities, research institutes, think tanks, and professional associations, to consider why they approach global transformations in the way that they do. And we will consider how particular kinds of global transformations, from the end of the cold war and the transformation of information/communication technology to the last financial crisis, affect knowledge production itself. By exploring intersections between global complexity and reflexivity in this fashion, we hope to increase our own capacities for seeing the world not only as it is, but how knowledge might be used in making better alternatives for the future. Enrollment limited to 20 juniors and seniors.

SOC 1871S. Legacies of Inequality: The U.S. and Beyond.
Does education equalize or widen gaps between people and nations? Has mass imprisonment reduced crime or exacerbated U.S. racial inequality? Does biology determine destiny, or is society more fluid? This course introduces theory and research on social inequality, emphasizing temporal dimensions of social differentiation. Attention will be paid to the characteristics we are given (race, sex), those we achieve (education, income), and institutions and policies we encounter throughout the life cycle (schools, the justice system). By understanding the complexities of social inequality and the challenges of devising solutions, students will leave as informed citizens, better equipped to enter any profession. Enrollment limited to 20. First year students require instructor permission.

SOC 1871X. Comparative Urban Political Economy.
For the first time, most people across the globe live in cities. Inequalities within both nations and cities are increasingly similar across national boundaries. This course ask how the politics of formal and informal institutions in cities produce and change inequalities of shelter, work, race, and other social identities, across urban space. We analyze cases from across the globe, along with a range of social science methods and theoretical perspectives.

Supervised reading or research. Specific program arranged in terms of the student's individual needs and interests. Required of intensive concentrators; open to others by written consent of the Chair of the department. Section numbers vary by instructor. Please check for the correct section number and CRN to use when registering for this course.

Under the direction of a faculty advisor, students construct and carry out a research project. The written report of the research is submitted to the advisor for honors consideration. A second reader selected by the thesis advisor certifies that the thesis is of honors quality. Please check Banner for the correct section number and CRN to use when registering for this course.

Under the direction of a faculty advisor, students construct and carry out a research project. The written report of the research is submitted to the advisor for honors consideration. A second reader selected by the thesis advisor certifies that the thesis is of honors quality. Please check Banner for the correct section number and CRN to use when registering for this course.

SOC 2010. Multivariate Statistical Methods I.
Introduction to probability, descriptive statistics and statistical inference. Coverage of the linear model, its assumptions and potential biases. Emphasis on hypothesis testing, model selection and interpretation through application with real data.

SOC 2020. Multivariate Statistical Methods II.
This course is a graduate-level introduction to multivariate regression models for categorical and limited dependent variables. Subject matter includes modeling nominal and ordinal outcomes; truncated distributions; and selection processes. The course also reviews strategies for sample design; handling missing data and weighting in multivariate models. The course employs contemporary statistical software. Special emphasis is placed on model selection and interpretation. Prerequisite: SOC 2010

SOC 2030. Social Stratification, Inequality and Mobility.
This course provides an introduction to contemporary literature on social stratification, social mobility, inequality in the United States, abroad, based on research articles and books. We focus on theories, data, methods, facts about categorical dimensions of inequality (race, ethnicity, gender, sexual orientation); core dimensions of stratification systems (income, earnings and wealth distributions; poverty; education; the intergenerational transmission of socioeconomic status; social mobility); social institutions that govern social stratification (families, schools, labor markets, and the justice system); key inequalities that stem from stratification systems (e.g., health). This is a reading course, not a research seminar. Prerequisites include Sociology 2010 or equivalent.

This is a graduate-level course requires students to engage in detailed analysis and critical review of sociological thought of the 19th and early 20th centuries. The class will introduce students to the critical thinking, methodological innovation, and historical imagination of sociological theory by reading the original texts of the forefathers of sociology, including Karl Marx, Max Weber, Emile Durkheim and others.

SOC 2050. Contemporary Sociology.
This class offers a review of some of the most interesting contemporary social theorists and the most intense debates in current sociological thought. It thematically reviews the works of Jurgen Habermas on the public sphere, Michel Foucault on disciplinary and governmental modes of power, Bruno Latour on modernity and modern science, Pierre Bourdieu on field and habitus and among others. No prerequisites.

An advanced introduction to theoretical and substantive issues in the social scientific study of population. Major areas within sociology are integrated with the study of population, including the comparative—historical analysis of development, family processes, social stratification, ethnicity, ecological studies, and social policy. Primarily for first year Graduate students.

SOC 2210. Qualitative Methods.
Emphasis on ethnographic field work through participant observation and interviews. Some attention to content analysis and visual sociology. Technical training in developing observational and interview guidelines, data collection, coding, transcript analysis, and computer applications. Strong emphasis on quality writing. Analysis of ethnographic research in book and article format. Attention to recent developments in ethnography, especially reflexivity and autoethnography.

SOC 2230. Techniques of Demographic Analysis.
Procedures and techniques for the collection, evaluation, and analysis of demographic data; measures of population composition, fertility, morality,
and migration; construction of life tables, population and projections, population dynamics; responsible use of demographic methodology.

This course investigates Du Bois’ empirical and theoretical sociological work and its implications for contemporary sociology. W.E.B Du Bois is recognized as a pioneer of sociology of race, but his work is seldom explored. The first part of this course we discuss in-depth Du Bois work to construct the bases for a Du Boisian sociology. The second part will we read contemporary theories of race through the lens of Du Bois’ work. The final section we will read contemporary empirical works in the field of race and ethnicity, reflect how we would conduct them differently from a Du Boisian perspective.

SOC 2385. Environmental Sociology.
As contestation over environmental concerns proliferates, it draws increasing attention from sociologists. But sociological research on environmental issues raises major challenges. Social-environmental relationships raise theoretical and methodological questions: How do we know an “environmental” issue when we see one? How can we effectively examine the relationships between environmental processes and social processes and structures?

SOC 2420. Master’s Thesis and Proposal Writing Seminar.
Sociology 2420 is a graduate seminar on the craft of social-science writing. Writing is not easy for most of us, and it can sometimes be frustrating. Through out-of-class writing and recurrent in-class review the course explores strategies for making your writing more effective, more productive, and hopefully more enjoyable. The seminar’s goal is to help graduate students to advance and complete their writing tasks, whatever they are working on. It is open to students working on a variety of goals such as writing their MA, their dissertation proposal, a research proposal, or a journal article.

SOC 2430. Fields and Methods of Social Research.
Introduction to strategies sociologists use to formulate theories and conduct methodologically sound research. Hypothesis formulation and research design; special emphasis on identifying causal mechanisms, techniques of operationalization, and choice of relevant comparisons.

SOC 2450. Exchange Scholar Program.
SOC 2460. Sociology Paper Writing Seminar.
This is a special seminar for graduate students in Sociology on the art of writing research papers for publication. The goals of the course are: 1) learn the process of writing by drafting or redrafting a complete research paper, one section at a time 2) participate in the process of critical peer review 3) become knowledgeable about the process of submission/publication in peer-reviewed journals in Sociology and related social science fields 4) become more familiar with the often hidden processes of journal review, publication ethics, and interpreting/responding to editorial decisions.

SOC 2500. Teaching Practicum in Sociology.
This course is designed for sociology graduate students whose funding has prohibited a teaching assistantship but who need to complete the departmental teaching requirement. The instructor for this course will default as the department chair but it is the graduate student's responsibility to identify an instructor to work alongside. This partnership must be approved by the director of graduate study.

SOC 2960G. Spatial Data Analysis Techniques in the Social Sciences.
Survey course of statistical methods that can be used to analyze spatial and/or clustered data at the individual and aggregate levels. Topics include multilevel analysis; fixed effects approaches; spatial choice; spatial autocorrelation, heterogeneity and dependence. Application with real data. Not a course about Geographic Information Systems (GIS) or mapping techniques.

SOC 2960M. Sociology of Organizations Graduate Seminar.
The sociology of organizations offers a burgeoning and vibrant literature, with relevance not only for self-identified organizational sociologists, but also for scholars in fields as diverse as politics, development, industrial relations, finance, education, health care, and the arts. This seminar offers an intensive exploration of the “state of play” in contemporary macro-organizational theory. Shared and individual readings, coupled with weekly discussions and email dialogues, allow students to refine and extend their thinking on a series of important and controversial topics in the recent literature. Although this course has no formal prerequisites, the syllabus is aimed primarily at graduate students who enjoy some prior familiarity with organizational theory, whether in sociology or a kindred discipline. Enrollment limited to 15.

SOC 2960Y. Causal Analysis.
“Does premarital cohabitation protect marriage?” “Does reducing class size improve elementary school education?” “Is there racial discrimination in the market for home loans?” We often use associations to claim causal effects. This course provides a broad introduction to causal analysis. We will address causal inference from observational and quasi-experimental research designs. Topics include instrumental variables estimation, difference-in-difference models, regression discontinuity, matching, propensity scores, heterogeneous treatment effects, and fixed effects models. The prerequisite of this course is SOC 2020 or equivalent.

SOC 2961E. Sociology of Education.
This course provides an overview of Sociology of Education, covering substantive, theoretical, and methodological issues in the field. Beginning with classical theories of education, the course will then provide an overview of the relationship between education and society, with a focus on its role in reducing and reproducing inequality. We will discuss causes and consequences of educational inequality, paying particular attention to education and the labor market. In the process, we will engage with aspirutive forms of stratification, including race and ethnicity. The focus of the course is education in the U.S., but we will occasionally incorporate international comparisons.

SOC 2962C. Knowledge Cultural Sociology.
Knowledge Cultural Sociology addresses how social relations shape the articulations and validations of knowledge as well as how knowledge itself becomes a resource and medium through which power is exercised and change is realized. What symbols, schemas, institutions and networks enable certain understandings to be valued more than others? For example, how does articulating “white supremacy” change research and policy? Whose experiences shape alternative narratives about global change? Whose expertise about Covid-19 infects policies undertaken by states, businesses, and universities? What knowledge practices extend solidarity and love, which hate and division?

SOC 2970. Preliminary Examination Preparation.
For graduate students who have met the tuition requirement and are paying the registration fee to continue active enrollment while preparing for a preliminary examination.

SOC 2980. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

SOC 2981. Reading and Research.
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

SOC 2982. Directed Research Practicum - MSAR Students Only.
The Directed Research Practicum is a one semester course taken in conjunction with an on- or off-campus research internship. The course consists of a directed reading of methodological texts and research articles selected by the student and the faculty director that are directly relevant to the psychological issues/challenges encountered in the internship. The student and faculty director will meet weekly to review the readings. The practicum may include written assignments, literature reviews, and data analysis exercises. Faculty directors need not be involved with the actual
**Course Descriptions**

**TAPS 0200. Persuasive Communication.**
Provides an introduction to public speaking, and helps students develop confidence in public speaking through the presentation of persuasive speeches. Primarily for seniors. Limited to 18. Instructor's permission required. No permission will be given during pre-registration; interested students should sign up in the fall. Fall TAPS0200 S01 16739 T 1:00-3:50(06) (S. Yim)

**TAPS 0220. Playwriting I.**
A workshop for students who have little or no previous experience in writing plays. Students will be introduced to a variety of technical and imaginative considerations through exercises, readings, and discussions. Course is not open to those who have taken Advanced Playwriting (TAPS 1500, formerly LITR 1010C and TSDA 1500). Enrollment is limited to 14 undergraduates per section. A limited number of spaces are reserved for incoming and transfer students. Instructor permission required. S/NC. Fall TAPS0220 S01 16424 TTh 3:00-4:20 (S. d'Angelo)

**TAPS 0230. Acting.**
Focus on elements of dramatic analysis and interpretation as applied to the art of acting, and, by extension, directing. Monologues, scene study, and improvisation are basis for comment on individual problems. Reading of dramatic texts and theory. Substantial scene rehearsal commitment necessary. Attendance mandatory. Not open to first-year students. Enrollment limited to 20. Instructor permission required. No permission will be given during pre-registration. S/NC.

**TAPS 0250. Introduction to Technical Theatre and Production.**
This course is an introduction to the basic principles of stagecraft, lighting and sound technology and the different elements of theatrical design. Instructor permission required. Enrollment limited to 15. Fall TAPS0250 S01 16411 MWF 10:00-11:50(14) (A. Haynes)

**TAPS 0320. Dance Composition.**
Focuses on building the individual's creative voice. A movement vocabulary is developed from Western techniques (ballet, American modern dance, Laban/Bartenieff movement analysis, vernacular forms, space-harmony/movement physics, and the body therapies) along with group improvisations and collaboration with artists in other disciplines. Enrollment limited to 40. S/NC.

**TAPS 0700. Introduction to Theatre, Dance and Performance.**
An introduction to the breadth of topics covered in the TAPS Department, this class is a gateway to the concentration open to all students interested in live arts. We will explore how, where, and why theatre, dance and performance are made and investigate their relationship to broader culture and society. Students will learn basics: how to read a play, how to appreciate dance, and how to approach the variety of venues, histories, and methods involved in production. Overlaps with other media will be explored. Visits from TAPS faculty will dovetail with the season of offerings on the TAPS main stage.

**TAPS 0880G. The Body Issue: An Introduction.**
Notions about bodies determine what or who is normal, deviant, transgressive, healthy or ill, and who belongs to the human. From philosophical questions about the nature of the body, to issues of gender, race, sexuality, trauma, disability, artificial intelligence, and death, we will see how bodies carry, produce, and perform meanings. With different artworks, we will examine how bodies are being represented, discuss what is being expected from bodies, and speculate on the possibility for bodies to no longer be an issue. This is a reading intensive and interdisciplinary course. Students across arts, humanities, and social science backgrounds welcome.

**TAPS 0930A. The Actor's Instrument: Voice and Speech.**
A complete and well-seasoned actor has the ability to perform with specificity and ease, both vocally and physically. Specificity comes from an integration of speech and movement technique. Ease is only possible when a mastery of technical skills reaches the point where the actor can integrate them without loss of spontaneity. The goal of this class is to give the student the fundamental techniques of voice and speech in relation to the body. Prerequisite: TAPS 0230. Enrollment limited to 16. Instructor permission required. S/NC.

**TAPS 1050E. RPM Playwriting (AFRI 1050E).**
An introduction to the breadth of topics covered in the TAPS Department, this class is a gateway to the concentration open to all students interested in live arts. We will explore how, where, and why theatre, dance and performance are made and investigate their relationship to broader culture and society. Students will learn basics: how to read a play, how to appreciate dance, and how to approach the variety of venues, histories, and methods involved in production. Overlaps with other media will be explored. Visits from TAPS faculty will dovetail with the season of offerings on the TAPS main stage.

**TAPS 1110. Voices Beneath the Veil (AFRI 1110).**
This course explores performance practices that predate the European Renaissance across disparate parts of the globe. Considered will be Paleolithic rock art and other evidence of ritual practices in Europe, Africa, and the Americas; ritual dramas of Egypt, Greece, and the Roman Empire; Sub-Saharan African traditions and theatre/dance forms in ancient India, medieval Japan and the indigenous Americas. In short, we will explore a
wealth of differing ancestral theatrical modes and methods that continue to
leave their mark in contemporary diasporic expressions.

Fall TAPS1230 S01 16451 TTh 10:30-11:50(13) (R. Schneider)

TAPS 1240. Performance Historiography and Theatre History.
This course will provide an introduction to performance history and
historiography by concentrating on analysis of dramatic texts, theatrical
events, festival performances and "performative" state and religious
ceremonies from 1500-1850. We will explore incidents in Asia, the
Americas and Europe as related to state consolidation, colonization,
incipient nationalism(s), urbanization, cultural negotiation, and the
representational practices that the enacted. Enrollment limited to 35.

TAPS 1250. Late Modern and Contemporary Theatre and
Performance.
This class provides introduction to an array of theatre and performance
forms of 20th- and 21st-century Europe and North America. We explore
historical realism and naturalism to symbolism, the birth of avant-garde,
constructivism, dada and surrealism, and myriad other modernist isms.
After Stein, Artaud, and Brecht, we jump to Americas and indigenous
theatre, the Harlem Renaissance, site specific art, and innovative
companies and practitioners from Maria Irene Fornes to the Wooster
Group, Augusto Boal and more. We study playwrights, directors,
actors, dancers, designers, and performance artists. The focus is on
"experimental" forms, recalling that even naturalism, in its day, was
"revolutionary."

TAPS 1280B. The Creative Ensemble: Poetry in/to Performance.
Creative Ensemble: Poetry in/to Performance is an Interdisciplinary Arts
course designed to develop skills in acting, improvisation, directing,
design, visual storytelling, and writing. Professor Kym Moore (TAPS) and
Enongo Lumumba-Kasongo (Music) are exploring the multiple dimension
of Poetry: visual, aural, and sonic. Drawing on Enongo Lumumba-Kasongo's
expertise as a rap lyricist and performer, students will also examine
the ways in which the incorporation of hip hop poetics can shape a
performance. Through research, experimentation, performance,
participants will engage in a creative process that will culminate in an
Ensemble-based final performance for the public. Application and Override
Required.

Fall TAPS1280B S01 17469 TTh 1:00-4:00(06) (K. Moore)

TAPS 1280F. Introduction to Set Design.
Students will explore set/scenic design for live performance in a studio
format. The main objective is to introduce the language, tools, and
technical skills involved in the discipline of scenic design and to lay the
foundation for further study while empowering students to actively engage
as set designers in productions on campus after taking the course. A
special feature of the course are guest visits which will give students
the opportunity to engage in dialogue with a professional director and
playwright in order to situate set design as a conceptual artistic discipline
which utilizes technical tools. Enrollment limited to 10.

TAPS 1280G. Introduction to Theatrical Design.
This class is an introduction to the process of creating designs for
live performance, with a focus on Set, Costume, Lighting, and Sound.
Students will learn about the history of production design, how to analyze
a script for design, the aesthetic and practical considerations of a
designer, and the skills, techniques, and philosophies used to create
meaningful designs for theatre. Students will gain proficiency in each area
of design, as well as learn communication and collaboration skills required
in a team setting. No prior experience with theatre or design is required.
Fall TAPS1280G S01 17666 WF 1:00-2:50(06) (R. Fitzgerald)

TAPS 1280K. Mindfulness and Movement: Somatic Studies, Yoga-
based practices, and Movement Meditations.
This course cultivates and mobilizes interceptive awareness as a
means of self-expression. By slowing things down, calming the mind and
focusing attention on the breath and bodily sensations we practice an
open-hearted release from self-judgment. Our daily training in Somatic
Studies includes Body-Scanning, Authentic Movement, Yoga, Ideokinesis,
Laban Movement Analysis, Continuum, Narrative Medicine, Feldenkrais,
Automatic Writing and the Visual Arts. S/NC

Fall TAPS1280K S01 18466 MWF 3:00-4:50 (M. Bach-Coulilay)

TAPS 1280M. A Producer Prepares: Curation, Ethics, and the
Entrepreneurial Practice of Arts Programming.
This course introduces students to the complex relationships between
cultural entrepreneurs, buyers, sellers, producers, managers, audiences,
and artists. Through readings, guest speakers and case studies, with
particular emphasis on emerging media technologies, business practice
and live art administration, "A Producer Prepares" will arm students
with the critical, historical, managerial and curatorial tools necessary to
produce work in the contemporary cultural economy. This class seeks to
situate the arts curation and production within histories of cultural practice,
management and technology, and ultimately aims to endow student
producers with the critical acumen necessary to thrive in a arts sector in
flux. Mandatory S/NC

Fall TAPS1280M S01 17616 T 9:30-12:00(06) (S. Skybetter)

TAPS 1280U. Voice Over for the Actor.
Have you always wanted to work as an actor in radio commercials, video
games or audio books? Has voice-acting appealed to you but you weren't
sure where to start? Luckily, COVID-19 has not shut down the voice over
industry. Home studios are now the way to go and are affordable. At
the minimum, you need a laptop, a mic, a quiet place, and an internet
connection. Students will learn narration, character techniques and
woodshedding different types of copy. The class covers setting up your
home studio, hardware and software, demo reels, how to find voice work
and navigating the business.

Fall TAPS1280U S01 17743 TTh 1:00-3:50(06) (S. d'Angelo)

TAPS 1280W. Native American Indigenous Theatre Performance.
Investigates Native American Theatre Indigenous performance through the
study of new contemporary plays. Diverse storytelling styles, Indigenous
ways of being and knowing intersected by history, law, sociology and
their impact on language, land and identity distinguishes Native American
Indigenous Theatre apart from western forms. Text based inquiry,
research and critical essays combined with place-making and embodied
practice contextualize how Indigenous values and their applications
to decolonize performance spaces create a methodology unique to
Indigenous performance aesthetics. Open to 2nd year students and up-
Brown/RISD graduate/undergraduates. Instructor permission and course
override required. Interested students should come to first class meeting.

Fall TAPS1280W S01 18469 W 1:00-3:30(06) (S. d'Angelo)

TAPS 1280X. Compossible Worldbuilding.
This course involves project-making through the use of materials and
influences that are in plain sight but perhaps not within the reach of what
previous investigative methodologies allowed. Our small worlds will be
minded for their alterity, their surreality, their complexity, their possibility and
apparent impossibility. Students will be reading philosophy, fiction, movies,
criticism, and above all, interior and exterior rooms and spaces that will
feed into their worldbuilding.

Fall TAPS1280X S01 17668 W 3:00-5:30 (S. Golumb)

TAPS 1281A. Director/Designer Collaborative Studio.
Students will explore the relationship between director and designer within
the production process. The main objective is to improve collaboration
and production output by learning the language, tools, and skills involved
in each area of discipline so as to enhance creative output. Enrollment
limited to 17 students.

Fall TAPS1281A S01 16418 M 2:00-6:00(06) (K. Moore)

TAPS 1281E. Directing Theory and Practice.
Directing Theory and Practice is a hybrid academic and studio class
designed to introduce students to the history, theory, and practice of the
director's craft. Readings on the theoretical/practical methods of direction
are examined closely in class discussions and directing projects. All
students must serve as actors and directors throughout.

TAPS 1281G. Queer Dance.
In this course we will study the intersections of dance studies and queer
studies, in an inquiry into the emerging field of Queer Dance. What
does dance do for queer studies? How does queer studies further
dance studies? What constitutes dance as queer? Students will study,
observe, examine, discuss, and at times participate in queer dance
from a range of historical and global perspectives. Course readings are
drawn from dance studies, critical race studies, gender and sexuality
TAPS 1281O. Acting Outside the Box: Race, Class, Gender and Sexuality in Performance
Examines the relationship between social and cultural identities and their representations in dramatic literature and performance. Students will be expected to read critical essays and plays, conduct research, and prepare to act in scenes that challenge the actor to confront the specifics of character and situation beyond the Eurocentric ideal. The goal is to strengthen the actor’s ability to construct truly meaningful characters by removing any reliance of “type” and/or immediate “identification” with the characters they will portray. Open to any Brown/RISD graduate/undergraduate student that has taken TAPS 0230/Acting or the equivalent. Students should be aware that this is a hybrid Research and Performance class which may be counted as either a Performance Studies/Theatre Arts course for credit. Instructor Permission is Required. Interested students should attend the first class meeting in order to apply.

TAPS 1281W. Artists and Scientists as Partners
This course focuses on current research on and practices in arts and healing, with an emphasis on dance and music for persons with Parkinson’s Disease (PD) and Autism (ASD). Includes guest lecturers, readings, field trips, and site placements. Admission to class will be through application in order to balance the course between self-identified artists and scientists and those primarily interested in PD and those primarily interested in ASD. Enrollment limited to 30.

TAPS 1281Z. Artists and Scientists as Partners: Theory to Practice.
This course focuses on the application of current research in neuroscience, education, narrative medicine, and best practices in the arts for persons with neurological disorders. Through site placements, students provide arts experiences (primarily dance and music) for persons with Parkinson’s Disease (PD) and Autism Spectrum Disorders (ASD). This course also includes guest lecturers, readings, curriculum development, analyzing and developing research methodology, ethnographic research, and planning of and participation in a convening of artists, scientists and educators in an intergenerational exploration. Completion of TAPS 1281W highly recommended, but course may be taken with no prior experience in science, dance or music.

TAPS 1342. Advanced Beginning Ballet.
This course is designed for students who have some dance background, or who have successfully completed Introduction to Ballet (TAPS 1341). Apart from working on core strength, alignment, and flexibility, we will focus on faster paced movement sequences, and prepare for turns and jumps appropriate for an advanced beginner level.

TAPS 1343. Intermediate Ballet.
This course is designed for students who have successfully completed Advanced Beginning Ballet (TAPS 1342) and kept up with their dance conditioning, or for students with previous ballet experience at an advanced beginner/intermediate level. The main focus of this class is on center exercises, especially on pirouettes and petit, medium and grand allegro appropriate for an intermediate level.

TAPS 1350. Dance Performance and Repertory.
Half class credit each semester. A study of dance repertory through commissioned new works, reconstruction, coaching, rehearsal, and performance. Guest artists and consultants from the American Dance Legacy Institute. Enrollment is by audition. Limited to skilled dancers. Instructor permission required. S/NC.

TAPS 1360. Dance Performance and Repertory.
A study of dance repertory offered through commissioned new works, reconstruction, coaching, rehearsal, and performance. The course will explore the phenomenology of dance, audience-performer connection, theatre production and dance criticism, among other topics. Enrollment is by audition. Limited to skilled dancers. S/NC.

TAPS 1370. New Works/World Traditions.
As an Engaged Scholarship course, New Works develops new dance theater pieces that are rooted in research in Mindfulness, Somatic Studies, Mande Dance, Contact Improvisation, Butoh and Contemporary Vernacular dance forms. Guest artists from Japan, China, West Africa, the USA, and local community partners co-create new theatrical pieces for the concert stage. May be repeated for credit. S/NC.

TAPS 1380. Mise en Scène.
A reconstruction of the idea of a stage and a frame on the evidence of theory, novels, plays, and especially films—the seen and the unseen—using the organizing strategies of mystery. Art’s “impossible” brokering of the real and the representational in a dialectic of space is considered from a multiplicity of perspectives in diverse works. Enrollment limited to 20. Instructor permission required.

Fall TAPS1380 S01 16431 M 3:00-5:30 (S. Golub)

TAPS 1425. Queer Performance.
This seminar will examine the many meanings of queer performance. We will consider queerness as it is performed in a range of aesthetic genres—theater, music, dance, performance art, digital media—as well as in everyday vernacular contexts. We will explore how the interdisciplinary academic field of queer studies has turned to performance and performativity as key modes through which gender and sexuality are expressed. The class will place a particular emphasis on queer of color, trans-, and crip/queer approaches and cultural practices, addressing how queerness intersects with other axes of social difference, including race, class, and ability.

TAPS 1500H. Advanced Playwriting.
This unique course combines Brown undergraduate/graduate students with Brown/Trinity M.F.A. Acting and Directing students to explore bodies on stage, in specific time and space. Students create original short, theatrical works as they examine and experiment with multiple narrative techniques. Classes include craft exercises and close readings of a diverse range of texts—all to look deeper at how works are built. Through energetic workshop-style classes, this rare and significant collaboration allows students of different backgrounds to experience the full process of drafting, hearing the words aloud, and revising original works. Open to graduate/undergraduate students. Prerequisite: TAPS 0100 and 0200. Enrollment limited.

TAPS 1500. Dramaturgy.
This course is an introduction to dramaturgy and script analysis for advanced undergraduates. It will introduce a variety of plays and critical approaches to dramatic texts and performances with emphasis on culturally divergent dramaturgies, adaptation and textual analysis for performance.

Fall TAPS1500 S01 16748 W 3:00-5:00 (C. Columbus)

TAPS 1970. Independent Reading and Research.
Intensive reading and research on selected topics arranged in terms of special needs and interests of the student. A written proposal must be submitted to the instructor and the chair of the theatre arts department before the project can be approved. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

To be taken by all students accepted into the theatre arts honors program. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

TAPS 2100. Seminar in Performance Studies and Theatrical Theory.
Key texts in Performance Studies and Theatre Theory selected from works by ancient, modern, and contemporary philosophers, dramatists, performers, and theorists. Covers basic methodological trends crucial to thinking about mimesis and alterity, acting and actants, identity formation and disidentification, decolonial theory and feminist theory in relationship to the study of performance, performativity, drama and theatricality. Enrollment limited to 20.

Fall TAPS2100 S01 16452 W 10:30-12:20(06) (R. Schneider)
TAPS 2310. Graduate Playwriting
With Word as the bodily forth to social reality of original experience, the structures, purposes and ethical risks of writing for performance are examined; experienced through the reading of each other's works-in-progress, through the reading of essays and in session exercises. Must be taken by playwriting grad students every semester in residence. May be taken multiple times for credit. Undergraduates will be admitted with permission of the instructor. S/N
Fall TAPS2310 S01 16460 Th 11:00-4:00(06) (J. Jarcho)

TAPS 2450. Exchange Scholar Program
Fall TAPS2450 S01 15540 'To Be Arranged'

This course will cover three modalities. Acting/Scene Study: Realism will provide a fundamental understanding of Stanislavski-based acting within the realistic style, developing: a working understanding of a five-week rehearsal process; a system of text analysis based upon events and cause-and-effect; beginning the work of integrating vocal and physical technique into each individual student's acting method. Voice and Speech will provide the basis of the actor's three years of vocal training, gaining an understanding of the actor's personal vocal blocks as they relate to how the breath resides in the body. Contact Improvisation will investigate improvisation movement through physical contact. Fall TAPS2505 S01 11350 Arranged (B. McElney)

All Voice and Speech work has two underlying goals: for the actor to be heard; for the actor to be understood. A daily warmup, rigorous drilling, the learning of IPA, and its application in Standard American dialect will build muscle to strengthen your instrument for clarity of speech and train your ear to the nuances of speech sounds, invaluable for dialect and character work. The Alexander Technique uses gentle guidance to enable movement to take place unencumbered by habitual effort. Voice, Speech and Alexander work together to enable the actor to produce clear, tension-free sound. Fall TAPS2515 S01 11352 Arranged (J. Feliciano-Sanchez Moser)

This course is designed to activate the mind of the director. It is a detailed investigation of the creative process and the beginning of the foundation for communication with actors, designers and audiences in the making of live performance with text. MFA students will participate in Directing Lab, rehearsing as assigned. Fall TAPS2535 S01 11355 Arranged (B. Mertes)

TAPS 2545. Dramaturgy.
This course will be an introduction to dramaturgy advanced undergraduates and MFA students. The course will introduce a wide variety of play and critical approaches to dramatic texts and performances with emphasis on culturally divergent dramaturgies, embodied dramaturgy, adaptation and textual analysis for performance. This course meets for 2 of the 3 hours with TAPS 1600 Dramaturgy for MFA students; Graduate Students will take Deb Salem Smith's Playwriting course for the final hour of their course credit. Fall TAPS2545 S01 11356 W 3:00-5:00 (P. Ybarra)

TAPS 2555. Advanced Acting: Modern and Contemporary Realism.
Purpose: To provide a deepened understanding of the principles of Stanislavski-based acting within the realistic style: to reinforce and practice a working understanding of a five-week rehearsal process; to develop a system of text analysis based upon events and cause-and-effect; to understand and deepen the process of individual personalization; to continue the work of integrating vocal and physical technique into each individual student's acting method. TAPS 2565. Acting Technique II: Strength, Expansion and Articulation.
This course is open only to students of the Brown University/Trinity Rep MFA Consortium program. Continued studio exploration of various dance and movement techniques and vocal articulation and practice, designed to promote effective, healthy usage of the actor's instrument, as well as an introduction to dialect work and stage combat. This course includes separate classes in Speech, Alexander Technique and Movement Technique. Mandatory S/N.

This course will be an introduction to the offerings in theatre history, theory and practice offered at Brown University and environs in relation to a changing American Theatre. Each week will feature an original guest speaker from TAPS or other affiliate departments/institutions to expand your understanding. First Look Production is included in this course. This production process is a companion production experience to course work done in the fall semester. Students will experience the full process of revising and staging original works, with opportunities to work as actor and/or director, playwright, producer—actively applying conceptual knowledge gained from first semester courses.

TAPS 2585. Directing II: Collaborative Communication.
Building on Directing I: Fundamentals in Analysis and Action this course focuses on communication between actors and directors. Methodologies are tested and explored through practice in studio scene work. Rehearsal preparation, diagnostic processes are developed and practiced, and a detailed exploration of the directors preparation is the final project.

An introduction to the conventions of classical English verse performance, including elements of meter, heightened language, metaphor and rhetoric, with the goal of expanding the actor's understanding of the principles of realistic acting to the rigorous demands of Shakespearean and other classical texts. This course includes separate classes in Scene Study, Voice and Movement, all designed to support and promote heightened poetic expressivity in performance. S/N
Fall TAPS2605 S01 11357 Arranged (J. Feliciano-Sanchez Moser)

TAPS 2615. Acting Technique III: Poetic Expression.
Vocal and physical work designed to support the exploration of classical verse acting, with an emphasis on expanding a range of performance beyond realism. Rhythm, fluidity, presence, power, clarity of thought and the expression of emotional depth through language and movement is the focus of studio practice. Also included is introduction to singing technique. This course includes separate classes in Movement Technique, Alexander Technique and Singing. Fall TAPS2615 S01 17554 Arranged (S. Baryshnikov)

TAPS 2625. Playwriting Dramaturgy Practicum.
This course is advanced playwriting and script analysis for second year students. We will look deeper at the tools and craft of playwriting. We will begin by exploring adaptation—what are the bones and tissues of a given story? How can that body be transformed into a theatrical story? What is required? What changes? What is the relationship between form and content? We will transition from adaptation to writing original full-length works. Fall TAPS2625 S01 11360 Arranged (D. Smith)

TAPS 2635. Directing III: The Director's Vision.
This course is for Brown/Trinity MFA Actors and Directors and focuses on the vision of the director. Deep investigation in complicated language, verse, period. Continued development in collaboration with actors as well as personal mission, and vision. Seminar discussion of current work in process and production, exploration of contemporary dramatic forms and practitioners, issues in the art and craft of directing, diagnostic and exchange around the breaking of boundaries and best practices. Seminar runs concurrently with Directors Lab, Director projects, including thesis, and verse. Fall TAPS2635 S01 17556 Arranged (B. Mertes)

TAPS 2645. Fall Directing Practicum.
This credit is designed to build the director's skills in preparation, script analysis, and rehearsal processes in the making of a Shakespeare piece and which tours into the Providence School System, a kind of "mobile unit" production. This project has very clear parameters and minimal design to center the work on the embodiment of the text by the actors. It is intended to center the actor in the making of work, requires a
deep understanding of the text through analysis, and an edit to get it to a length that will support the tour.

Fall TAPS2645 S01 17555 Arranged  (B. Mertes)

**TAPS 2655. Advanced Acting: Shakespeare and Classical Verse.**
In-depth study of the methods and practice of classical acting, with the goal of developing professional-level skill and mastery of the form. Actors work toward total integration of the physical and vocal instrument into a unified whole to achieve complete expressivity of thought, emotion, character and imagination through poetic language and vigorous, purposeful and creative physicality. This course includes separate classes in Scene Study, Voice and Movement Composition.

**TAPS 2675. Advanced Playwriting.**
We will do craft exercises and close readings of texts to look deeper at how works are built. We will explore, discover, and map the mechanics of a diverse range of texts. You will have the opportunity to experiment with those same mechanics to create your own pieces. Through energetic workshop-style classes, you will experience the full process of drafting, hearing aloud, and then revising original works. In charting and defining others’ voices, you will discover your own particular voice and what makes it valuable and necessary.

**TAPS 2705. Third Year Practicum: The Actor as Creator.**
Based upon a foundation of mastery in realistic and classical acting styles, actors engage in an exploration of historical, modern and contemporary dramatic literature and theatre practice with a goal of developing a personal aesthetic voice that pushes the boundaries of convention and tradition in their mature theatre practice. This course includes separate classes in Scene Study, Voice, Movement and Alexander Technique, as well as participation in Director’s Lab. S/NC

Fall TAPS2705 S01 11362 Arranged  (B. McEleney)

**TAPS 2715. Professional Development and Performance.**
This course builds upon the first two years of acting technique training. Students will use the foundational technique acquired as they add the critical component of preparation to enter the professional theater, television, film, and audiobook industries. Actors will select material for themselves and their colleagues in preparation for spring Showcase rehearsals. Students will cut/arrange selected material to an appropriate length, propose several partner pairings for each scene, and work on further adaptations and pairings as necessary. Workshops with industry professionals in casting, entertainment unions, agencies, self-taping, audiobook work, on-camera technique and auditioning will be scheduled throughout the semester. Mandatory S/NC

Fall TAPS2715 S01 17537 Arranged  (S. Berenson)

**TAPS 2735. Directing V: Advanced Directing - Directing Seminar.**
Seminar discussion of current work in process and production, exploration of contemporary dramatic forms and practitioners, issues in the art and craft of directing, diagnostic and exchange around the breaking of boundaries and best practices. Seminar runs concurrently with Directors Lab, Director projects, including thesis, and verse. Directors Lab provides work for critical analysis. This course is required for all Brown/Trinity Rep MFA Directors. The course is S/NC.

Fall TAPS2970 S01 15541 Arranged  'To Be Arranged'

**TAPS 2975. Thesis Workshop.**
For graduate playwrights, in their second and third years, rehearsing and revising their thesis projects. May be taken multiple times for credit. Must be taken both semesters in the third year.

**TAPS 2980. Graduate Level Independent Reading and Research.**
A program of intensive reading and research on selected topics arranged in terms of special needs and interests of the student. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**TAPS 2981. Master’s Thesis Research.**
Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

**TAPS 2990. Thesis Preparation.**
For graduate students who have met the residency requirement and are continuing research on a full time basis.

Fall TAPS2990 S01 15542 Arranged  'To Be Arranged'

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**University Courses**

**UNIV 1005. Narratives of Racism: Lynchings, Miscegenation, and Internment Camps in America.**
In this course, we will study narrative accounts of 20th-century American incidents in which racism led to the persecution of members of minority groups by means of lynchings, miscegenation and justice, or the placement of people in internment camps: the unjustly conducted trial and lynching of the Jewish factory manager Leo Frank accused of murdering a young girl in Georgia; the kidnapping and murder of African American adolescent Emmett Till in Mississippi; and the internment of Japanese descendants during World War II out of fear that they would aid America’s enemy. Fall UNIV1005 S01 15762 MWF 11:00-11:50(16)  (D. Jacobson)

**UNIV 1089. Global Dynamics and Critical Perspectives on Immigrant Entrepreneurship in the United States.**
Immigrants own over a quarter of newly established businesses, despite accounting for less than 15 percent of the total U.S. population. 45 percent of immigrant business owners are women. These entrepreneurs have developed businesses in various industries including healthcare and medicine, biotech, hospitality, food services, garment and technology. Course traces U.S. history of 18th century immigrant entrepreneurs (Italians, Germans, ethnic and religious affiliated Jews) to more recent entrepreneurs from countries such as China, South Korea, Japan, Iran, Cuba. We examine today’s emerging immigrant entrepreneurs including Mexicans and Filipinos, and among the more recent immigrant groups, including Vietnamese, Cambodians, Ethiopians, Eritreans. Fall UNIV1089 S01 18037 Th 4:00-6:30  (J. Nazarenko)

**UNIV 1110. The Theory and Teaching of Problem Solving.**
What is a problem and how do you solve one? What relationship exists between problem-solving and teaching? This course is designed for STEM students who are teaching/will teach and are interested in improving their problem-solving and teaching. You will gain the skills that will aid you in your own learning, promote learning in others, improve communication and problem-solving capabilities, and prepare you to engage more deeply in diverse learning spaces. In the final weeks of the course you will apply concepts to a Scholarship of Teaching and Learning project that focuses on improving/examining problem-solving and/or teaching in your field. S/NC

Fall UNIV1110 S01 17530 MWF 12:00-12:50(15)  (C. Smith)

**UNIV 1520. The Shaping of World Views.**
To many students, an exclusive emphasis on specialized studies fragments the "world" in which they live. A widespread feeling of loss pervades the minds of students who often come to universities to learn right from wrong, to distinguish what is true from what is false, but
who realize at the end of four years that they have deconstructed their freshman beliefs, values, and ideologies, but have created nothing to replace them. This course examines the diversity of worldviews both synchronically and diachronically and surveys various explanations for such diversity. Enrollment limited to 30. Conducted in English.

Urban Studies

URBN 1250. The Political Foundations of the City.
This course examines the history of urban and social welfare policy in the United States and abroad. It reviews major theories accounting for the origins and subsequent development of welfare states, explains the "exceptional" nature of American public policy, and employs a combination of historical texts and case studies to analyze the connections between politics and the urban environment.

Fall URBN1250 S01 17335 TTh 1:00-2:20(08) (J. Pacewicz)

A central theme of the course is that urban politics in the United States arises from the interplay of governmental power and private resources. The course describes the emergence of urban America; the modern city and the theories that have evolved to explain urban politics; and the nature of the urban condition with particular emphasis on the challenges faced by residents and government in the post-industrial city.

Fall URBN1270 S01 15666 MWF 10:00-10:50(14) (M. Orr)

URBN 1870A. American Culture and the City.
This course explores American culture and the way it shapes our cities. Topics include the American dream, race, immigration, urban dilemmas, white supremacy, and the seduction of suburbia. We read a book (readings include Alexis de Tocqueville, Richard Wright, Toni Morrison, Tom Wolfe, W.E.B.Du Bois, and others. Films include Wall Street and Gangs of New York. Prerequisite: POLS 0220. Priority given to Urban Studies concentrators.

URBN 1870M. Urban Regimes in the American Republic.
A probing of topical issues in both their theoretical antecedents and their contemporary manifestations. Examines the intellectual debates and the scholarly treatments surrounding issues of power in the city, urban redevelopment policy, urban poverty, urban educational policy, and race in the city. Enrollment limited to 20.

Fall URBN1870M S01 15668 M 3:00-5:30 (M. Orr)

This seminar explores how urban planners in the U.S. plan for and around various transportation networks. We will examine how these networks are designed and funded, which modes get priority over others, and ultimately how transportation shapes the built environment. Realworld examples of plans and projects from Providence and Rhode Island are used throughout the course. Important concepts are illustrated through field trips and guest speakers.

URBN 1934. The Just City (Installment II): Crossroads and Congregations.
The second installment in a series on the just city, this course focuses on the exploration of critical "crossroads" and "congregations" -- exploring the spatial imaginaries of injustice found across the urban landscape and working to uncover the specific routes, intersections, and sites of convergence activated in its necessary transformation. Students learn from a range of materials including scholarly articles and essays, contemporary ethnographies, films, and applied reports. Students will also gain experience in fieldwork (spatial analysis, participant observation, urban design) as they trace these processes locally, with Providence and its environs as a primary site.

URBN 1970. Independent Reading and Research.
A specific program of intensive reading and research arranged in terms of the special needs and interests of the student. Open primarily to concentrators, but others may be admitted by written permission. Section numbers vary by instructor. Please check Banner for the correct section number and CRN to use when registering for this course.

A program of intensive reading, research, and writing under the direction of a faculty member. Permission should be obtained from the Thesis Advisor in Urban Studies. Mandatory attendance at periodic meetings during the semester is required. Open to Senior Urban Studies concentrators pursuing Honors in Urban Studies. Instructor permission required.

A program of intensive reading, research, and writing under the direction of a faculty member. Permission should be obtained from the Thesis Advisor in Urban Studies. Mandatory attendance at periodic meetings during the semester is required. Open to Senior Urban Studies concentrators pursuing Honors in Urban Studies. Instructor permission required.

URBN XLIST. Courses of Interest to Concentrators in Urban Studies.

Visual Art

VISA 0100. Studio Foundation.
Required for all VA and RISD courses (with the exception of VISA1012, VISA0130, VISA0140, VISA0150 and VISA0160). Covers the basics of drawing and 2D design while cultivating the capacity for visual thinking.

Fall VISA0100 S01 17139 MW 10:00-11:50 'To Be Arranged'
Fall VISA0100 S02 17141 MW 4:00-5:50 (I. Mattia)
Fall VISA0100 S03 17142 TTh 1:00-2:50(06) 'To Be Arranged'
Fall VISA0100 S04 17143 TTh 4:00-5:50 'To Be Arranged'
Fall VISA0100 S05 17144 F 9:00-12:50(06) (T. Ganz)

VISA 0120. Foundation Media.
Foundation media focuses on the production and theory of time-based digital media and introduces the computer as a medium and a tool for art. Students will experiment with the production of video, sound, and interactive media. Students will examine and produce work that is multidisciplinary in nature, combining aspects of critical discourse, art, and technology.

Fall VISA0120 S01 17147 TTh 10:00-11:50(06) (E. Osborn)

VISA 0130. Sculpture Foundation.
This is an extensive study in form and structure. It is designed to develop spatial understanding and the fundamentals of 3-dimensional design and construction. Students will explore the structural, compositional and conceptual implications of common materials, such as wood, metal, plaster and found objects. Projects are designed as a means for investigating a variety of sculptural processes. Students will learn safe usage of power and hand tools, casting techniques, wood and metal work.

VISA 0140. Photography Foundation.
This class is a wide ranging technical and conceptual introduction to photography. Through weekly projects, students will be exposed to 19th-21st century photo processes. Topics covered include cameras, lenses, software, darkroom overview, scanning, natural and artificial lighting, alternative processes as well as concepts such as selective focus, color temperature, composition. Short readings and in-class slide presentations on a diverse range of photographers will introduce students to the history of photography. This course will prepare students for upper level Photography classes at Brown and RISD.

VISA 0150. Digital 2D Foundation.
This foundation studio course introduces the basic practices and concepts of two-dimensional digital media production including image acquisition, editing and manipulation, vector illustration, and preparation for online and offline viewing. Through studio exercises, readings, and assignments we will experiment with the production of electronic images. We will be looking at and producing work that is conscious and critical in nature, and which combines aspects of contemporary art, media, and technology. Collaboration and group work will be encouraged to share learning techniques and skill resources.

Fall VISA0150 S01 17150 Th 5:00-8:50PM (L. Beeferman)
Fall VISA0150 S03 17485 F 9:00-12:50(06) (L. Beeferman)

VISA 1110. Drawing.
This course focuses on drawing from models, observation, and imagination in a variety of media with an emphasis on creative work and classroom participation. A continuing series of outside assignments is emphasized. Visits to galleries, museums and pertinent exhibitions may be
Students may take this course more than once, as the problems can work within the context of contemporary works on paper will be explored through a series of experimental mixed-media projects. Work will be in both black and white and color. Prerequisite: VISA 0100 or VISA 0110. This course restricted to 17 students. Students who are not admitted during pre-registration or were unable to pre-register should attend the first class.

Fall VISA1210G S01 17407 TTh 1:00-4:50(06) (A. McNeary)

VISA 1240. Art of the Book.
Will examine the book, structurally and conceptually, as artist's medium. Students will learn the materials, tools and techniques of making books, as they explore the expressive and narrative possibilities of the book form. Topics and projects may include digital imaging, combining text and image, traditional binding or digital publishing. Students who are not admitted during pre-registration or were unable to pre-register should attend the first meeting.

Fall VISA1240 S01 17155 MW 9:00-12:50(06) (S. Cozzens)

VISA 1250. Art of the Book.
We will examine the artist's book from the printer/publisher perspective. Students will learn the basics of book design, traditional typography & letterpress printing. Students will consider the book and its related printed matter in service of its content. The course will be run as a fine press publishing house. Students will produce individual and group projects, including bookplates, broadsides, and books. Studio work will be augmented with field trips, artist visits, and guided exploration of the special collections at the John Hay Library. Students who are not admitted during pre-registration or were unable to pre-register should attend the first meeting.

Fall VISA1250 S01 17155 MW 9:00-12:50(06) (S. Cozzens)

VISA 1310. Beginning Painting.
This painting course explores ideas and concepts in contemporary painting and emphasizes individual projects based on prompts. Students will experiment with materials, color and scale strengthening ideas through individual investigations into content and context. Critiques, readings, writing assignments and final projects will be supplemented by research into artists and movements that have developed within the last several decades. Enrollment limited to 14. Prerequisites: VISA 0100.

VISA 1320. Advanced Painting.
This course is an in-depth investigation of contemporary painting practices and concepts, with a strong emphasis placed on critique. Experimentation and exploration of individual themes is emphasized. Affords an opportunity for in-depth investigation of painting techniques and ideas and the development of a series of works reflecting an individual creative vision.

Fall VISA1320 S01 17157 TTh 1:00-4:50(06) (A. Evans)

VISA 1410. Sculpture: Material Investigations.
This studio course addresses basic sculptural methods, i.e., additive + subtractive modeling, casting, and assemblage, and common sculptural materials, i.e., wood, metal, plaster, and found objects. Demos + workshops on a number of sculptural tools and materials form the foundation for this studio. Students develop sculptural solutions to a given set of problems. Contemporary issues raised in critiques and readings. Extensive outside work is expected. Students who are not admitted during pre-registration or were unable to pre-register should attend the first meeting of the class.

Fall VISA1410 S01 17160 TTh 12:00-3:50(06) (P. Myoda)

VISA 1420. Sculpture II: Conceptual Propositions.
This studio course explores a number of contemporary sculptural theories and practices. Contemporary issues raised in critiques and readings. Completion of VISA 1410 is suggested, but not required. Demos and workshops on a number of tools and materials will be given as needed. Students may take this course more than once, as the problems can be customized for those with more experience. Extensive outside work expected. Please attend first day of class.

VISA 1510. Black and White Photography.
This course offers introduction to traditional black and white 35mm darkroom techniques, including processing film, silver gelatin printing and related techniques. While the class is primarily a studio course, it will be supplemented by weekly slide presentations and discussions of assigned readings. Slide presentations will focus on individual photographers in the history of the medium. Topics of discussion will include photographic genres, the photo essay, editing and sequencing a body of work, personal visions, social and political context, documentary versus art photography. Students may check out 35 mm film camera from the Dept.

Fall VISA1510 S02 17611 MW 1:00-4:50(06) (R. Ross)

VISA 1520. Digital Photography.
Over 1.8 billion photographs are uploaded to the Internet each day. Since everyone's a 'photographer', what type are you? While we constantly produce images for ourselves and others in private and public, this course will ask students to critically rethink this tool. Image-making, from "capture" to "color-correction" and beyond will be consciously addressed, as we approach photography from the perspective of contemporary art practice and produce a final portfolio of prints. Class will be discussion, slideshow, studio and critique. Prior experience in photography preferred not required. A digital SLR type camera may be checked out from the Department.

Fall VISA1520 S01 17162 TTh 1:00-4:50(06) 'To Be Arranged'

VISA 1800C. Honors Seminar.
Required for students who have been accepted as candidates for honors. The seminar meets weekly to discuss readings and for group critiques. Includes group trips to New York and Boston, to visit galleries, museums, and artists' studios. Instructor permission required. Must be accepted into Honors Program.

Fall VISA1800C S01 17163 MW 2:00-4:50(06) (L. Bostrom)

Visual artists don't have agents or managers—you have to do it all yourself. This class covers business basics including tracking inventory and preparing invoices; taking legal precautions like registering a copyright and drafting consignment forms; using promotional tools; and making decisions such as choosing the right venue for your work. Grants, residencies, and relationships with galleries & nonprofit institutions will be discussed in depth. Work will emphasize community the practical, skills to thrive as a visual artist. Enrollment limited to 20 juniors and seniors in Visual Art.

Work on an approved project leading to the presentation of a portfolio, under supervision of an individual member of the staff. Project proposals must be filed with the department no later than the first week of the semester. Section numbers vary by instructor.

Section numbers vary by instructor.

VISA 2450. Exchange Scholar Program.

VISA XLIST. Courses of Interest to Visual Arts Concentrators.
Africana Studies

The concentration in Africana Studies critically examines the artistic, historical, literary, and theoretical expressions of the peoples and cultures of Africa and the African Diaspora. Central to the work of students and faculty in the concentration is the close collaboration of artists, scholars, and writers in examining relationships between academic and artistic knowledge about the world and human experience. Concentrators work closely with faculty members in developing new knowledge about the world and human existence through the critical and comprehensive study of the peoples and cultures of Africa and the African Diaspora. Concentrators are encouraged to study abroad in Africa, the Caribbean, and/or Latin America and to acquire language competency in a language other than English spoken in Africa and the diaspora.

Africana Studies presents a different conceptual paradigm that connects the global black experience. Africana Studies engages issues about historical and contemporary responses to local and global crises. It engages with how people of color create their own knowledge culturally and politically. It oftentimes a critique of how forms of knowledge are produced. Concentrators acquire a host of interdisciplinary skills that allow them to ask questions about the world around them, and forms of knowledge production while developing critical analytical skills. Our concentrators deploy these skills in other classes, enriching their own general intellectual development.

In order to develop requisite competency in the discipline of Africana Studies, concentrators must complete eight (8) semester-long courses offered by or cross-listed with the Department. Six (6) courses must have an AFRI prefix or be offered by Africana Studies core faculty. Two (2) courses can be cross-listed. In some cases, Concentrators may petition the Department to accept other appropriate courses. Of these 8 courses, the following Africana Studies courses are required:

- AFRI 0090 An Introduction to Africana Studies
- AFRI 1360 Africana Studies: Knowledge, Texts and Methodology—Senior Capstone Seminar (Spring ONLY)

Please note: Beginning with the class of 2021, the concentration will be comprised of a total of 9 courses, which will include a required junior seminar to be offered during the second semester. Students studying abroad during the second semester of their junior year will be required to take the seminar during their senior year. If there is a documented conflict with another concentration’s senior seminar, students should consult with the DUS.

The Department strongly encourages foreign study in Africa, the Caribbean, and Latin America, during the student’s junior year of concentration. Although the Africana Studies Department actively supports programs in South Africa, Tanzania, Ethiopia, Brazil, and the English-Speaking Caribbean, at least six (6) courses must be completed in the department and taught by core faculty.

The Department also encourages the acquisition of language competencies, in addition to English, which are spoken in Africa and the diaspora. Since no continental African language is currently offered at Brown, concentrators who study abroad and acquire certified competency in any African language are welcome to petition the department for competency credit.

For more information about the concentration, please contact Professor Françoise Hamlin (Francoise_Hamlin@brown.edu), Director of Undergraduate Studies.

Honors in Africana Studies

Africana Studies’ concentrators with outstanding academic records (demonstration of excellent research and writing skills from course selections to grades) may be admitted to the department’s Honors Program.

Students interested in pursuing honors should identify a faculty sponsor in Africana Studies (chosen from Core Faculty or affiliated faculty after Chair agreement) in their 6th semester and begin working on their thesis project during the summer before their senior year. By the end of the sixth semester, while working in consultation with a faculty advisor, the student must submit a rough draft of the project proposal. Please visit the department website for proposal guidelines. This preliminary plan should include a timeline for completion of the thesis and is not to exceed one (1) typewritten page. This plan should also include a bibliography that students have developed with their thesis advisor to guide their summer reading.

By the end of the summer, the Honor’s candidate should be familiar with the secondary works in the field. (Secondary readings should be extensive and be incorporated into the final proposal, due Monday, September 14, 2020.) The student should also identify a second reader at this point. The final work plan/proposal, not to exceed three (3) typewritten pages, should incorporate the summer research findings and in submission to the completion deadline. The final proposal must be approved and signed by a committee, comprised of the faculty advisor who is to direct the Honor’s thesis, the second reader, and the concentration advisor. By the end of the week three of the first senior semester, the thesis advisor should inform the Director of Undergraduate Studies by email that the proposal has been approved.

The Honor’s candidate should complete at least one chapter of distinguished quality while enrolled in an independent study with their faculty advisor during the first semester of the senior year. Students must enroll in at least one, preferably two, semesters of independent study to work on their thesis.

For students completing graduation requirements by the end of Semester I (Fall), a first complete draft of the thesis should be completed by Friday, November 6, 2020. Final drafts must be submitted by Friday, November 27, 2020. For students completing graduation requirements by Semester II (Spring), a first complete draft of the thesis should be submitted by Friday, March 12, 2021. The final draft of the thesis should be submitted by Friday, April 16, 2021. Students must submit bound copies of the final thesis to the department and to each of their readers, along with an electronic copy of the completed thesis to the Academic Department Manager. All students are expected to formally present their thesis projects in the Department of Africana Studies on Monday, April 26, 2021 at a time to be determined. After this presentation, a department committee will make recommendations for honors to the Director of Undergraduate Studies and students will receive notification of the recommendation.

American Studies

The concentration in American Studies seeks to understand American society and cultures as emerging from historical and contemporary processes at work in local, national, and global contexts. Concentrators study four broad themes: social structure and the practices of identity, space and place, production and consumption of culture, and science, technology, and everyday life. The concentration is predicated on the ideal of scholarly engagement with the public, so students take junior seminars that engage some aspect of the public humanities such as public policy, memorialization, community studies or civic engagement. Study abroad is supported and encouraged. Interested students may contact the director of undergraduate studies.

A concentrator in American Studies will be able to:

- Analyze texts, contexts, and data from multiple disciplinary and historical perspectives
- Synthesize research as verbal, visual and/or digital presentations
- Explore the theory and/or practice of the engagement of scholarship with a broader public
- Understand how American society and cultures have been and are being shaped by global flows of people, goods and ideas
- Experiment with new media as critical tools for scholarship

For more information about the concentration, please contact Professor Sarah T. Ehrman (sarah.ehrman@brown.edu), Director of Undergraduate Studies.
Concentrators have gone on to a vast variety of careers, including law, public humanities, politics, public service, academics, business, creative arts, and medicine.

Requirements:
Each concentrator will take 10 upper-level courses, four of which must be seminars, including a Junior Seminar (an AMST 1700 level course) and a Senior Seminar (AMST 1900 level course). Students may take as many AMST 1900 level courses as they wish, however for the course to count as a senior seminar it must be taken during the senior year.

Each concentrator will create an individual FOCUS consisting of at least three courses in consultation with the Concentration Advisor. The focus is the flexible core of the concentration. Here each student builds a coherent and dynamic interdisciplinary structure of related courses that develops his or her compelling interest in some aspect of American experience. Courses from outside of AMST and ETHN can be counted for credit within the concentration if they relate to the concentrator's focus area.

All seniors are required to do a capstone electronic portfolio.

Some concentrators may elect to do an Honors Thesis and are encouraged to take AMST 1800, the Honors Seminar, in the Spring of their Junior year. Students pursuing honors are required to take two independent study courses (AMST 1970) in their senior year, in addition to the regular concentration requirements (for a total of 12 credits), in order to write their honors thesis.

Requirements for the American Studies Concentration
Junior Seminar: A course from the AMST 1700 Series, for example:

- AMST 1700B Death and Dying in America
- AMST 1700C Slavery in American History, Culture and Memory
- AMST 1700D Race and Remembering
- AMST 1700F American Publics
- AMST 1700I Community Engagement with Health and the Environment

Senior Seminar: A course from the AMST 1900 series taken during the senior year, for example:

- AMST 1900A The Problem of Class in America
- AMST 1900B America and the Asian Pacific: A Cultural History
- AMST 1900C Narratives of Slavery
- AMST 1900D America as a Trans-Pacific Culture
- AMST 1900F Transnational Popular Culture
- AMST 1900G Movements, Morals, and Markets
- AMST 1900I Latina/o Cultural Theory
- AMST 1900J Race, Immigration and Citizenship
- AMST 1900K China in the American Imagination
- AMST 1900L Cold War Culture The American Culture in the Cold War
- AMST 1900N Ethnicity, Identity and Culture in 20th Century New York City
- AMST 1900O Filipino American Cultures
- AMST 1900P Essaying Culture
- AMST 1900Q From Perry to Pokemon: Japan in the United States, the United States in Japan
- AMST 1900R Gender, Race, and Class in the United States
- AMST 1900S Green Cities: Parks and Designed Landscapes in Urban America
- AMST 1900U Immigrant Radicals: Asian Political Movements in the Americas 1850-1970
- AMST 1900V Immigrants, Exiles, Refugees, and Citizens in the Americas

Ungraded Capstone ePortfolio

| Total Credits | 10 |

Honors
AMST 1970 Independent Reading and Research (Students pursuing honors in the concentration are required to take two semesters of Independent Study to produce the Honors Thesis)

WHAT we study
American Studies at Brown is concerned with four broad themes:

- **Social Structures and the Practices of Identity:** How do communities and individuals come to define themselves, and how do others define them, in terms of, among other categories, nation, region, class, race, ethnicity, gender, sex, religion, age and sexuality? How do organizations and institutions function socially and culturally? What are the roles of social movements, economic structures, politics and government?

- **Space and Place:** How is space organized, and how do people make place? This includes the study of natural and built environments; local, regional, national and transnational communities; and international and inter-regional flows of people, goods, and ideas.

- **Production and Consumption of Culture:** How do people represent their experiences and ideas as culture? How is culture transmitted, appropriated and consumed? What is the role of artists and the expressive arts, including literature, visual arts and performance?

- **Science, Technology, and Everyday Life:** How does work and the deployment of science and technology shape American culture? How do everyday social practices of work, leisure and consumption provide agency for people?
HOW we study

American Studies at Brown emphasizes four intersecting approaches that are critical tools for understanding these themes:

- **Cultural and Social Analysis:** Reading and analyzing different kinds of texts, including literary, visual, aural, oral, material objects and landscapes. Examining ethnic and racial groups, institutions, organizations and social movements.

- **Global/International Contextualization:** Comprehending the United States as a society and culture that has been shaped by the historical and contemporary flows of people, goods and ideas from around the world and in turn, learning about the various ways in which America has shaped the world.

- **New Media Understandings:** Understanding the creation of new forms of discourse, new ways of knowing and new modes of social organization made possible by succeeding media revolutions. Using new media as a critical tool for scholarship.

- **Publicly Engaged Scholarship:** Connecting the theory and the practice of publicly-engaged research, understanding and presentation, from community-based scholarship to ethnography, oral history, and museum exhibits. Civic engagement might include structured and reflective participation in a local community or communities or the application of general theoretical knowledge to understanding social issues.

**Anthropology**

Anthropology is the study of human beings from all times and all places, offering holistic, comparative, international, and humanistic perspective. In studying and interpreting the vast range of similarities and differences in human societies and cultures, anthropologists also seek to understand how people themselves make sense of the world in which they live. The Department of Anthropology at Brown is a vibrant, award-winning group of scholars working primarily in the subfields of cultural anthropology, archaeology, and anthropological linguistics. The concentration provides students with a broad introduction to the discipline and includes the major subdisciplines of the field: sociocultural anthropology, archaeology, anthropological linguistics, and biological anthropology. The department also allows students to pursue the Engaged Scholars Program (https://www.brown.edu/academics/college/special-programs/public-service/engaged-scholars-program/). ESP is for students with an interest in making deeper connections between their concentration curriculum and long-term engaged activities such as internships, public service, humanitarian and development work, archaeological excavations, and many other possible forms of community involvement.

Students who declared a concentration prior to fall 2019 can refer to concentration requirements here: (https://bulletin.brown.edu/archive/2018-19/)https://bulletin.brown.edu/archive/2018-19/the-college/concentrations/anth/

**General Anthropology Track**

Choose one foundational course in sociocultural, linguistic anthropology, or medical anthropology:

- ANTH 0100 Introduction to Cultural Anthropology
- ANTH 0300 Culture and Health
- ANTH 0800 Sound and Symbols: Introduction to Linguistic Anthropology

Choose one foundational course in archaeology or biological anthropology:

- ANTH 0310 Human Evolution
- ANTH 0500 Past Forward: Discovering Anthropological Archaeology

Choose one of the following courses in anthropological methodology, to prepare students for further research:

- ANTH 1201 Introduction to Geographic Information Systems and Spatial Analysis
- ANTH 1621 Material Culture Practicum
- ANTH 1720 The Human Skeleton

**Medical Anthropology Track**

ANTH 0300 Culture and Health

Two courses in at least two of the four major subfields of anthropology:

Choose any one 0000 or 1000-level course in socio-cultural anthropology or linguistic anthropology such as:

- ANTH 0100 Introduction to Cultural Anthropology
- ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance
- ANTH 0800 Sound and Symbols: Introduction to Linguistic Anthropology
- ANTH 0805 Language and Migration
- ANTH 1111 Anthropology of China
- ANTH 1150 Middle East in Anthropological Perspective
- ANTH 1240 Religion and Culture
- ANTH 1255 Anthropology of Disasters
- ANTH 1320 Anthropology and International Development: Ethnographic Perspectives on Poverty and Progress
- ANTH 1848 Ethnography + Social Critique
- ANTH 1940 Ethnographic Research Methods

At least one 1000-level course in medical anthropology such as:

- ANTH 1242 Bioethics and Culture
- ANTH 1300 Anthropology of Addictions and Recovery
- ANTH 1301 Anthropology of Homelessness
- ANTH 1310 International Health: Anthropological Perspectives

An additional three anthropology courses of the student’s choosing. At least two of the electives must be at the 1000-level to meet the general requirements of the concentration.

At least one non-anthropology course in the natural sciences, public health, or psychology that focuses on human health to give students basic exposure to the science of human physical and/or mental health. This course is in addition to the nine courses required in ANTH.

Total Credits: 10

1. Other appropriate anthropology courses may be used to fulfill this requirement with DUS approval.
2. Most qualifying courses will bear a BIOL, PHP, or CLPS designation but students can choose any appropriate course to fulfill this requirement with DUS approval.

**Socio-Cultural Anthropology Track**

ANTH 0100 Introduction to Cultural Anthropology

One course in archaeology or biological anthropology:

- ANTH 0310 Human Evolution
ATN 0500  Past Forward: Discovering Anthropological Archaeology  1
ATN 1940  Ethnographic Research Methods  1
At least two 1000-level courses that focus on specific aspects of sociocultural methods or theories, or in a particular region:

ATN 1111  Anthropology of China  1
ATN 1150  Middle East in Anthropological Perspective  1
ATN 1240  Religion and Culture  1
ATN 1242  Bioethics and Culture  1
ATN 1255  Anthropology of Disasters  1
ATN 1300  Anthropology of Addictions and Recovery  1
ATN 1301  Anthropology of Homelessness  1
ATN 1310  International Health: Anthropological Perspectives  1
ATN 1320  Anthropology and International Development: Ethnographic Perspectives on Poverty and Progress  1
ATN 1848  Ethnography + Social Critique  1

An additional three anthropology courses of the student’s choosing. At least one of the electives must be at the 1000-level to meet the general requirements of the concentration.

ATN 1990  Senior Seminar: (Re)Making Anthropology  1

Total Credits  9

Linguistic Anthropology Track

ATN 0800  Sound and Symbols: Introduction to Linguistic Anthropology  1

One additional course in linguistic anthropology from the following:

ATN 0805  Language and Migration  1
ATN 1810  Language and Power  1

Two other foundational courses in anthropology:

Choose one:

ATN 0100  Introduction to Cultural Anthropology  1
ATN 0300  Culture and Health  1

Choose one:

ATN 0310  Human Evolution  1
ATN 0500  Past Forward: Discovering Anthropological Archaeology  1
ATN 1940  Ethnographic Research Methods  1
ATN 1990  Senior Seminar: (Re)Making Anthropology  1

An additional three anthropology courses of the student’s choosing. At least two of the electives must be at the 1000-level to meet the requirements of the concentration.

At least one general course focusing on aspects of linguistic structure.  1
At least one language course (one semester) in any language other than English  1

Total Credits  11

1 This course is in addition to the nine courses required in ANTH. Given the teaching commitments of departmental faculty, eligible courses will generally be offered only in departments other than Anthropology. Recommended courses include Introduction to Linguistics (CLPS 0300) or Sociolinguistics (SLAV 1300). Students may also choose another appropriate course to fulfill this requirement with DUS approval.

2 This course is in addition to the nine courses required in ANTH. Students interested in studying a language not offered at Brown should consult with Linguistic Anthropology faculty and the DUS.

3 Other anthropology courses with significant geographic focus may be used to fulfill this requirement with DUS approval.

Anthropological Archaeology Track

ATN 0500  Past Forward: Discovering Anthropological Archaeology  1
ATN 0100  Introduction to Cultural Anthropology  1
Choose one course in anthropological archaeology methodology:

ANTH 1201  Introduction to Geographic Information Systems and Spatial Analysis  1
ANTH 1621  Material Culture Practicum  1
ARCH 1900  The Archaeology of College Hill  1

Choose one course that involves detailed archaeological investigation of a geographic region:

ANTH 1031  Classic Mayan Civilization  1
ANTN 1126  Ethnographies of Heritage: Community and Landscape of the Mediterranean and Beyond  1
ANTH 1505  Vertical Civilization: South American Archaeology from Monte Verde to the Inkas  1
ANTN 1624  Indians, Colonists, and Africans in New England  1
ANTN 1640  Maize Gods and Feathered Serpents: Mexico and Central America in Antiquity  1
ANTN 1650  Ancient Maya Writing  1
ANTN 1692  Southwestern Archaeology  1

One 1000-level course in anthropology with significant archaeological, material culture, and/or museum studies component. A second geographic area course from the list above may be used to meet this requirement. Other regularly offered courses that meet this requirement include:

ANTN 1125  Indigenous Archaeologies  1
ANTH 1620  Global Historical Archaeology  1
ANTH 1623  Archaeology of Death  1
ANTH 1820  Lost Languages: The Decipherment and Study of Ancient Writing Systems  1

Three anthropology courses of the student’s choosing. At least one of the electives must be at the 1000-level to meet the general requirements of the concentration.

ATN 1990  Senior Seminar: (Re)Making Anthropology  1

Total Credits  9

1 This requirement will be waived for students who have completed an archaeological field school. The field school must be approved in advance of its completion for the requirement to be waived. Per the broader requirements of the concentration, students must still complete nine anthropology credits at Brown or via transfer credits. Note that many field schools do not carry credit.

2 Other anthropological archaeology courses with significant geographic focus may be used to fulfill this requirement with DUS approval.

3 Other anthropology courses with significant archaeological, material culture, or museum studies focus may be used to fulfill this requirement with DUS approval.

Biological Anthropology Track

ANTN 0310  Human Evolution  1
Choose one foundational course in cultural anthropology, medical anthropology, or linguistic anthropology:

ANTH 0100  Introduction to Cultural Anthropology  1
ANTH 0300  Culture and Health  1
ANTN 0800  Sound and Symbols: Introduction to Linguistic Anthropology  1
ANTH 1720  The Human Skeleton  1
Five anthropology courses of the student’s choosing. At least three of the electives must be at the 1000-level to meet the requirements of the concentration.

At least one non-anthropology course with a biological focus. Any course with a BIOL subject code can be used to fulfill this requirement. Students are especially encouraged to consider a course with a significant content devoted to genetics and/or evolutionary theory. This course is in addition to the nine courses required in ANTH.

Choose at least one course in statistics. This course is in addition to the nine courses required in ANTH. Possible courses include:  

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0650</td>
<td>Essential Statistics</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0495</td>
<td>Statistical Analysis of Biological Data</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 1100</td>
<td>Introduction to Qualitative Research Methods</td>
<td>1</td>
</tr>
<tr>
<td>SOC 1100</td>
<td>Introductory Statistics for Social Research</td>
<td>1</td>
</tr>
<tr>
<td>PHP 1501</td>
<td>Essentials of Data Analysis</td>
<td>1</td>
</tr>
<tr>
<td>ANTH 1990</td>
<td>Senior Seminar: (Re)Making Anthropology</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits 11

1 Other courses may be substituted to meet this requirement with the permission of the DUS.

**Engaged Scholars Program**

The Engaged Scholars Program in Anthropology is geared for anthropology concentrators who are especially interested in making deeper connections between their concentration curriculum and long-term engagement with local communities in Providence and beyond. Engaged scholars combine hands-on experiences such as internships, public service, humanitarian and development work with their academic learning in order to develop a deeper understanding of, and appreciation for, social engagement. While most anthropology courses have some sort of ‘engaged’ element, being an Engaged Scholar in Anthropology means making a commitment to engaging more actively and intensively with the communities in which a student is living.

**Requirements for Engaged Scholars in Anthropology**

Requirement information can be found at the Anthropology website: [https://www.brown.edu/academics/anthropology/undergraduate-program/engaged-scholars-program](https://www.brown.edu/academics/anthropology/undergraduate-program/engaged-scholars-program)

**Honors**

Candidates for honors should apply to the concentration advisor by the end of his or her 6th semester, but no later than the 4th week of the 7th semester. An application consists of a brief statement addressing the focus of a proposed thesis and the names and signatures of two faculty members from the Department of Anthropology who have agreed to serve as the student’s honors committee—one as honors thesis advisor, the other as a reader. Candidates for honors are required to:

1. Fulfill the standard concentration requirements.
2. Take two additional courses, usually, which may be used for thesis preparation.
3. Have a majority of A’s in the concentration.
4. Submit an approved honors thesis.

**Field Work**

Concentrators interested in archaeology are urged to obtain training in field archaeology by participating in Brown-sponsored field research, or by participating in an archaeological field school elsewhere.

**Applied Mathematics**

The concentration in Applied Mathematics allows students to investigate the mathematics of problems arising in the physical, life and social sciences as well as in engineering. The basic mathematical skills of Applied Mathematics come from a variety of sources, which depend on the problems of interest: the theory of ordinary and partial differential equations, matrix theory, statistical sciences, probability and decision theory, risk and insurance analysis, among others. Applied Mathematics appeals to people with a variety of different interests, ranging from those with a desire to obtain a good quantitative background for use in some future career, to those who are interested in the basic techniques and approaches in themselves. The standard concentration leads to either the A.B. or Sc.B. degree. Students may also choose to pursue a joint program with biology, computer science or economics. The undergraduate concentration guide is available here: [http://www.brown.edu/academics/applied-mathematics/undergraduate/](http://www.brown.edu/academics/applied-mathematics/undergraduate/).

Both the A.B. and Sc.B. concentrations in Applied Mathematics require certain basic courses to be taken, but beyond this there is a great deal of flexibility as to which areas of application are pursued. Students are encouraged to take courses in applied mathematics, mathematics and one or more of the application areas in the natural sciences, social sciences or engineering. Whichever areas are chosen should be studied in some depth.

**Standard program for the A.B. degree.**

**Prerequisites**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
<td>1</td>
</tr>
<tr>
<td>&amp; MATH 0100</td>
<td>and Introductory Calculus, Part II</td>
<td>1</td>
</tr>
</tbody>
</table>

**Program**

Ten additional semester courses approved by the Division of Applied Mathematics. These classes must include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0180</td>
<td>Intermediate Calculus</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra 4</td>
<td>1</td>
</tr>
<tr>
<td>APMA 0350 &amp; APMA 0360</td>
<td>Applied Ordinary Differential Equations and Applied Partial Differential Equations</td>
<td>2</td>
</tr>
<tr>
<td>APMA 0330, APMA 0340, APMA 0360</td>
<td>will sometimes be accepted as substitutes for APMA 0350, APMA 0360. APMA 1910 cannot be used as an elective.</td>
<td>1</td>
</tr>
</tbody>
</table>

Select one course on programming from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0090</td>
<td>Introduction to Mathematical Modeling</td>
<td>1</td>
</tr>
<tr>
<td>APMA 0160</td>
<td>Introduction to Scientific Computing</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0111</td>
<td>Computing Foundations: Data</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
<td>1</td>
</tr>
</tbody>
</table>

Five additional courses, of which four should be chosen from the 1000-level courses taught by the Division of Applied Mathematics. APMA 1910 cannot be used as an elective.

Total Credits 10

1 Substitution of alternate courses for the specific requirements is subject to approval by the division.
2 Concentrators are urged to consider MATH 0540 as an alternative to MATH 0520.
3 APMA 0330, APMA 0340 will sometimes be accepted as substitutes for APMA 0350, APMA 0360. APMA 1910 cannot be used as an elective.
4 Concentrators are urged to complete their introductory programming course before the end of their sophomore year.

**Standard program for the Sc.B. degree.**

**Program**

Eighteen approved semester courses in mathematics, applied mathematics, engineering, the natural or social sciences. These classes must include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
<td>2</td>
</tr>
<tr>
<td>&amp; MATH 0100</td>
<td>and Introductory Calculus, Part II</td>
<td>2</td>
</tr>
<tr>
<td>MATH 0180</td>
<td>Intermediate Calculus</td>
<td>1</td>
</tr>
</tbody>
</table>

Brown University
Students are required to take Required Courses and prepare for careers in medicine, public health, industry, and academic research collaborations. Applied Math - Biology concentrators are in a senior capstone experience that pairs student and faculty in creative research collaborations. Students will focus in particular areas of biology. The program culminates mathematical and statistical sciences, and their application in biology. The students will focus this program aims at ensuring expertise in mathematical and statistical sciences, and their application in biology. The program culminates in a senior capstone experience that pairs student and faculty in creative research collaborations. Applied Math - Biology concentrators are prepared for careers in medicine, public health, industry, and academic research.

**Required Courses:**

Students are required to take all of the following courses.

- MATH 0090: Introductory Calculus, Part I 1
- MATH 0100: Introductory Calculus, Part II 1
- or MATH 0170: Advanced Placement Calculus

- APMA 0350: Applied Ordinary Differential Equations 2
- & APMA 0360: Applied Partial Differential Equations

- Select one senior seminar from the APMA 1930 or APMA 1940 series, or an approved equivalent.

- Select one course on programming from the following: 4
  - APMA 0090: Introduction to Mathematical Modeling
  - APMA 0160: Introduction to Scientific Computing
  - CSCI 0040: Introduction to Scientific Computing and Problem Solving
  - CSCI 0111: Computing Foundations: Data
  - CSCI 0150: Introduction to Object-Oriented Programming and Computer Science
  - CSCI 0170: Computer Science: An Integrated Introduction

Ten additional courses, of which six should be chosen from the 1000-level or higher level courses taught by the Division of Applied Mathematics. APMA 1910 cannot be used as an elective.

**Total Credits:** 18

1. Substitution of alternate courses for the specific requirements is subject to approval by the division.
2. Concentrators are urged to consider MATH 0540 as an alternative to MATH 0520.
3. APMA 0330, APMA 0340 will sometimes be accepted as substitutes for APMA 0350, APMA 0360.
4. Concentrators are urged to complete their introductory programming course before the end of their sophomore year.

### Applied Mathematics-Biology

The Applied Math - Biology concentration recognizes that mathematics is essential to address many modern biological problems in the post genomic era. Specifically, high throughput technologies have rendered vast new biological data sets that require novel analytical skills for the most basic analyses. These technologies are spawning new ‘data-driven' paradigm in the biological sciences and the fields of bioinformatics and systems biology. The foundations of these new fields are inherently mathematical, with a focus on probability, statistical inference, and systems dynamics. These mathematical methods apply very broadly in many biological fields including some like population growth, spread of disease, that predate the genomics revolution. Nevertheless, the application of these methods in areas of biology from molecular genetics to evolutionary biology has grown very rapidly in with the availability of vast amounts of genomic sequence data. Required coursework in this program aims at ensuring expertise in mathematical and statistical sciences, and their application in biology. The students will focus in particular areas of biology. The program culminates in a senior capstone experience that pairs student and faculty in creative research collaborations.

**Standard program for the Sc.B. degree**

Required coursework in this program aims at ensuring expertise in mathematical and statistical sciences, and their application in biology. The students will focus in particular areas of biology. The program culminates in a senior capstone experience that pairs student and faculty in creative research collaborations. Applied Math – Biology concentrators are prepared for careers in medicine, public health, industry, and academic research.

**Required Courses:**

Students are required to take all of the following courses.

- MATH 0090: Introductory Calculus, Part I 1
- MATH 0100: Introductory Calculus, Part II 1
- or MATH 0170: Advanced Placement Calculus

- APMA 0160: Applied Ordinary Differential Equations
- & APMA 0360: Applied Partial Differential Equations

- Select one of the following sequences: 2
  - APMA 0350: Applied Ordinary Differential Equations
  - & APMA 0360: Applied Partial Differential Equations
  - APMA 0330: Methods of Applied Mathematics I
  - & APMA 0340: Methods of Applied Mathematics II
  - APMA 1650: Statistical Inference I
  - or APMA 1655: Statistical Inference II
  - APMA 1070: Quantitative Models of Biological Systems
  - APMA 1080: Inference in Genomics and Molecular Biology
  - or NEUR 2110: Statistical Neuroscience
  - BIOL 0200: The Foundation of Living Systems (or equivalent)

**Additional Courses**

In addition to required courses listed above, students must take the following:

- Two additional courses in Applied Math or Biology. At least one of these must be a directed research course, e.g. a senior seminar or independent study in Applied Math or a directed research/independent study in Biology. For example:
  - A course from the APMA 1930 series
  - A course from the APMA 1940 series.

- APMA 1970: Independent Study
- BIOL 1950: Directed Research/Independent Study
- BIOL 1960: Directed Research/Independent Study

We strongly recommend that Applied Mathematics-Biology concentrators take one of the following programming courses on or before their first semester as a concentrator: APMA 0160, CSCI 0040, CSCI 0150, CSCI 0170, CSCI 0190, CLPS 0950. Those who do can use it as their second Applied Math or Biology course.

Four classes in the biological sciences agreed upon by the student and advisor. These four courses should form a cohesive grouping in a specific area of emphasis, at least two of which should be at the 1000-level. Some example groupings are below:

**Areas of Emphasis and Suggested Courses:**

Some areas of possible emphasis for focusing of elective courses are listed below. Given the large number of course offerings in the biosciences and neuroscience, students are free to explore classes in these areas that are not listed below. However, all classes must be approved by the concentration advisor. APMA 1910 cannot be used as an elective.

**Biochemistry**

- BIOL 0280: Biochemistry
- BIOL 1270: Advanced Biochemistry
- CHEM 0350/0360: Organic Chemistry
- CHEM 1230: Chemical Biology

**Biotechnology and Physiology**

- BIOL 0800: Principles of Physiology
- BIOL 1100: Cell Physiology and Biophysics

and/or appropriate bioengineering courses, such as:

- BIOL 1090: Polymer Science for Biomatertals
- BIOL 1120: Biomatertals
- BIOL 1140: Tissue Engineering
- BIOL 1150: Stem Cell Engineering
and an approved English writing course. While the concentration in Applied Math-Computer Science allows students to develop the use of quantitative methods in thinking about and solving problems, knowledge that is valuable in all walks of life, students who have completed the concentration have pursued graduate study, computer consulting and information industries, and scientific and statistical analysis careers in industry or government. This degree offers a standard track and a professional track.

**Requirements for the Standard Track of the Sc.B. degree.**

**Prerequisites - two semesters of Calculus, for example**

- MATH 0090 & MATH 0100 and Introductory Calculus, Part I
- MATH 0170 Advanced Placement Calculus

**Concentration Requirements (17 courses)**

**Core-Math:**

- MATH 0180 Intermediate Calculus
- or MATH 0350 Honors Calculus
- or MATH 0520 Linear Algebra
- or MATH 0540 Honors Linear Algebra
- or CSCI 0530 Coding the Matrix: An Introduction to Linear Algebra for Computer Science

**Core-Applied Mathematics:**

- APMA 0350 Applied Ordinary Differential Equations
- APMA 0360 Applied Partial Differential Equations
- APMA 1170 Introduction to Computational Linear Algebra
- or APMA 1180 Introduction to Numerical Solution of Differential Equations

**Core-Computer Science:**

- Select one of the following Series:

**Series A**

- CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
- & CSCI 0160 and Introduction to Algorithms and Data Structures

**Series B**

- CSCI 0170 Computer Science: An Integrated Introduction
- & CSCI 0180 and Computer Science: An Integrated Introduction

**Series C**

- CSCI 0190 Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level CS course, or a 1000-level course)

Select three of the following intermediate-level courses, one of which must be math-oriented and one systems-oriented.

- MATH 0420 Introduction to Discrete Structures and Probability (math)
- or MATH 0430 Introduction to Discrete Structures and Probability (math)
- or MATH 0470 Introduction to Discrete Structures and Probability (math)
- or APMA 1650 Statistical Inference I

**Honors**

Requirements and Process: Honors in the Applied Math-Biology concentration is based primarily upon an in-depth, original research project carried out under the guidance of a Brown (and usually Applied Math or BioMed) affiliated faculty advisor. Projects must be conducted for no less than two full semesters, and student must register for credit for the project via APMA 1660/BIOL 1950/BIOL 1960 or similar independent study courses. The project culminates in the writing of a thesis which is reviewed by the thesis advisor and a second reader. It is essential that the student have one advisor from the biological sciences and one in Applied Mathematics. The thesis work must be presented in the form of an oral presentation (arranged with the primary thesis advisor) or posted at the annual Undergraduate Research Day in either Applied Mathematics or Biology. For information on registering for BIOL 1950/BIOL 1960, please see https://www.brown.edu/academics/biology/undergraduate-education/undergraduate-research

Excellence in grades within the concentration as well as a satisfactory evaluation by the advisors are also required for Honors. The student's grades must place them within the upper 20% of their cohort, in accordance with the university policy on honors. Honors recipients typically maintain a Grade Point Average of 3.4 or higher in the concentration. However, in the case of outstanding independent research as demonstrated in the thesis and supported by the Thesis Committee, candidates with a GPA between 3.0 and 3.4 will be considered and are encouraged to apply.

The deadline for applying to graduate with honors in the concentration are the same as those of the biology concentrations. However, students in the joint concentration must inform the undergraduate chair in Applied Mathematics of their intention to apply for honors by these dates.

**Applied Mathematics-Computer Science**

The Sc.B. concentration in Applied Math-Computer Science provides a foundation of basic concepts and methodology of mathematical analysis and computation and prepares students for advanced work in computer science, applied mathematics, and scientific computation. Concentrators must complete courses in mathematics, applied math, computer science,
Three 1000-level Computer Science courses. Two of these courses and the intermediate courses must satisfy one of the CS pathways. Two 1000-level Applied Mathematics courses approved by the concentration advisor, of which two should constitute a standard sequence or address a common theme. Typical sequences include: APMA 1200/1210 and APMA 1650 or 1655/1660. APMA 1910 cannot be used as an elective.

A capstone course: a one-semester course, taken in the student's last undergraduate year, in which the student (or group of students) uses a significant portion of their undergraduate education, broadly interpreted, in studying some current topic in depth, to produce a culminating artifact such as a paper or software project. The title and abstract of the artifact, along with the student's and faculty-sponsor's names, will be placed in the CS website. The inclusion of a relevant image or system diagram is strongly encouraged. The complete text of the best artifacts of each class will be featured on the CS website. A senior thesis, which involves two semesters of work, may count as a capstone.

Note: CSCI 1010 and 1450 may be used either as a math-oriented intermediate course or as advanced courses. CSCI 1010 was formerly known as CSCI 510: they are the same course and hence only one may be taken for credit. CSCI 1450 was formerly known as CSCI 450: they are the same course and hence only one may be taken for credit. Applied Math 1650 or 1655 may be used in place of CSCI 1450. However, concentration credit will be given for only one of Applied Math 1650, 1655, and CSCI 1450.

Total Credits

1 APMA 1650 may only be used if not being used as an Applied Math course.
2 Pathways may be viewed here: https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-requirements-2020/pathways-for-undergraduate-and-masters-students/
3 Capstone Options may be found here: https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-requirements-2020/capstone/

Requirements for the Professional Track of the Sc.B. degree.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs. This work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:

- Which courses were put to use in your summer's work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.

Applied Mathematics-Economics

The Applied Mathematics-Economics concentration is designed to reflect the mathematical and statistical nature of modern economic theory and empirical research. This concentration has two tracks. The first is the advanced economics track, which is intended to prepare students for graduate study in economics. The second is the mathematical finance track, which is intended to prepare students for graduate study in finance, or for careers in finance or financial engineering. Both tracks have A.B. degree versions and Sc.B. degree versions, as well as a Professional track option.

Standard Program for the A.B. degree (Advanced Economics track):

Prerequisites:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td>3</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>APMA 0350</td>
<td>Applied Ordinary Differential Equations (a)</td>
<td>2</td>
</tr>
<tr>
<td>APMA 0360</td>
<td>Applied Partial Differential Equations (b)</td>
<td>2</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0160</td>
<td>Introduction to Scientific Computing (preferred)</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0111</td>
<td>Computing Foundations: Data</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
<td>1</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1200</td>
<td>Operations Research: Probabilistic Models</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1210</td>
<td>Operations Research: Deterministic Models</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1655</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
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</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1200</td>
<td>Operations Research: Probabilistic Models</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1210</td>
<td>Operations Research: Deterministic Models</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1330</td>
<td>Methods of Applied Mathematics</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1360</td>
<td>Applied Dynamical Systems</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1660</td>
<td>Statistical Inference II</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1690</td>
<td>Computational Probability and Statistics</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1720</td>
<td>Monte Carlo Simulation with Applications to Finance</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1740</td>
<td>Recent Applications of Probability and Statistics</td>
<td>1</td>
</tr>
<tr>
<td>MATH 1010</td>
<td>Analysis: Functions of One Variable</td>
<td>1</td>
</tr>
</tbody>
</table>

Economics Requirements:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I</td>
<td>1</td>
</tr>
<tr>
<td>Two 1000-level courses from the 'mathematical-economics' group</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
<td>1</td>
</tr>
</tbody>
</table>
ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
ECON 1460 Industrial Organization (Mathematical)
ECON 1470 Bargaining Theory and Applications
ECON 1490 Designing Internet Marketplaces
ECON 1640 Mathematical Econometrics II
ECON 1660 Big Data
ECON 1670 Advanced Topics in Econometrics
ECON 1750 Investments II
ECON 1820 Theory of Behavioral Economics
ECON 1850 Theory of Economic Growth
ECON 1860 The Theory of General Equilibrium
ECON 1870 Game Theory and Applications to Economics

One 1000-level course from the ‘data methods’ group: 1
ECON 1301 Economics of Education I
ECON 1310 Labor Economics
ECON 1315 Health, Education, and Social Policy
ECON 1340 Economics of Global Warming
ECON 1355 Environmental Issues in Development Economics
ECON 1360 Health Economics
ECON 1375 Inequality of Opportunity in the US
ECON 1400 The Economics of Mass Media
ECON 1430 The Economics of Social Policy
ECON 1480 Public Economics
ECON 1510 Economic Development
ECON 1530 Health, Hunger and the Household in Developing Countries
ECON 1629 Applied Research Methods for Economists
ECON 1640 Mathematical Econometrics II
ECON 1660 Big Data
ECON 1670 Advanced Topics in Econometrics
ECON 1765 Finance, Regulation, and the Economy
ECON 1825 Behavioral Economics and Public Policy
ECON 1830 Behavioral Finance

One additional 1000-level economics course: 

Total Credits 13

1 No course may be used to simultaneously satisfy (a) and (b).
2 APMA 0330 and APMA 0340 may be substituted with advisor approval. APMA 1910 cannot be used as an elective.
3 Or ECON 1110 with permission.
4 No course may be used to simultaneously satisfy the ‘mathematical economics’ and the ‘data methods’ requirements.
5 Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to 1970s may be used for university credit.

Standard program for the Sc.B. degree (Advanced Economics track):

Prerequisites:
MATH 0100 Introductory Calculus, Part II
MATH 0520 Linear Algebra

Course Requirements:
Applied Mathematics Requirements
(a) 1
APMA 0350 Applied Ordinary Differential Equations
& APMA 0360 Applied Partial Differential Equations

Select one of the following:
APMA 0160 Introduction to Scientific Computing (preferred)
CSCI 0040 Introduction to Scientific Computing and Problem Solving
CSCI 0111 Computing Foundations: Data
CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
CSCI 0170 Computer Science: An Integrated Introduction

Select one of the following:
APMA 1200 Operations Research: Probabilistic Models
APMA 1210 Operations Research: Deterministic Models
APMA 1650 Statistical Inference I or APMA 1655 Statistical Inference I
(b) 1
Select two of the following:
APMA 1200 Operations Research: Probabilistic Models
APMA 1210 Operations Research: Deterministic Models
APMA 1330 Methods of Applied Mathematics
APMA 1360 Applied Dynamical Systems
APMA 1660 Statistical Inference II
APMA 1690 Computational Probability and Statistics
APMA 1720 Monte Carlo Simulation with Applications to Finance
APMA 1740 Recent Applications of Probability and Statistics

Mathematics Requirements:
ECON 1130 Intermediate Microeconomics (Mathematical) 3
ECON 1210 Intermediate Macroeconomics
ECON 1630 Mathematical Econometrics I

Three 1000-level courses from the ‘mathematical-economics’ group: 3
ECON 1170 Welfare Economics and Social Choice Theory
ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies
ECON 1460 Industrial Organization (Mathematical)
ECON 1470 Bargaining Theory and Applications
ECON 1490 Designing Internet Marketplaces
ECON 1640 Mathematical Econometrics II
ECON 1660 Big Data
ECON 1670 Advanced Topics in Econometrics
ECON 1750 Investments II
ECON 1820 Theory of Behavioral Economics
ECON 1850 Theory of Economic Growth
ECON 1860 The Theory of General Equilibrium
ECON 1870 Game Theory and Applications to Economics

One 1000-level course from the ‘data methods’ group: 4
ECON 1301 Economics of Education I
ECON 1310 Labor Economics
ECON 1315 Health, Education, and Social Policy
ECON 1340 Economics of Global Warming
ECON 1355 Environmental Issues in Development Economics
ECON 1360 Health Economics
### Standard program for the A.B. degree (Mathematical Finance track):

**Prerequisites:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
</tbody>
</table>

**Course Requirements:** 13 Courses: 6 Applied Math and 7 Economics

#### Applied Mathematics Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0350 &amp; APMA 0360</td>
<td>Applied Ordinary Differential Equations and Applied Partial Differential Equations</td>
</tr>
</tbody>
</table>

Select one of the following:

- APMA 0160: Introduction to Scientific Computing (preferred)
- CSCI 0040: Introduction to Scientific Computing and Problem Solving
- CSCI 0111: Computing Foundations: Data
- CSCI 0150: Introduction to Object-Oriented Programming and Computer Science
- CSCI 0170: Computer Science: An Integrated Introduction
- APMA 1650: Statistical Inference I
- or APMA 1655: Statistical Inference I

(b) Select one of the following:

- APMA 1180: Introduction to Numerical Solution of Differential Equations
- APMA 1210: Operations Research: Deterministic Models
- APMA 1330: Methods of Applied Mathematics
- APMA 1360: Applied Dynamical Systems
- APMA 1660: Statistical Inference II

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1375</td>
<td>Inequality of Opportunity in the US</td>
</tr>
<tr>
<td>ECON 1400</td>
<td>The Economics of Mass Media</td>
</tr>
<tr>
<td>ECON 1430</td>
<td>The Economics of Social Policy</td>
</tr>
<tr>
<td>ECON 1480</td>
<td>Public Economics</td>
</tr>
<tr>
<td>ECON 1510</td>
<td>Economic Development</td>
</tr>
<tr>
<td>ECON 1530</td>
<td>Health, Hunger and the Household in Developing Countries</td>
</tr>
</tbody>
</table>

**Select one of the following:**

- APMA 1655: Statistical Inference I
- APMA 1690: Computational Probability and Statistics
- APMA 1720: Monte Carlo Simulation with Applications to Finance (preferred)
- APMA 1740: Recent Applications of Probability and Statistics
- MATH 1010: Analysis: Functions of One Variable

### Economics Requirements:

**ECON 1130:** Intermediate Microeconomics (Mathematical) 
**ECON 1210:** Intermediate Macroeconomics 
**ECON 1630:** Mathematical Econometrics I 
**ECON 1670:** Financial Institutions 
**ECON 1750:** Investments II 
**ECON 1760:** Investments II 
**ECON 1765:** Finance, Regulation, and the Economy 
**ECON 1780:** Advanced Topics in Corporate Finance 
**ECON 1830:** Behavioral Finance 

Select one 1000-level course from the `mathematical economics' group:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1110</td>
<td>Health, Hunger, and the Household in Developing Countries</td>
</tr>
<tr>
<td>ECON 1130</td>
<td>Health Economics</td>
</tr>
<tr>
<td>ECON 1150</td>
<td>Social Security Economics</td>
</tr>
<tr>
<td>ECON 1160</td>
<td>Economic Development</td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

Select one 1000-level course from the `financial economics' group:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1100</td>
<td>Advanced Topics in Financial Economics</td>
</tr>
<tr>
<td>ECON 1120</td>
<td>Advanced Topics in Financial Economics</td>
</tr>
<tr>
<td>ECON 1150</td>
<td>Social Security Economics</td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

Total Credits: 16

1 No course may be used to simultaneously satisfy (a) and (b).
2 APMA 0330 and APMA 0340 may be substituted with advisor approval. APMA 1910 cannot be used as an elective.
3 Or ECON 1110 with permission.
4 No course may be used to simultaneously satisfy the 'mathematical economics' and the 'data methods' requirements.
5 Students may use either ECON 1070 or ECON 1090 toward the concentration, but not both. Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.
### Standard program for the Sc.B. degree (Mathematical Finance track):

#### Prerequisites:
- MATH 0100 Introductory Calculus, Part II
- MATH 0520 Linear Algebra

#### Course Requirements: 16 courses: 7 Applied Math and 9 Economics

##### Applied Mathematics requirements:
- APMA 0350 & APMA 0360 Applied Ordinary Differential Equations and Partial Differential Equations 2
- APMA 1010 Introduction to Scientific Computing (preferred)
- APMA 1060 Programming and Object-Oriented Programming in C (Java) 1
- APMA 1120 Operations Research: Probabilistic Models 1
- APMA 1650 Statistical Inference I 1
- APMA 1655 Statistical Inference I 1

##### Economics requirements:
- ECON 1130 Intermediate Microeconomics (Mathematical) 1
- ECON 1210 Intermediate Macroeconomics 1
- ECON 1630 Mathematical Econometrics I 1
- ECON 1820 Behavioral Finance 1

Select three 1000-level courses from the 'financial economics' group: 3
- ECON 1620 Behavioral Finance
- ECON 1630 Mathematical Econometrics I
- ECON 1640 Mathematical Econometrics II

Select two 1000-level courses from the 'mathematical economics' group: 2
- ECON 1170 Welfare Economics and Social Choice Theory
- ECON 1225 Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies

Select one 1000-level course from the 'data methods' group: 1
- ECON 1800 The Theory of Economic Growth
Honors and Capstone Requirement

Admission to candidacy for honors in the concentration is granted on the following basis: 3.7 GPA for Economics courses, and a 3.5 GPA overall.

To graduate with honors, a student must write an honors thesis in the senior year following the procedures specified by the concentration (see Economics Department website).

Professional Track

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student’s concentration advisor:

- Which courses were put to use in your summer’s work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.

Archaeology and the Ancient World

The concentration in Archaeology and the Ancient World provides an opportunity to explore the multi-faceted discipline of archaeology while examining the critical early civilizations of the so-called ‘Old World’—that is, the complex societies of the Mediterranean, Egypt, and the Near East. Students will learn about the art, architecture, and material culture of the ancient world, exploring things of beauty and power, as well as the world of the everyday. Concentrators will also learn ‘how to do’ archaeology— the techniques of locating, retrieving, and analyzing ancient remains—and consider how material culture shapes our understanding of the past. Concentrators are encouraged to pursue research opportunities through summer fieldwork, museum experience, or independent study projects. The undergraduate concentration in Archaeology and the Ancient World provides students with an opportunity to explore any region or time period, and to develop their own areas of focus, such as museum studies, ethics and politics of the past, engineering and materials analysis, cultural heritage, or environmental studies.

Within this concentration, the three tracks are:

- **Archaeology and the Ancient World**: the most flexible of the concentration tracks, allowing students to explore any region or time period, and to develop their own areas of focus, such as museum studies, ethics and politics of the past, engineering and materials analysis, cultural heritage, or environmental studies.
- **Classical Archaeology**: for those interested chiefly in the ‘classic’ civilizations of the Mediterranean (especially Greece and Rome), as well as for those interested in both earlier (prehistoric) and later (medieval) periods in that geographic region.
- **Egyptian and Near Eastern Archaeology**: for those interested chiefly in the cultures of Egypt and the ancient Near East – Anatolia, the Levant, Mesopotamia – from prehistoric through Islamic times.

**Required Courses:**

The student must take a total of 10 courses, including:

**CORE REQUIREMENTS:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 0100</td>
<td>Field Archaeology in the Ancient World</td>
</tr>
<tr>
<td>ARCH 0200</td>
<td>Classical Archaeology of the Mediterranean World</td>
</tr>
<tr>
<td>anth 0500</td>
<td>Past Forward: Discovering Anthropological Archaeology</td>
</tr>
</tbody>
</table>

**One introductory course in ancient art history, preferably:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 0030</td>
<td>Art in Antiquity: An Introduction</td>
</tr>
<tr>
<td>ARCH 0150</td>
<td>Introduction to Egyptian Archaeology and Art</td>
</tr>
<tr>
<td>ARCH 0270</td>
<td>Troy Rocks! Art and Archaeology of an Epic</td>
</tr>
<tr>
<td>ARCH 0420</td>
<td>Archaeologies of the Greek Past</td>
</tr>
</tbody>
</table>

**TRACK REQUIREMENTS:**

In addition to the Core Requirements above, each of the three tracks requires two additional courses, which allow students to define their own areas of geographic and/or topical specialty.

**Archaeology and the Ancient World:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 0315</td>
<td>Heritage In and Out of Context: Museum and Archaeological Heritage</td>
</tr>
</tbody>
</table>
One ARCH course, of any level, that focuses on a part of the world OTHER than Mediterranean, Egyptian, or Near Eastern OR focuses on a particular thematic topic pertaining to archaeology, for example:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 1070</td>
<td>Archaeology of the Andes</td>
</tr>
<tr>
<td>ARCH 1170</td>
<td>Community Archaeology in Providence and Beyond</td>
</tr>
</tbody>
</table>

One non-ARCH course which EITHER relates to the study of the ancient world OR to the discipline of archaeology. Outside courses are chosen with the approval of the Concentration Advisor from appropriate 1000 level (or above) offerings in other departments such as, but not limited to: Anthropology, Classics, Egyptology and Assyriology, Environmental Studies, Geological Sciences, History, History of Art and Architecture, Religious Studies.

**TOTAL (including Core and Track Requirements):** 10

Students are strongly encouraged to consider participating in a field project, most typically after sophomore or junior year. The Joukowsky Institute’s Assistant Director and other faculty members can provide suggestions about how to explore and fund possible field projects. For each of the tracks, a capstone experience may be substituted for one of these required courses. With the permission of the Assistant Director or the Director of Undergraduate Studies, up to three successfully completed courses, from relevant and accredited study abroad programs, may be counted towards the concentration requirements. Field school courses that provide formal university transfer credit, and official transcripts, may also be used to fulfill concentration requirements.

**Honors Concentrations**

An Honors concentration in any of these tracks requires the successful completion of all the standard requirements with the addition of an Honors thesis. For the preparation of this thesis, students will ordinarily enroll in ARCH 1970 during the first semester of the junior year and ARCH 1990 during the second semester of the senior year (these courses may not be taken SINC, nor may they be used to satisfy the standard requirements of the concentration). In order to qualify for honors, students must have received more A’s than B’s in concentration courses completed.

Honors concentrations are recommended for students considering graduate work in the discipline of archaeology. Any student interested in a course of graduate study should speak to the Joukowsky Institute’s Assistant Director and faculty members as soon as possible, not least for advice about additional forms of preparation. Graduate work in the archaeology of the ancient world, for example, requires knowledge of appropriate ancient, as well as modern, languages. Students should start work on acquiring these skills as early as possible.

**The Honors Thesis**

The Honors thesis is an extended essay, usually of between 40 and 60 pages in length, researched and written under the supervision of a faculty advisor and second reader during the senior year (during which the student must be enrolled in ARCH 1970 in the Fall and ARCH 1990 in the Spring semester).

Where appropriate, the advisor or the reader, but not both of them, may be in a unit other than the Joukowsky Institute for Archaeology and the Ancient World. The specific topic and approach of the thesis are worked out between the student and the thesis advisor, with assistance from the
student's second reader. This process should begin in the latter part of the student's junior year.

A preliminary title and one page outline of the proposed Honors thesis is due to the Joukowsky Institute's Assistant Director and the thesis advisor by May 15th of the junior year.

The deadlines for thesis drafts, and for final thesis submission, will be agreed between the student and the faculty advisors. It is expected that students will have submitted at least one full chapter to their primary advisor by the end of the student's penultimate semester. The deadline for final thesis submission typically should be on or before April 15th, and must be no later than the first day of Reading Period in the final semester of senior year. Both a bound and an electronic version of the final thesis must be submitted to the Joukowsky Institute by May 1, via email to joukowsky_institute@brown.edu.

The completed thesis will be evaluated by the advisor and second reader, who will discuss its strengths and weaknesses in a joint meeting with the student; they will then make a recommendation concerning Honors, and also agree a grade for ARCH 1990.

The Honors concentrators will be asked to make a short public presentation about their work; this event will be organized by the Joukowsky Institute's Assistant Director, and usually occurs during or shortly after Reading Period.

Evaluation

The Director of Undergraduate Studies will review the student's overall record, in addition to the thesis evaluations. If all requirements have been successfully met, the recommendation will be made that the student graduates with Honors.

Architecture

The Architecture concentration allows students to develop a broad understanding of the concepts and methods for the planning and design of buildings, landscapes, and cities. The concentration was planned with the explicit goal of connecting architectural training firmly with the humanities and providing a greater awareness of global, environmental, social and economic issues in the built environment. This approach to the education of architects and urban planners is meant to provide them with the tools needed in today’s urban global society. Students who complete a specific track within the concentration will have the option of transitioning into a 2-year Masters of Architecture program at the Rhode Island School of Design or several other architecture schools.

Concentration Requirements

Two RISD double-credit Design Studios: Students will take the courses at the Rhode Island School of Design but will register at Brown.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIAA 0001</td>
<td>Architectural Design</td>
<td>4</td>
</tr>
<tr>
<td>HIAA 0002</td>
<td>Advanced Design Studio</td>
<td></td>
</tr>
</tbody>
</table>

Six Core Requirements: 6

Select Four (4) courses from RISD: Students will take the courses at the Rhode Island School of Design but will register at Brown.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIAA 0003</td>
<td>Architectural Projection (alternative IntAR Intro to Drawing)</td>
</tr>
<tr>
<td>HIAA 0004</td>
<td>Architectural Analysis</td>
</tr>
<tr>
<td>HIAA 0005</td>
<td>Structural Analysis</td>
</tr>
<tr>
<td>HIAA 0006</td>
<td>Wood Structures</td>
</tr>
<tr>
<td>HIAA 0007</td>
<td>Environmental Design II</td>
</tr>
</tbody>
</table>

Select Two (2) Courses from Brown:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIAA 0010</td>
<td>A Global History of Art and Architecture</td>
</tr>
<tr>
<td>HIAA 0042</td>
<td>Islamic Art and Architecture</td>
</tr>
<tr>
<td>HIAA 0081</td>
<td>Architecture of the House Through Space and Time</td>
</tr>
<tr>
<td>HIAA 0770</td>
<td>Architecture and Urbanism of Africa</td>
</tr>
<tr>
<td>HIAA 0850</td>
<td>Modern Architecture</td>
</tr>
<tr>
<td>or HIAA 0860</td>
<td>Contemporary Architecture</td>
</tr>
<tr>
<td>HIAA 0860</td>
<td>Contemporary Architecture</td>
</tr>
<tr>
<td>HIAA 1181</td>
<td>Prefabrication and Architecture</td>
</tr>
</tbody>
</table>

Six Additional Electives: 6

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGN 0030</td>
<td>Introduction to Engineering</td>
</tr>
<tr>
<td>ENGN 0040</td>
<td>Dynamics and Vibrations</td>
</tr>
<tr>
<td>ENGN 0310</td>
<td>Mechanics of Solids and Structures</td>
</tr>
<tr>
<td>ENGN 0930A</td>
<td>Appropriate Technology</td>
</tr>
<tr>
<td>ENGN 0930C</td>
<td>DesignStudio</td>
</tr>
<tr>
<td>ENGN 1000</td>
<td>Projects in Engineering Design I</td>
</tr>
<tr>
<td>ENGN 1300</td>
<td>Structural Analysis</td>
</tr>
<tr>
<td>ENGN 1380</td>
<td>Design of Civil Engineering Structures</td>
</tr>
<tr>
<td>ENGN 1930U</td>
<td>Renewable Energy Technologies</td>
</tr>
</tbody>
</table>

Four Additional Electives from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH 1900</td>
<td>The Archaeology of College Hill</td>
</tr>
<tr>
<td>COLT 1810H</td>
<td>Tales of Two Cities: Havana - Miami, San Juan - New York</td>
</tr>
<tr>
<td>ENGL 1760K</td>
<td>Reading New York</td>
</tr>
<tr>
<td>IAPA 1803E</td>
<td>Social Entrepreneurship</td>
</tr>
<tr>
<td>JAPN 0910B</td>
<td>Japanese Cities: Tokyo and Kyoto</td>
</tr>
<tr>
<td>LACA 1510I</td>
<td>Urban Latin America</td>
</tr>
<tr>
<td>POLS 0220</td>
<td>City Politics</td>
</tr>
<tr>
<td>POLS 1730</td>
<td>Politics of Globalization</td>
</tr>
<tr>
<td>SOC 1340</td>
<td>Principles and Methods of Geographic Information Systems</td>
</tr>
<tr>
<td>TAPS 0260</td>
<td>Stage Lighting</td>
</tr>
<tr>
<td>TAPS 1240</td>
<td>Performance Historiography and Theatre History</td>
</tr>
<tr>
<td>TAPS 1280F</td>
<td>Introduction to Set Design</td>
</tr>
<tr>
<td>TAPS 1300</td>
<td>Advanced Set Design</td>
</tr>
<tr>
<td>URBN 0210</td>
<td>The City: An Introduction to Urban Studies</td>
</tr>
<tr>
<td>URBN 1000</td>
<td>Fieldwork in the Urban Community</td>
</tr>
<tr>
<td>URBN 1870C</td>
<td>The Environment Built: Urban Environmental History and Urban Environmentalism for the 21st Century</td>
</tr>
<tr>
<td>VISA 0100</td>
<td>Studio Foundation</td>
</tr>
<tr>
<td>VISA 1210K</td>
<td>Digital Printmaking</td>
</tr>
<tr>
<td>VISA 1420</td>
<td>Sculpture II: Conceptual Propositions</td>
</tr>
</tbody>
</table>

Total Credits: 16
**Honors**

For students in the concentration who intend to go to architecture school afterwards, typically their design project in their double credit second RISD studio will be ideal for a capstone or honors project. For others, who might tend towards theory or history of architecture, an honors thesis is still a valid option.

**Astronomy**

Along with Greek, Latin, and Mathematics, Astronomy counts as one of the oldest continuously taught subjects in the Brown curriculum. It is the study of the properties of stars, galaxies, and the Universe, and as such combines elements from the disciplines of both Physics and Planetary Geology. Students pursuing this concentration complete introductory coursework in classical mechanics, relativity, and astrophysics, along with mathematics and electromagnetism. They go on to complete courses in stellar and extragalactic astrophysics as well as cosmology. Facilities available to concentrators include the historic Ladd Observatory.

**Standard concentration for the A.B. degree**

Eleven or twelve courses are required (depending on the satisfaction of prerequisites).

**Prerequisites**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0070</td>
<td>Analytical Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 0160</td>
<td>Introduction to Relativity, Waves and Quantum Physics</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 0270</td>
<td>Astronomy and Astrophysics</td>
<td>1</td>
</tr>
</tbody>
</table>

Select one of the following Series: 1-2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0170</td>
<td>Advanced Placement Calculus</td>
<td></td>
</tr>
<tr>
<td>&amp; MATH 0180</td>
<td>and Intermediate Calculus</td>
<td></td>
</tr>
<tr>
<td>MATH 0190</td>
<td>Advanced Placement Calculus (Physics/ Engineering)</td>
<td></td>
</tr>
<tr>
<td>&amp; MATH 0200</td>
<td>and Intermediate Calculus (Physics/ Engineering)</td>
<td></td>
</tr>
<tr>
<td>MATH 0350</td>
<td>Honors Calculus (or equivalent)</td>
<td></td>
</tr>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
<td></td>
</tr>
</tbody>
</table>

**Program**

Select one of the following mathematics courses: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>MATH 0540</td>
<td>Honors Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>PHYS 0720</td>
<td>Methods of Mathematical Physics</td>
<td></td>
</tr>
<tr>
<td>APMA 0330</td>
<td>Methods of Applied Mathematics I, II</td>
<td></td>
</tr>
<tr>
<td>APMA 0340</td>
<td>Methods of Applied Mathematics I, II</td>
<td></td>
</tr>
</tbody>
</table>

Select two of the following astrophysics courses: 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1100</td>
<td>General Relativity</td>
<td></td>
</tr>
<tr>
<td>PHYS 1250</td>
<td>Stellar Structure and the Interstellar Medium</td>
<td></td>
</tr>
<tr>
<td>PHYS 1270</td>
<td>Extragalactic Astronomy and High-Energy Astrophysics</td>
<td></td>
</tr>
<tr>
<td>PHYS 1280</td>
<td>Introduction to Cosmology</td>
<td></td>
</tr>
</tbody>
</table>

Three additional 1000- or 2000-level courses in physics or a related field, suggestions: 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 1670</td>
<td>Statistical Analysis of Time Series</td>
<td></td>
</tr>
<tr>
<td>EEPS 0810</td>
<td>Planetary Geology</td>
<td></td>
</tr>
<tr>
<td>EEPS 1710</td>
<td>Remote Sensing of Earth and Planetary Surfaces</td>
<td></td>
</tr>
<tr>
<td>EEPS 1810</td>
<td>Physics of Planetary Evolution</td>
<td></td>
</tr>
<tr>
<td>ENGR 1860</td>
<td>Advanced Fluid Mechanics</td>
<td></td>
</tr>
<tr>
<td>MATH 1060</td>
<td>Differential Geometry</td>
<td></td>
</tr>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 0560</td>
<td>Experiments in Modern Physics</td>
<td></td>
</tr>
<tr>
<td>PHYS 1410</td>
<td>Quantum Mechanics A</td>
<td></td>
</tr>
<tr>
<td>PHYS 1510</td>
<td>Advanced Electromagnetic Theory</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1530</td>
<td>Thermodynamics and Statistical Mechanics</td>
<td></td>
</tr>
<tr>
<td>PHYS 1560</td>
<td>Modern Physics Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits**: 11-12

1 PHYS 0050 and PHYS 0060 can be taken in lieu of PHYS 0160

**Behavioral Decision Sciences**

Leading to a Bachelor of Arts, the study of decision making at Brown covers descriptive questions like how people, institutions, and nations make judgments and decisions; normative questions about rationality, such as what constitutes the best judgments and decisions; and prescriptive questions, such as how the process of decision making can be improved to make actual decisions closer to optimal ones. By virtue of its broad interdisciplinary nature, the study of decision making covers work found in a variety of more traditional disciplines including psychology, cognitive science, economics, philosophy, computer science, and neuroscience. Professor Steven Sloman (steven_sloman@brown.edu) will be acting concentration advisor from January 2020 to December 2020. Upon declaring, concentrators are also encouraged to speak with the appropriate area specialist from among those listed here (https://www.brown.edu/academics/cognitive-linguistic-psychological-sciences/behavioral-decision-sciences/).

**Standard Program for the AB Degree**

**CLPS Classes:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0220</td>
<td>Making Decisions</td>
<td></td>
</tr>
</tbody>
</table>

Choose one of the following: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0400</td>
<td>Cognitive Neuroscience</td>
<td></td>
</tr>
<tr>
<td>CLPS 0200</td>
<td>Human Cognition</td>
<td></td>
</tr>
<tr>
<td>CLPS 0700</td>
<td>Social Psychology</td>
<td></td>
</tr>
</tbody>
</table>

Choose two of the following: 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1470</td>
<td>Mechanisms of Motivated Decision Making</td>
<td></td>
</tr>
<tr>
<td>CLPS 1495</td>
<td>Affective Neuroscience</td>
<td></td>
</tr>
<tr>
<td>CLPS 1730</td>
<td>Psychology in Business and Economics</td>
<td></td>
</tr>
<tr>
<td>CLPS 1760</td>
<td>The Moral Brain</td>
<td></td>
</tr>
<tr>
<td>CLPS 0710</td>
<td>The Psychology and Philosophy of Happiness</td>
<td></td>
</tr>
</tbody>
</table>

**Distribution Requirements:**

Select one Introductory Course from the following: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td></td>
</tr>
<tr>
<td>CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
<td></td>
</tr>
<tr>
<td>or CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
<td></td>
</tr>
<tr>
<td>or CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
<td></td>
</tr>
<tr>
<td>or CSCI 0180</td>
<td>Computer Science: An Integrated Introduction</td>
<td></td>
</tr>
<tr>
<td>or CSCI 0190</td>
<td>Accelerated Introduction to Computer Science</td>
<td></td>
</tr>
</tbody>
</table>

Select Two Advanced Courses From: 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1410</td>
<td>Artificial Intelligence</td>
<td></td>
</tr>
<tr>
<td>CSCI 1420</td>
<td>Machine Learning</td>
<td></td>
</tr>
<tr>
<td>ECON 1110</td>
<td>Intermediate Microeconomics</td>
<td></td>
</tr>
<tr>
<td>or ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td></td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
<td></td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
<td></td>
</tr>
<tr>
<td>PHIL 1550</td>
<td>Decision Theory: Foundations and Applications</td>
<td></td>
</tr>
</tbody>
</table>

**Methods Classes:**
Choose One From the Following:  
1
APMA 0650 Essential Statistics
APMA 1650 Statistical Inference I
CLPS 0900 Statistical Methods
CSCI 0100 Data Fluency for All
CSCI 1450 Probability for Computing and Data Analysis
ECON 1620 Introduction to Econometrics

Plus One of the Following:  
1
CLPS 1791 Laboratory in Social Cognition
CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
CSCI 0170 Computer Science: An Integrated Introduction
ECON 1629 Applied Research Methods for Economists
ECON 1630 Mathematical Econometrics I
PHIL 0540 Logic

Electives:  
3
Students will choose three additional courses in consultation with a concentration advisor that will constitute an integrated specialization in some area of decision science. Any advanced course taught at Brown is eligible. Such courses might include, but are not limited to:

Psychology and Cognitive Science
- CLPS 0950 Introduction to Programming
- CLPS 1292 Introduction to Programming for the Mind, Brain and Behavior
- CLPS 1370 Pragmatics
- CLPS 1970 Directed Reading in Cognitive, Linguistic and Psychological Sciences

Economics:
- ECON 1820 Theory of Behavioral Economics
- ECON 1870 Game Theory and Applications to Economics

Applied Mathematics:
- APMA 0200 Introduction to Modelling
- APMA 1690 Computational Probability and Statistics
- APMA 2640 Theory of Probability II
- APMA 2821V Neural Dynamics: Theory and Modeling

Philosophy:
- PHIL 0500 Moral Philosophy
- PHIL 1650 Moral Theories
- PHIL 1750 Epistemology

Computer Science:
- CSCI 1430 Computer Vision
- CSCI 1460 Computational Linguistics
- CSCI 1951A Data Science

Political Science:
- POLS 1090 Polarized Politics
- POLS 1150 Prosperity: The Ethics and Economics of Wealth Creation
- POLS 1470 International Negotiation and Conflict Resolution

Public Health:
- PHP 1740 Principles of Health Behavior and Health Promotion Interventions

Capstone:  
1
Fall seminar in which students write an integrative paper or do a project covering their areas of study in their senior year.

Total Credits  
13

---

1 Students may not use the same course to satisfy both the Introductory and Methods course requirements.

Students will be expected to take no more than 6 courses below the 1000-level within the concentration. Students with multiple concentrations may not apply more than 2 courses from a second concentration to the AB in Behavioral Decision Sciences. No more than 2 courses can be transferred from another institution to count toward concentration credit.

**Honors**

The Honors Program in BDS gives undergraduates a special opportunity to carry out a research project under the direction of a faculty member that they have developed a relationship with. The program also provides the opportunity for senior concentrators to receive their undergraduate degree with Honors. Participation in the program allows students to develop an understanding of research and acquire research skills and background.

Candidates for Honors in BDS must meet all of the requirements of the BDS concentration as described above. Candidates submit their application for the program at the beginning of semester 7. We encourage students to seek out a faculty mentor prior to semester 7 and to complete their methods courses and two of their three electives before semester 7. Please refer to the CLPS Honors Program page for detailed information about the specific requirements for the Honors Program in BDS.

**Biochemistry & Molecular Biology**

How does life work at the molecular level? This question is at the core of the concentration program Biochemistry and Molecular Biology. In earlier years of this discipline, the focus was on structure and function of proteins, nucleic acids, lipids, carbohydrates and small molecules such as vitamins. Today the logical approach and tools of biochemical science are being expanded to new areas in neuroscience, developmental biology, immunology, pharmacology and synthetic biology (the design of analogs of biological systems). Training in biochemistry begins with a foundation in mathematics, physics, chemistry and biology. Some courses offered in other departments, including engineering, geology and computer science, are also useful. A key component of this program is the year of hands-on research carried out in collaboration with a faculty member here at Brown. Faculty sponsors are drawn from both the Chemistry Department and the Division of Biology and Medicine, and include basic science and clinical faculty.

**Standard program for the Sc.B. degree**

Students must take twenty courses in biology, chemistry, mathematics, and physics, including the following core requirements, some of these may be fulfilled with AP credits. Students are expected to take courses that will count toward the concentration ABC/NC. Students should discuss the S/NC option with their concentration advisor if circumstances warrant consideration. Students should not register S/NC for a concentration course without advisor pre-approval.

Three courses in mathematics including two courses in  
MATH 0090/0100 or MATH 0170/0180 with a third class in statistics, math, or computer science

Two courses in physics, typically:  
- PHYS 0030 Basic Physics A
- PHYS 0030 Basic Physics B
- or PHYS 0050 Foundations of Mechanics
- or PHYS 0060 Foundations of Electromagnetism and Modern Physics
- or ENGN 0030 Introduction to Engineering
- or ENGN 0040 Dynamics and Vibrations

Three courses in physical and organic chemistry:  
- CHEM 0330 Equilibrium, Rate, and Structure
- CHEM 0350/0360 Organic Chemistry
- CHEM 0330 Equilibrium, Rate, and Structure
- CHEM 0350/0360 Organic Chemistry

One course in biophysical or related chemistry, such as:  
- CHEM 0500 Inorganic Chemistry

Four courses in biochemistry:
BIOL 0280  Biochemistry
BIOL 0285  Inquiry in Biochemistry: From Gene to Protein Function

Plus two of three upper level biochemistry courses:
BIOL 1270  Advanced Biochemistry
or CHEM 1230  Chemical Biology
or CHEM 1240  Biochemistry

Select two semester courses of independent research approved by a concentration advisor:
BIOL 1950/1960  Directed Research/Independent Study

- or -
CHEM 0970/0980  Undergraduate Research

Suggested Elective Courses:
Students are required to take five courses from the chart below or, with approval from a concentration advisor, from any science or mathematics course relevant to biochemistry, cell and molecular biology.

**Applied Mathematics Electives:**
- APMA 0330  Methods of Applied Mathematics I, II
- APMA 0410  Mathematical Methods in the Brain Sciences
- APMA 0650  Essential Statistics

**Biology Electives:**
- BIOL 0030  Principles of Nutrition
- BIOL 0150D  Techniques in Regenerative Medicine: Cells, Scaffolds and Staining
- BIOL 0170  Biotechnology in Medicine
- BIOL 0190R  Phage Hunters, Part I
- BIOL 0190S  Phage Hunters, Part II
- BIOL 0200  The Foundation of Living Systems
- BIOL 0380  The Ecology and Evolution of Infectious Disease
- BIOL 0415  Microbes in the Environment
- BIOL 0440  Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- BIOL 0470  Genetics
- BIOL 0500  Cell and Molecular Biology
- BIOL 0510  Introductory Microbiology
- BIOL 0530  Principles of Immunology
- BIOL 0800  Principles of Physiology
- BIOL 1050  Biology of the Eukaryotic Cell
- BIOL 1090  Polymer Science for Biomaterials
- BIOL 1100  Cell Physiology and Biophysics
- BIOL 1110  Topics in Signal Transduction
- BIOL 1120  Biomaterials
- BIOL 1150  Stem Cell Engineering
- BIOL 1200  Protein Biophysics and Structure
- BIOL 1210  Synthetic Biological Systems
- BIOL 1260  Physiological Pharmacology
- BIOL 1290  Cancer Biology
- BIOL 1300  Biomolecular Interactions: Health, Disease and Drug Design
- BIOL 1310  Developmental Biology
- BIOL 1330  Biology of Reproduction
- BIOL 1520  Innate Immunity
- BIOL 1540  Molecular Genetics
- BIOL 1560  Virology
- BIOL 1600  Development of Vaccines to Infectious Diseases
- BIOL 2110  Drug and Gene Delivery

**Chemistry Electives:**
- CHEM 0500  Inorganic Chemistry
- CHEM 1140  Physical Chemistry: Quantum Chemistry
- CHEM 1150  Physical Chemistry: Thermodynamics and Statistical Mechanics
- CHEM 1220  Computational Tools in Biochemistry and Chemical Biology
- CHEM 1230  Chemical Biology
- CHEM 1240  Biochemistry
- CHEM 1450  Advanced Organic Chemistry
- CHEM 2420  Organic Reactions

**Computer Science Electives:**
- CSCI 0080  A First Byte of Computer Science
- CSCI 0150  Introduction to Object-Oriented Programming and Computer Science
- CSCI 0160  Introduction to Algorithms and Data Structures
- CSCI 0170  Computer Science: An Integrated Introduction
- CSCI 0180  Computer Science: An Integrated Introduction
- CSCI 1810  Computational Molecular Biology

**Education Electives:**
- EDUC 1110  Introductory Statistics for Education Research and Policy Analysis

**Engineering Electives:**
- ENGN 0410  Materials Science

**Neuroscience Electives:**
- NEUR 0010  The Brain: An Introduction to Neuroscience
- NEUR 0650  Biology of Hearing
- NEUR 1020  Principles of Neurobiology
- NEUR 1030  Neural Systems
- NEUR 1040  Introduction to Neurogenetics
- NEUR 1670  Neuropharmacology and Synaptic Transmission
- NEUR 1740  The Diseased Brain: Mechanisms of Neurological and Psychiatric Disorders

**Physics Electives:**
- PHYS 0160  Introduction to Relativity, Waves and Quantum Physics

**Public Health Electives:**
- PHP 1501  Essentials of Data Analysis

Total Credits 20

1 Note that the mathematics and physics requirements may be satisfied by Advanced Placement credit.

2 BIOL 0285 is required for the class of 2022 onward. Students in the classes of 2019-2021 are required to take only three courses in biochemistry yet may take BIOL 0285 as an elective.

3 Students in the classes of 2019-2021 are required to take six electives. The five elective requirement applies to the class of 2022 and after.

4 or any NEUR course in Cell, Genetics, Molecular Biology, or Development.

**Honors Requirements for Biochemistry**

All ScB Biochemistry concentrators are candidates for Honors; no separate application is necessary.

The requirements for Honors in Biochemistry are:
A strong grade record in concentration courses. This means a grade point average for the concentration that is higher than 3.25.

Two semesters of Independent Study (CHEM 0970, CHEM 0980 or equivalent). Guidelines and requirements associated with Independent Study are in the Undergraduate Concentration Handbook which can be found at the department website (http://www.brown.edu/academics/biology/undergraduate/chemistry/undergraduate/).

A Thesis in a form approved by the research advisor, and recommended by the research advisor. Additional information about thesis guidelines will be provided by the Concentration Advisor in the first half of the fall semester.

**Biology**

The Biology concentration invites students to study, in depth and in breadth, the science of life and living matter. Whether pursuing the Bachelor of Arts (A.B.) or Science (Sc.B.) in biology, students can expect to learn broadly in the discipline through a selection of courses in three areas: cell and molecular biology, structure and function, and organismal biology. In addition, students pursuing the Sc.B. complete a thematic track through which they gain an in-depth understanding of a particular subfield such as, Immunopathology, Ecology and Evolutionary Biology, Physiology/Biotechnology, Cell and Molecular Biology, Physical Sciences. The concentration also emphasizes practical skills and experimental design. Concentrators are required to take at least 3 courses with a laboratory or fieldwork component. Within all of these requirements, students have a high degree of flexibility and choice. Broad research opportunities are also available across several departments within the basic sciences as well.

**Standard program for the A.B. Biology**

The concentration program for the A.B. in Biology consists of four prerequisite courses in math, chemistry, and a statistics course as well as ten courses in biological sciences, including at least one course in each of the following three areas: Area 1: Cell/Molecular Biology, Area 2: Structure/Function, and Area 3: Organismal Biology.


**Prerequisites:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td></td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td></td>
</tr>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I (or placement, MATH 0050/MATH 0060 may be substituted for MATH 0090.)</td>
<td></td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II (or placement)</td>
</tr>
<tr>
<td>MATH 0170</td>
<td>Advanced Placement Calculus (or equivalent placement)</td>
</tr>
</tbody>
</table>

Or a statistics course, to be approved by the concentration advisor.

**Ten Core Courses:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems (Required course; AP credit or similar IB or A-levels accepted, placement test available.)</td>
</tr>
</tbody>
</table>

**Area 1 (Cell/Molecular Biology)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0280</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>BIOL 0470</td>
<td>Genetics</td>
</tr>
<tr>
<td>BIOL 0500</td>
<td>Cell and Molecular Biology</td>
</tr>
<tr>
<td>BIOL 0510</td>
<td>Introductory Microbiology</td>
</tr>
<tr>
<td>BIOL 0530</td>
<td>Principles of Immunology</td>
</tr>
<tr>
<td>BIOL 1050</td>
<td>Biology of the Eukaryotic Cell</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1310</td>
<td>Developmental Biology</td>
</tr>
<tr>
<td>BIOL 1515</td>
<td>Conservation in the Genomics Age</td>
</tr>
<tr>
<td>BIOL 1810</td>
<td>21st Century Applications in Cell and Molecular Biology</td>
</tr>
<tr>
<td>BIOL 1865</td>
<td>Toxicology</td>
</tr>
<tr>
<td>NEUR 1020</td>
<td>Principles of Neurobiology</td>
</tr>
</tbody>
</table>

**Area 2 (Structure/Function)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>BIOL 0400</td>
<td>Biological Design: Structural Architecture of Organisms</td>
</tr>
<tr>
<td>BIOL 0410</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIOL 0440</td>
<td>Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses</td>
</tr>
<tr>
<td>BIOL 0800</td>
<td>Principles of Physiology</td>
</tr>
<tr>
<td>BIOL 1120</td>
<td>Biomaterials</td>
</tr>
<tr>
<td>BIOL 1155</td>
<td>Hormones and Behavior</td>
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<td>Biology of Reproduction</td>
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<tr>
<td>BIOL 1800</td>
<td>Animal Locomotion</td>
</tr>
<tr>
<td>BIOL 1865</td>
<td>Toxicology</td>
</tr>
<tr>
<td>BIOL 1880</td>
<td>Comparative Biology of the Vertebrates</td>
</tr>
<tr>
<td>NEUR 0010</td>
<td>The Brain: An Introduction to Neuroscince</td>
</tr>
</tbody>
</table>

**Area 3 (Organismal Biology)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0210</td>
<td>Diversity of Life</td>
</tr>
<tr>
<td>BIOL 0350</td>
<td>The Fossil Record: Life through Time on Earth</td>
</tr>
<tr>
<td>BIOL 0380</td>
<td>The Ecology and Evolution of Infectious Disease</td>
</tr>
<tr>
<td>BIOL 0410</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIOL 0420</td>
<td>Principles of Ecology</td>
</tr>
<tr>
<td>BIOL 0430</td>
<td>The Evolution of Plant Diversity</td>
</tr>
<tr>
<td>BIOL 0480</td>
<td>Evolutionary Biology</td>
</tr>
<tr>
<td>BIOL 1480</td>
<td>Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
</tr>
<tr>
<td>BIOL 1515</td>
<td>Conservation in the Genomics Age</td>
</tr>
<tr>
<td>BIOL 1800</td>
<td>Animal Locomotion</td>
</tr>
<tr>
<td>BIOL 1880</td>
<td>Comparative Biology of the Vertebrates</td>
</tr>
<tr>
<td>ENVS 0490</td>
<td>Environmental Science in a Changing World</td>
</tr>
</tbody>
</table>

Six additional courses chosen from BIOL and/or NEUR offerings for concentrators. The Core may include up to two related sciences, with advisor approval. The Core must also include a Senior Capstone.

SENIOR CAPSTONE: "Only applies to students who have declared in Fall 2019 or later." To be fulfilled via ONE of the following:

1. One of the following approved courses: BIOL 1100, 1250, 1515, 1555, 1565, 1575, 1560, 1820, 1970A.

2. One semester of independent research/independent study (BIOL 1950 or BIOL 1960).

3. A senior Honors thesis in Biology; Students can register for BIOL 1950 or BIOL 1960 or both.

Please visit the BUE webpage for more information.

**Total Credits**: 10

1. AP scores of 4 or 5 may substitute Math courses.
2. Biology courses for concentration credit include those numbered between 0100 - 2999. Exclusions: BIOL 1070, 1920 series courses, and BIOL 1980 can only be used as related sciences with advisor approval and do not fulfill advanced course requirements.
3 At least two biology and/or neuroscience courses must be at the advanced level (between 1000-2999). Senior Capstone can be used towards one advanced requirement. At least three of the Biology and/or Neuroscience courses must include laboratory or fieldwork. BIOL 1950/BIOL 1960, (Directed Research) may be included, but is not required. If a lab project, this can count for one of the three lab course requirements, and one advanced course.

4 No substitutions per above Area list. If a course is listed in more than one area, it may be used to fulfill one area only; the other area must be fulfilled by a different course.

Honors: Honors in biology requires a thesis and presentation based on a research project (conducted via BIOL 1950/BIOL 1960), and quality grades in the concentration. More information on faculty research are available in the Office of Biology Undergraduate Education or found at http://www.brown.edu/academics/biology/undergraduate-education/.

### Standard Program for the Sc.B. Biology

The concentration program for the Sc.B. in Biology consists of seven prerequisite courses in math, chemistry, and physics as well as thirteen to fourteen courses in biological sciences, including courses in each of the following three areas: Area 1: Cell/Molecular Biology, Area 2: Structure/Function, and Area 3: Organismal Biology, and the three-course Track. The biological sciences requirement also requires research (BIOL 1950/BIOL 1960), which should reflect the advanced cluster.

Students pursuing a ScB in Biology have the option to substitute a course for CHEM 0360 (Organic Chemistry) in their background core. For students pursuing the Marine Biology track, an upper level course in Geological Sciences may replace CHEM 0360. For students pursuing all other tracks, BIOL 0280 (Introductory Biochemistry) may serve as the replacement course. Please note that approval from the concentration advisor is required for these background course substitutions. If the student has already declared, then a revised concentration plan must be submitted and approved via the ASK system. If BIOL 0280 is used as a substitute for CHEM 0360, it cannot be counted as a core course or as an Area 1 course. Students planning to apply to medical or graduate school should seek additional advising (such as from the Health Careers Office) in crafting their course plan.


<table>
<thead>
<tr>
<th>Prerequisites:</th>
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</tr>
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<tbody>
<tr>
<td>MATH 0090 Introductory Calculus, Part I (or placement, MATH 0050/MATH 0060 may be substituted for MATH 0090)</td>
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<td>CHEM 0330 Equilibrium, Rate, and Structure (or IB credit)</td>
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<tr>
<td>CHEM 0350 Organic Chemistry</td>
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<tr>
<td>CHEM 0360 or BIOL 0280 Organic Chemistry Biochemistry</td>
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<tr>
<td>PHYS 0030 Basic Physics A (or equivalent. PHYS 0050 PHYS 0070, or ENGN 0030 may be substituted for PHYS 0030.)</td>
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<tr>
<td>PHYS 0040 Basic Physics B (or equivalent. PHYS 0060 or ENGN 0040 may be substituted for PHYS 0040.)</td>
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</table>

**Core Courses:** 2,3,4

<table>
<thead>
<tr>
<th>BIOL 0200 The Foundation of Living Systems (or placement)</th>
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<tr>
<td><strong>Area 1 (Cell/Molecular Biology)</strong></td>
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<td>BIOL 0280 Biochemistry</td>
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<td>BIOL 0470 Genetics</td>
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<tr>
<td>BIOL 1880 Comparative Biology of the Vertebrates</td>
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<tr>
<td>NEUR 0010 The Brain: An Introduction to Neuroscience</td>
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<tr>
<td><strong>Area 3 (Organismal Biology)</strong></td>
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<tr>
<td>BIOL 0210 Diversity of Life</td>
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<td>BIOL 0350 The Fossil Record: Life through Time on Earth</td>
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<td>BIOL 1480 Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
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<td>BIOL 1515 Conservation in the Genomics Age</td>
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<td>BIOL 1880 Comparative Biology of the Vertebrates</td>
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<tr>
<td>ENVS 0490 Environmental Science in a Changing World</td>
<td></td>
</tr>
</tbody>
</table>

Six additional courses chosen from BIOL and/or NEUR offerings for concentrators. The Core may include up to two related sciences, with advisor approval. The Core must also include research. 5

**RESEARCH:** 5

Typically, two courses in Core are advanced level research (BIOL 1950/1960).

**TRACK:**

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Brown University
The advanced thematic track consists of three additional biological sciences courses (not including BIOL 1950/1960 research). Tracks include: Immuno/Pathobiology; Ecology and Evolutionary Biology; Physiology and Biotechnology; Neurobiology; Physical Sciences; Marine Biology; Cell and Molecular Biology; Biomedical Informatics. At least two track courses, and preferably all three, must be above 1000-level. Track courses should form a cohesive grouping approved by an advisor and/or Associate Dean of Biology, Katherine Smith.

**Biomedical Informatics - BIOL 1565 is required for this track along with 2 additional courses from the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1555</td>
<td>Methods in Informatics and Data Science for Health</td>
</tr>
<tr>
<td>BIOL 1575</td>
<td>Evaluation of Health Information Systems</td>
</tr>
<tr>
<td>BIOL 1595</td>
<td>Artificial Intelligence in Biomedicine</td>
</tr>
</tbody>
</table>

**Cell and Molecular Biology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1050</td>
<td>Biology of the Eukaryotic Cell</td>
</tr>
<tr>
<td>BIOL 1270</td>
<td>Advanced Biochemistry</td>
</tr>
<tr>
<td>BIOL 1300</td>
<td>Biomolecular Interactions: Health, Disease and Drug Design</td>
</tr>
<tr>
<td>BIOL 1310</td>
<td>Developmental Biology</td>
</tr>
<tr>
<td>BIOL 1330</td>
<td>Biology of Reproduction</td>
</tr>
<tr>
<td>BIOL 1540</td>
<td>Molecular Genetics</td>
</tr>
<tr>
<td>BIOL 1545</td>
<td>Human Genetics and Genomics</td>
</tr>
<tr>
<td>BIOL 1810</td>
<td>21st Century Applications in Cell and Molecular Biology</td>
</tr>
<tr>
<td>BIOL 1970A</td>
<td>Stem Cell Biology</td>
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</tbody>
</table>

**Ecology and Evolutionary Biology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL 1420</td>
<td>Experimental Design in Ecology</td>
</tr>
<tr>
<td>BIOL 1430</td>
<td>Population Genetics</td>
</tr>
<tr>
<td>BIOL 1435</td>
<td>Computational Methods for Studying Demographic History with Molecular Data</td>
</tr>
<tr>
<td>BIOL 1440</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>BIOL 1450</td>
<td>Community Ecology</td>
</tr>
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<td>BIOL 1465</td>
<td>Human Population Genomics</td>
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<td>BIOL 1470</td>
<td>Conservation Biology</td>
</tr>
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<td>BIOL 1475</td>
<td>Biogeography</td>
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<td>BIOL 1480</td>
<td>Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
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<tr>
<td>BIOL 1495</td>
<td>500 Million Years of Land Plants</td>
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<tr>
<td>BIOL 1515</td>
<td>Conservation in the Genomics Age</td>
</tr>
<tr>
<td>BIOL 1800</td>
<td>Animal locomotion</td>
</tr>
<tr>
<td>BIOL 1880</td>
<td>Comparative Biology of the Vertebrates</td>
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</tbody>
</table>

**Immunobiology**

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BIOL 1250</td>
<td>Host-microbiome Interactions in Health and Disease</td>
</tr>
<tr>
<td>BIOL 1290</td>
<td>Cancer Biology</td>
</tr>
<tr>
<td>BIOL 1520</td>
<td>Innate Immunity</td>
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<tr>
<td>BIOL 1550</td>
<td>Biology of Emerging Microbial Diseases</td>
</tr>
<tr>
<td>BIOL 1560</td>
<td>Virology</td>
</tr>
<tr>
<td>BIOL 1600</td>
<td>Development of Vaccines to Infectious Diseases</td>
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</tbody>
</table>

**Marine Biology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>BIOL 1440</td>
<td>Marine Biology</td>
</tr>
<tr>
<td>GEOL (EEPS) listings 1000 level or above. Must be a coherent set of courses that are above the introductory level and approved by advisor</td>
<td></td>
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**Neurobiology**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>BIOL 1100</td>
<td>Cell Physiology and Biophysics</td>
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<td>BIOL 1110</td>
<td>Topics in Signal Transduction</td>
</tr>
<tr>
<td>BIOL 1190</td>
<td>Synaptic Transmission and Plasticity</td>
</tr>
<tr>
<td>BIOL 1260</td>
<td>Physiological Pharmacology</td>
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</table>

**NEUR listings 1000 level or above**

**Physiology and Biotechnology**

<table>
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<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1090</td>
<td>Polymer Science for Biomaterials</td>
</tr>
<tr>
<td>BIOL 1100</td>
<td>Cell Physiology and Biophysics</td>
</tr>
<tr>
<td>BIOL 1110</td>
<td>Topics in Signal Transduction</td>
</tr>
<tr>
<td>BIOL 1120</td>
<td>Biomaterials</td>
</tr>
<tr>
<td>BIOL 1140</td>
<td>Tissue Engineering</td>
</tr>
<tr>
<td>BIOL 1150</td>
<td>Stem Cell Engineering</td>
</tr>
<tr>
<td>BIOL 1190</td>
<td>Synaptic Transmission and Plasticity</td>
</tr>
<tr>
<td>BIOL 1300</td>
<td>Biomolecular Interactions: Health, Disease and Drug Design</td>
</tr>
</tbody>
</table>

**Physical Sciences**

Must be a coherent set of courses drawn from the Physical Sciences; courses must be above the introductory level and approved by advisor

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1090</td>
<td>Polymer Science for Biomaterials</td>
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<td>BIOL 1100</td>
<td>Cell Physiology and Biophysics</td>
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</tr>
<tr>
<td>BIOL 1300</td>
<td>Biomolecular Interactions: Health, Disease and Drug Design</td>
</tr>
</tbody>
</table>

**Total Credits: 13**

1. AP scores of 4 or 5 may substitute Math courses.
2. Biology courses for concentration credit include those numbered between 0100-2999. Exclusions: BIOL 1070, 1920 series courses, and BIOL 1980 can only be used as related sciences with advisor approval and do not fulfill advanced course requirements.
3. At least two biology and/or neuroscience courses must be at the advanced level (between 1000-2999). At least three of the biology and/or neuroscience courses must be laboratory or fieldwork. BIOL 1950/BIOL 1960 can count for one of the three lab courses requirements and one advanced course.
4. No substitutions per above Area list. If a course is listed in more than one area, it may be used to fulfill one area only; the other area must be fulfilled by a different course.
5. If substantial research is carried out away from Brown, it must be approved by an appropriate Brown BioMed faculty member but does not carry course credit toward the Core program.

**Honors:** Honors in biology requires a thesis and presentation based on a research project (usually conducted via BIOL 1950/BIOL 1960), and quality grades in the concentration. Guidelines and information on faculty research are available in the Office of Biology Undergraduate Education or at http://www.brown.edu/academics/biology/undergraduate-education/.

**Stipulations for Biology Programs:**

1. For double concentrations, no more than two courses may overlap (i.e., be used to meet requirements of both programs). This includes prerequisite courses.
2. No more than two semesters of directed research may be used as concentration credits. Each does count as an individual core towards the program, but only carry one lab credit towards the three required.
3. A limited number of transfer or study abroad courses may be used within the program, subject to approval of advisor, and Associate Dean of Biology, Katherine Smith.

**Biomedical Engineering**

The Sc.B. program in Biomedical Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org/. It is jointly offered by the School of Engineering and the Division of Biology and Medicine as an interdisciplinary concentration designed for students interested in applying the methods and tools of engineering to the subject matter of biology and the life sciences. The education objectives of the Biomedical Engineering program are to prepare graduates: (1) to be employed in careers of useful service to society, including scientific and technical areas within medicine, industry, and health care delivery; (2) to demonstrate the ability to apply the basic principles of engineering and science, as well as problem solving skills and critical thinking, to a broad spectrum of biomedical engineering problems; (3) to demonstrate their ability to work in teams, and to effectively communicate and understand the broad social, ethical, economic and environmental consequences of their lifelong education. The student outcomes of this program are the ABET (1) - (7) Student Outcomes as defined by the *ABET Criteria for
Standard program for the Sc.B. degree

1. Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGN 0030</td>
<td>Introduction to Engineering</td>
<td>1</td>
</tr>
<tr>
<td>or ENGN 0031</td>
<td>Honors Introduction to Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGN 0040</td>
<td>Dynamics and Vibrations</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 0510</td>
<td>Electricity and Magnetism</td>
<td>1</td>
</tr>
<tr>
<td>or ENGN 0520</td>
<td>Electrical Circuits and Signals</td>
<td></td>
</tr>
<tr>
<td>ENGN 0720</td>
<td>Thermodynamics</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 0810</td>
<td>Fluid Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
<td></td>
</tr>
<tr>
<td>or MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td></td>
</tr>
<tr>
<td>MATH 0200</td>
<td>Intermediate Calculus (Physics/Engineering)</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 0180</td>
<td>Intermediate Calculus</td>
<td></td>
</tr>
<tr>
<td>or MATH 0350</td>
<td>Honors Calculus</td>
<td></td>
</tr>
<tr>
<td>APMA 0330</td>
<td>Methods of Applied Mathematics I, II</td>
<td>1</td>
</tr>
<tr>
<td>or APMA 0350</td>
<td>Applied Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
<tr>
<td>or BIOL 0495</td>
<td>Statistical Analysis of Biological Data</td>
<td></td>
</tr>
<tr>
<td>or PHP 1510</td>
<td>Principles of Biostatistics and Data Analysis</td>
<td></td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
<td></td>
</tr>
</tbody>
</table>

2. Upper Level Biomedical Engineering Curriculum

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGN 1110</td>
<td>Transport and Biotransport Processes</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 1210</td>
<td>Biomechanics</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 1230</td>
<td>Instrumentation Design</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 1490</td>
<td>Biomaterials</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0800</td>
<td>Principles of Physiology</td>
<td>1</td>
</tr>
</tbody>
</table>

3. Additional Biomedical Engineering Electives (Complete at least 3 courses from the following groups):

Select one or two of the following:

- ENGN 1220 Neuroengineering
- ENGN 1510 Nanoengineering and Nanomedicine
- ENGN 1520 Cardiovascular Engineering
- ENGN 1930B Biomedical Optics
- ENGN 2910S Cancer Nanotechnology
- ENGN 2912R Implantable Devices
- BIOL 1140 Tissue Engineering
- CSCI 1810 Computational Molecular Biology
- or CSCI 1820 Algorithmic Foundations of Computational Biology
- ENGN 0500 Digital Computing Systems
- ENGN 1740 Computer Aided Visualization and Design

4. Capstone Design

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGN 1930L</td>
<td>Biomedical Engineering Design and Innovation</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 1931L</td>
<td>Biomedical Engineering Design and Innovation II</td>
<td>1</td>
</tr>
</tbody>
</table>

5. General Education Requirement: At least four approved courses must be taken in the humanities and social sciences.

Total Credits: 21

1 In some cases, Independent Study may be substituted subject to Concentration Advisor approval

Biophysics

Biophysics is a quantitative science that requires a significant level of competence in physics, chemistry, mathematics, and biology. These areas therefore form the required background coursework for this program, and serve as a springboard to an advanced focus, developed in consultation with a concentration advisor. Advanced foci may include structure-function relations of macromolecules, biomechanics of cell cytoskeleton, biotechnology for drug and gene delivery, molecular mechanisms of membrane transport, sensory signal transduction, for examples. The program also requires a capstone research project that reflects this focus and may be drawn from collaborative research opportunities offered by faculty in biology, chemistry, or physics departments.

Additional detailed information about the field of Biophysics may be found at: [http://www.biophysics.org/AboutUs/Biophysics/tabid/517/Default.aspx](http://www.biophysics.org/AboutUs/Biophysics/tabid/517/Default.aspx)

Standard program for the Sc.B. degree

Requirements

Select one of the following Series:

- PHYS 0050 Foundations of Mechanics
- PHYS 0060 Foundations of Electromagnetism and Modern Physics
- PHYS 0070 Analytical Mechanics
- or PHYS 0160 and Introduction to Relativity, Waves and Quantum Physics

Annex information about the standard program for the Sc.B. degree in engineering, including coursework and requirements, is available at [http://www.brown.edu/Undergraduate/Academics/Programs/Engineering/Programs/StandardPrograms/ScBEng](http://www.brown.edu/Undergraduate/Academics/Programs/Engineering/Programs/StandardPrograms/ScBEng).
Physics 0470 Electricity and Magnetism 1
Chemistry 0330 Equilibrium, Rate, and Structure 1
Chemistry 0350 Organic Chemistry 1
Chemistry 0360 Organic Chemistry 1
Select one of the following: 1
Chemistry 0400 Biophysical and Bioinorganic Chemistry
Chemistry 1140 Physical Chemistry: Quantum Chemistry
Physics 1530 Thermodynamics and Statistical Mechanics
Physics 1610 Biological Physics
Mathematics 0100 Introductory Calculus, Part II (or equivalent) 1
Mathematics 0180 Intermediate Calculus (or equivalent) 1
Biology 0200 The Foundation of Living Systems 1
Select two additional biology courses chosen with approval of the advisor. Examples include courses in:

**Cell Biology**
- Biology 0500 Cell and Molecular Biology
- Biology 1050 Biology of the Eukaryotic Cell
- Biology 1200 Protein Biophysics and Structure

**Physiology**
- Biology 0800 Principles of Physiology
- Biology 1100 Cell Physiology and Biophysics
- Biology 1190 Synaptic Transmission and Plasticity
- Neuroscience 1020 Principles of Neurobiology

**Pharmacology**
- Biology 1260 Physiological Pharmacology

**Biotechnology**
- Biology 1090 Polymer Science for Biomaterials
- Biology 1120 Biomaterials
- Biology 1140 Tissue Engineering

Select six additional intermediate or advanced level courses, chosen from biology (e.g., biochemistry, genetics, physiology, physics, chemistry, and/or computer sciences and mathematics). Examples include:

**Biology**
- Biology 0280 Biochemistry
- Biology 0470 Genetics
- Biology 0800 Principles of Physiology
- Biology 1190 Synaptic Transmission and Plasticity

**Physics**
- Physics 0500 Advanced Classical Mechanics
- Physics 0580 Experiments in Modern Physics
- Physics 1410 Quantum Mechanics A
- Physics 1420 Quantum Mechanics B
- Physics 1610 Biological Physics

**Mathematics**
- Mathematics 0520 Linear Algebra

**Applied Mathematics**
- Applied Mathematics 0330 Methods of Applied Mathematics I, II
- Applied Mathematics 0340 Methods of Applied Mathematics I, II
- Applied Mathematics 0350 Applied Ordinary Differential Equations
- Applied Mathematics 0360 Applied Partial Differential Equations

**Chemistry**
- Chemistry 1230 Chemical Biology
- Chemistry 1450 Advanced Organic Chemistry
A course from the Chemistry 1560 series.

Select at least one semester (two are recommended) of Directed Research:

**Business, Entrepreneurship and Organizations**

Business, Entrepreneurship and Organizations (BEO) is a multidisciplinary concentration that provides a rigorous and synergistic program in the study of commercial activity grounded in economics, sociology and engineering. BEO focuses on the formation, growth, and organization of new ventures, innovation in commercial applications, financial markets and the marketplace, and management and organizational theory. Concentrators seek to understand the basic principles, approaches and vocabulary relevant to the study of entrepreneurship from the disciplines of economics, organizational sociology and engineering. Building on this multidisciplinary base, students develop specialized expertise in one of the three disciplinary approaches, with special emphasis on critical reasoning and quantitative research methods. In senior year capstone projects, students apply and integrate multi-disciplinary learning by working in groups on real world projects, including the creation of new ventures. BEO students interested in the theory and practice of addressing social challenges might consider the Engaged Scholars Program (https://www.brown.edu/academics/business-entrepreneurship-organizations/beo-engaged-scholar-program-esp/).

The Business, Entrepreneurship, and Organizations concentration is open only to students admitted in the fall of 2019 or prior.

The three tracks of the concentration are as follows:
1. Business Economics
2. Organizational Studies
3. Entrepreneurship and Technology Management

Upon completion of all concentration requirements, students receive the Bachelor of Arts (A.B.) degree in Business, Entrepreneurship and Organizations.

**The Curriculum**

**Business Economics Track**

Foundation Requirements (foundation requirements must be completed before taking the capstone in fall of senior year)
- Economics 0110 Principles of Economics 1
- Economics 1110 Intermediate Microeconomics 1
- Any two of the following three courses: 2
  - Sociology 0300 Organizations and Society
  - Sociology 1311 Micro-Organizational Theory: Social Behavior in Organizations
  - Sociology 1315 Macro-Organizational Theory: Organizations in Social Context
- Engineering 0020 Transforming Society-Technology and Choices for the Future 1
  - or Engineering 0030 Introduction to Engineering
  - or Engineering 1010 The Entrepreneurial Process: Innovation in Practice 1

**Math and Statistics Requirements**
- Mathematics 0100 Introductory Calculus, Part II 1
  - or Mathematics 0170 Advanced Placement Calculus
  - or Economics 0170 Essential Mathematics for Economics
  - Or AP BC Calculus score of 4 or higher
  - Or IB High-level Math minimum score of 5 (IB Standard-level not accepted)
### Organizational Studies Track

**Track Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0710</td>
<td>Financial Accounting</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1629</td>
<td>Applied Research Methods for Economists</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1710</td>
<td>Investments I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1720</td>
<td>Corporate Finance</td>
<td>1</td>
</tr>
</tbody>
</table>

One 1000-level economics course.

Capstone: one-semester required (must be taken fall of senior year)

BEO 1930C BEO Capstone I: Business Economics Track

**Foundation Requirements** (foundation requirements must be completed before taking the capstone in fall of senior year)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1100</td>
<td>Principles of Economics</td>
</tr>
<tr>
<td>ECON 1110</td>
<td>Intermediate Microeconomics</td>
</tr>
<tr>
<td>ENGN 0020</td>
<td>Transforming Society-Technology and Choices for the Future</td>
</tr>
<tr>
<td>or ENGN 0030</td>
<td>Introduction to Engineering</td>
</tr>
<tr>
<td>ENGN 1010</td>
<td>The Entrepreneurial Process: Innovation in Practice</td>
</tr>
</tbody>
</table>

Any two of the following three courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 0300</td>
<td>Organizations and Society</td>
</tr>
<tr>
<td>SOC 1311</td>
<td>Micro-Organizational Theory: Social Behavior in Organizations</td>
</tr>
<tr>
<td>SOC 1315</td>
<td>Macro-Organizational Theory: Organizations in Social Context</td>
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</table>

**Math and Statistics Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
</tr>
<tr>
<td>or ECON 0170</td>
<td>Essential Mathematics for Economics</td>
</tr>
<tr>
<td>or AP BC Calculus with a score of 4 or higher</td>
<td></td>
</tr>
<tr>
<td>or IB High-level Math with a minimum score of 5 (IB Standard-level is not accepted)</td>
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</table>

SOC 1100 Introductory Statistics for Social Research

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>or APMA 0650</td>
<td>Essential Statistics</td>
</tr>
<tr>
<td>or ECON 1620</td>
<td>Introduction to Econometrics</td>
</tr>
</tbody>
</table>

**Track Requirements**

One Introduction to Research Methods course (selected from the following):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 1020</td>
<td>Methods of Social Research</td>
</tr>
</tbody>
</table>

Two Organization-Relevant Electives (OREs) Not all of the courses listed here will be offered in any given semester, and others are sometimes added. The following are approved examples—please consult with courses@Brown/Brown.edu/BEO website for current offerings:

ORE courses allow students to deepen and/or broaden their exposure to topics and settings that are either strongly determined by, or strongly determining of, organizational activities and outcomes. An ORE course will have a clear linkage to commerce, organizations and/or entrepreneurship, and it will incorporate organizational phenomena and perspectives in a significant portion of its coursework.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any from the Advanced Research Methods or Advanced Organization-Studies lists; or CLPS 1250</td>
<td>Human Factors</td>
</tr>
<tr>
<td>CSCI 1900</td>
<td>csciStartup</td>
</tr>
<tr>
<td>ECON 1760</td>
<td>Financial Institutions</td>
</tr>
</tbody>
</table>

EDUC 1020 The History of American Education
EDUC 1040 Sociology of Education
EDUC 1060 Politics and Public Education
EDUC 1150 Education, the Economy and School Reform
EDUC 1650 Policy Implementation in Education
EDUC 1730 American Higher Education in Historical Context
IAPA 1700B Investigating Modes of Social Change
IAPA 1803E Social Entrepreneurship
PHP 2400 The U.S. Health Care System: Case Studies in Financing, Delivery, Regulation and Public Health
POLS 1150 Prosperity: The Ethics and Economics of Wealth Creation
POLS 1240 Politics, Markets and States in Developing Countries
POLS 1770 Education, Inequality, and American Democracy
SOC 1114 Law and Society
SOC 1115 The Enlightened Entrepreneur: Changemakers, Inspired Protagonists and Unreasonable People
SOC 1871C Sociology of the Legal Profession

One Advanced Organization Studies course (AOS). Not all of the courses listed here will be offered in any given semester, and others are sometimes added. The following are approved examples—please consult with courses@Brown/Brown.edu/BEO website for current offerings:

AOS courses directly employ and extend the theories and perspectives introduced by the foundational Organizational Studies courses. They are either taught by core Organization Studies faculty or vetted on a regular basis by the Organization Studies track advisor, to ensure that they thoroughly incorporate Organization Studies perspectives and focus primarily on organizational processes and phenomena.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1730</td>
<td>Psychology in Business and Economics</td>
</tr>
<tr>
<td>IAPA 1804E</td>
<td>Health Policy Challenges</td>
</tr>
<tr>
<td>IAPA 1700E</td>
<td>Nonprofit Organizations</td>
</tr>
<tr>
<td>MPA 2020</td>
<td>Public Budgeting and Management</td>
</tr>
<tr>
<td>SOC 1060</td>
<td>Leadership in Organizations</td>
</tr>
<tr>
<td>SOC 1128</td>
<td>Migrants, Refugees and the Mediterranean</td>
</tr>
<tr>
<td>SOC 1870A</td>
<td>Investing in Social Change</td>
</tr>
<tr>
<td>SOC 1870L</td>
<td>The Economic Foundations of Everyday Life</td>
</tr>
<tr>
<td>SOC 1871O</td>
<td>Law, Innovation and Entrepreneurship</td>
</tr>
<tr>
<td>SOC 1872H</td>
<td>Sociology of FIRE: Finance, Insurance, + Real Estate</td>
</tr>
</tbody>
</table>

One Advanced Research Methods course (ARM). Not all of the courses listed here will be offered in any given semester, and others are sometimes added. The following are approved examples—please consult with courses@Brown/Brown.edu/BEO website for current offerings:

ARM courses allow students to deepen and/or broaden their expertise in one or more methods of empirical inquiry.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 1940</td>
<td>Ethnographic Research Methods</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I</td>
</tr>
<tr>
<td>EDUC 1100</td>
<td>Introduction to Qualitative Research Methods</td>
</tr>
<tr>
<td>MPA 2035</td>
<td>Statistics II for Public Policy Analysis</td>
</tr>
<tr>
<td>IAPA 1700A</td>
<td>Program Evaluation</td>
</tr>
<tr>
<td>MPA 2040</td>
<td>Statistics for Program Evaluation</td>
</tr>
</tbody>
</table>

Total Credits: 15
The concentration provides students with a broad-based understanding of chemistry and physics and is administered jointly by the two departments. Chemical Physics is an interdisciplinary field at the crossroads of chemistry and physics. For specific gateway and subfield courses, refer to the BEO website.

**Entrepreneurship and Technology Management Track**

**Foundation Requirements (foundation requirements must be completed before taking the capstone in fall of senior year)**

- **ECON 0110** Principles of Economics 1
- **ECON 1110** Intermediate Microeconomics 1
- **SOC 0300** Organizations and Society 2
- **SOC 1311** Micro-Organizational Theory: Social Behavior in Organizations
- **SOC 1315** Macro-Organizational Theory: Organizations in Social Context
- **ENGN 0030** Introduction to Engineering 1
- **ENGN 1010** The Entrepreneurial Process: Innovation in Practice 1

**Math and Statistics Requirements**

- **MATH 0200** Intermediate Calculus (Physics/Engineering) 1
- or **APMA 0330** Methods of Applied Mathematics I, II
- **SOC 1100** Introductory Statistics for Social Research 1
- or **APMA 0650** Essential Statistics
- or **ENGN 1620** Introduction to Econometrics

**Track Requirements**

- One gateway course in Engineering or another physical science 1
- Five courses that develop expertise in a technical subfield 1, 2
- Capstone: two-semesters required (must be taken in fall and spring of senior year) 2

**Chemical Physics**

Chemical Physics is an interdisciplinary field at the crossroads of chemistry and physics and is administered jointly by the two departments. The concentration provides students with a broad-based understanding of fundamental molecular sciences, as well as a background for graduate studies in physical chemistry, chemical physics, or molecular engineering. Concentrators are required to take twenty courses in chemistry, physics, and mathematics, although approved courses in applied mathematics, biology, computer science, geological sciences, or engineering may be substitutes. Chemical Physics concentrators are also advised to take at least six courses in the humanities and social sciences. Chemical Physics concentrators at all levels (first-year through seniors) are actively involved in research with faculty members in both departments.

**Standard program for the Sc.B. degree**

Twenty-one semester courses 1 in chemistry, physics, and mathematics, with a minimum of four semester courses in mathematics. The expectation is that courses required for a concentration in Chemical Physics will be taken for a letter grade. Core courses are:

- **CHEM 0330** Equilibrium, Rate, and Structure 1
- **CHEM 0350** Organic Chemistry 1
- **CHEM 0500** Inorganic Chemistry 1
- **CHEM 1140** Physical Chemistry: Quantum Chemistry 1
- **PHYS 0070** Analytical Mechanics 1
- **PHYS 0160** Introduction to Relativity, Waves and Quantum Physics 1
- **PHYS 0470** Electricity and Magnetism 1

Select one of the following laboratory courses: 1

- **CHEM 1160** Physical Chemistry Laboratory
- **PHYS 0560** Experiments in Modern Physics
- **PHYS 1560** Modern Physics Laboratory

Select one course in statistical mechanics: 1

- **CHEM 1150** Physical Chemistry: Thermodynamics and Statistical Mechanics
- **PHYS 1530** Thermodynamics and Statistical Mechanics

- **MATH 0190** Advanced Placement Calculus (Physics/Engineering) 1
- **MATH 0200** Intermediate Calculus (Physics/Engineering) 1
- **MATH 0520** Linear Algebra 1

Seven courses, primarily at the 1000 or 2000 level, in chemistry or physics.

Select two semesters of independent study: 2

- **CHEM 0970/0980** Undergraduate Research
- **PHYS 1990** Senior Conference Course

**Honors Requirements for Chemical Physics**

All ScB Chemical Physics concentrators who completes the following requirements are candidates for Honors; no separate application is necessary.

The requirements for Honors in Chemical Physics are:

- A strong grade record in concentration courses. This means a grade point average for the concentration that is higher than 3.50.
- Two semesters of Independent Study (CHEM 0970, CHEM 0980, PHYS 1990 or equivalent). Guidelines and requirements associated with Independent Study are in the Undergraduate Concentration Handbook which can be found at the department website (http://www.brown.edu/academics/chemistry/undergraduate/).
- A Thesis in a form approved by the research advisor, and recommended by the research advisor. Additional information about thesis guidelines
Chemistry

The Chemistry concentration offers courses and research opportunities that range from fundamental studies involving the characterization and preparation of synthetic and naturally occurring molecules, to interdisciplinary studies at the interfaces of chemistry with biology, medicine, physics, engineering, and nanoscience. As early as their first year, undergraduates are able to work one-on-one or in small groups with faculty members on cutting edge research projects. The Sc.B. degree provides a thorough foundation for further graduate study or for entry-level technical positions in each area. Students seeking the Sc.B. may either pursue the standard Chemistry concentration or one of the two optional tracks: Chemical Biology or Materials Chemistry. Students may also pursue the A.B. degree in Chemistry, which provides a core education in the discipline.

Standard program for the A.B. degree

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0360</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0500</td>
<td>Inorganic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1140</td>
<td>Physical Chemistry: Quantum Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1150</td>
<td>Physical Chemistry: Thermodynamics and Statistical Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1160</td>
<td>Physical Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Two advanced science/math electives.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

1. Note that the physical chemistry courses (CHEM 1140, CHEM 1150, CHEM 1160) have mathematics and physics prerequisites.

2. At least one must be a chemistry course. BIOL 0280 is credited as a chemistry elective for chemistry concentration purposes. Non-CHEM electives are upper level science/math courses with a significant molecular focus or those that cover tools/techniques that are of utility to a chemist. You should discuss your elective choices with the Concentration Advisor to craft a course of study that is appropriate for your interests.

Standard program for the Sc.B. degree

The Chemistry Department offers three tracks for the Sc.B. Chemistry Concentration – a Chemistry track, a Chemical Biology track and a Materials Chemistry track. These tracks are not separate concentrations – your degree will still be an Sc.B. in Chemistry. The Chemical Biology track is designed for students who have a strong interest in the interface of chemistry with biology. The Materials Chemistry track is designed for students who have a strong interest in the interface of chemistry with nanoscience and materials science. The expectation is that courses and research opportunities required for the concentration will be taken for a letter grade.

Concentrating in Chemistry – Three tracks

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
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<td>CHEM 0360</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0500</td>
<td>Inorganic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0970</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0980</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1140</td>
<td>Physical Chemistry: Quantum Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1150</td>
<td>Physical Chemistry: Thermodynamics and Statistical Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1160</td>
<td>Physical Chemistry Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>Two advanced science/math electives.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

Chemical Biology Track:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0360</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0500</td>
<td>Inorganic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0970</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0980</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1140</td>
<td>Physical Chemistry: Quantum Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1230</td>
<td>Chemical Biology</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1240</td>
<td>Biochemistry</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0280</td>
<td>Biochemistry</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0180</td>
<td>or equivalent</td>
<td>1</td>
</tr>
<tr>
<td>Two Physics courses</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Select three of the following:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BIOL 0470</td>
<td>Genetics</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0500</td>
<td>Cell and Molecular Biology</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0510</td>
<td>Introductory Microbiology</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0530</td>
<td>Principles of Immunology</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0800</td>
<td>Principles of Physiology</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1020</td>
<td>Principles of Neurobiology</td>
<td>1</td>
</tr>
<tr>
<td>Three other electives</td>
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<td>3</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

Materials Chemistry Track:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0360</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0500</td>
<td>Inorganic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0970</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0980</td>
<td>Undergraduate Research</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1060</td>
<td>Advanced Inorganic Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1140</td>
<td>Physical Chemistry: Quantum Chemistry</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1150</td>
<td>Physical Chemistry: Thermodynamics and Statistical Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1700</td>
<td>Nanoscale Materials: Synthesis and Applications</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0180</td>
<td>or equivalent</td>
<td>1</td>
</tr>
<tr>
<td>Two Physics courses</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>One of the following courses</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BIOL 1090</td>
<td>Polymer Science for Biomaterials (or)</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 1120/</td>
<td>Biomaterials (or)</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 1140</td>
<td>Tissue Engineering (or)</td>
<td>1</td>
</tr>
<tr>
<td>ENGN 1470</td>
<td>Structure &amp; Properties of Nonmetallic Materials (or)</td>
<td>2</td>
</tr>
<tr>
<td>ENGN 1490</td>
<td>Biomaterials (or)</td>
<td>1</td>
</tr>
<tr>
<td>Five electives, at least two must be chemistry courses.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

1. BIOL 0280 is credited as a chemistry elective for the chemistry concentration. Non-CHEM electives are upper level science/math courses with a significant molecular focus or those that cover tools/techniques that are of utility to a chemist. You should discuss your elective choices with the Concentration Advisor to craft a course of study that is appropriate for your interests.
2 For students with a more Engineering bent, the following substitutions can be made: ENGN 0030/ENGN 0040 can be substituted for PHYS; ENGN 0410 can be substituted for CHEM 1060; ENGN 0720 for CHEM 1150.

3 NOTE: MATH 0180 has additional prerequisites.

4 NOTE: Many of the BIOL courses have BIOL 0200 as a prerequisite.

In each of these cases, CHEM 0970/CHEM 0980 should be carried out with a faculty member with an appointment in the Chemistry Department. Research with faculty advisors outside Chemistry may be allowed in some special cases. In this event, the student should speak with a concentration advisor to discuss this possibility.

Honors Requirements for Chemistry

All ScB Chemistry concentrators, and any AB concentrator who completes the following requirements, are candidates for Honors; no separate application is necessary.

The requirements for Honors in Chemistry are:

* A strong grade record in concentration courses. This means a grade point average for the concentration that is higher than 3.50.
* Two semesters of Independent Study (CHEM 0970, CHEM 0980 or equivalent. Guidelines and requirements associated with Independent Study are in the Undergraduate Concentration Handbook which can be found at the department website (http://www.brown.edu/academics/chemistry/undergraduate/).
* A Thesis in a form approved by the research advisor, and recommended by the research advisor. Additional information about thesis guidelines will be provided by the Concentration Advisor in the first half of the fall semester.
* A Poster presentation at the chemistry department's spring undergraduate poster session.

Classics

The study of Classics focuses on the languages, literature, history, culture, and legacy of Greco-Roman antiquity. An undergraduate concentration in Classics furnishes students with a broad liberal education, and provides specialized training for those students intending to enter graduate school. Students may choose to study Ancient Greek, Latin, Sanskrit, and/or related areas to be approved by the Department of Classics.

In each of these cases, CHEM 0970/CHEM 0980 should be carried out with a faculty member with an appointment in the Chemistry Department. Research with faculty advisors outside Chemistry may be allowed in some special cases. In this event, the student should speak with a concentration advisor to discuss this possibility.

Classics: One course in Greek or Latin on the 1000-level or above. 1 Select one of the following series: 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 1210</td>
<td>Mediterranean Culture Wars: Archaic Greek History, c. 1200 to 479 BC</td>
</tr>
</tbody>
</table>

And

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 1220</td>
<td>The Fall of Empires and Rise of Kings: Greek History 478 to 323 BC</td>
</tr>
<tr>
<td>or HIST 1200B</td>
<td>The Fall of Empires and Rise of Kings: Greek History to 478 to 323 BCE</td>
</tr>
</tbody>
</table>

OR

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 1310</td>
<td>Roman History I: The Rise and Fall of an Imperial Republic</td>
</tr>
</tbody>
</table>

And

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 1320</td>
<td>Roman History II: The Roman Empire and Its Impact</td>
</tr>
</tbody>
</table>

Five other courses in classics, including classical archaeology, Greek, Latin, Sanskrit, or related areas to be approved by the concentration advisor. At least three of these five courses must be offered through the Department of Classics. 2

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics. 3

Total Credits: 9

Greek

Four Greek courses on the 1000-level or above, at least one of which is to be: 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREK 1810</td>
<td>Greek Literature Survey to 450 BCE</td>
</tr>
<tr>
<td>or GREK 1820</td>
<td>Greek Literature Survey after 450 BCE</td>
</tr>
</tbody>
</table>

CLAS 1210 Mediterranean Culture Wars: Archaic Greek History, c. 1200 to 479 BC

CLAS 1220 The Fall of Empires and Rise of Kings: Greek History 478 to 323 BC

Two additional courses in classics, including classical archaeology, Greek, Latin, or related areas to be approved by the concentration advisor. At least one of these two courses must be offered through the Department of Classics. 3

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics. 3

Total Credits: 9

Additional requirements for Honors in Classics:

* A strong grade record in concentration courses. This means a grade point average for the concentration that is higher than 3.50.
* A Thesis in a form approved by the research advisor, and recommended by the research advisor. Additional information about thesis guidelines will be provided by the Concentration Advisor in the first half of the fall semester.
* A Poster presentation at the chemistry department's spring undergraduate poster session.

Greek:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREK 1110B, GREK 1110S, GREK 1111B, GREK 1150, GREK 1810, LATN 1020D, LATN 1040B, LATN 1060G, LATN 1110F, LATN 1110H, LATN 1110P, LATN 1820, LATN 1930B, and with instructor permission for those who are very advanced in Greek or Latin: GREK 2020E, GREK 2110K, and LATN 2080F/LATN 2090I.</td>
<td></td>
</tr>
</tbody>
</table>

CLAS 1310 Roman History I: The Rise and Fall of an Imperial Republic

And

CLAS 1320 Roman History II: The Roman Empire and Its Impact

or HIST 1201B Roman History II: The Empire

Five other courses in classics, including classical archaeology, Greek, Latin, Sanskrit, or related areas to be approved by the concentration advisor. At least three of these five courses must be offered through the Department of Classics. 2

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics. 3

Total Credits: 9

1 Options offered in 2018/2019 include, but are not limited to: GREK 1110B, GREK 1110S, GREK 1111B, GREK 1150, GREK 1810, LATN 1020D, LATN 1040B, LATN 1060G, LATN 1110F, LATN 1110H, LATN 1110P, LATN 1820, LATN 1930B, and with instructor permission for those who are very advanced in Greek or Latin: GREK 2020E, GREK 2110K, and LATN 2080F/LATN 2090I.

2 Options offered by the Department of Classics in 2018/2019 include, but are not limited to: CLAS 0150, CLAS 0660, CLA 0765, CLAS 0780, CLAS 0855, CLAS 0900, CLAS 1120G, CLAS 1120Q, CLAS 1120U, CLAS 1145, CLAS 1310, CLAS 1320, CLAS 1750H, GREK 0100, GREK 1110H, GREK 1110B, GREK 1110S, GREK 1150, GREK 1810, LATN 1020D, LATN 1040B, LATN 1060G, LATN 1110F, LATN 1110H, LATN 1110P, LATN 1820, LATN 1930B, SANS 0100 and SANS 0200.

3 Options offered by the Department of Classics in 2018/2019 include, but are not limited to: CLAS 0660, CLAS 0765, CLAS 0855, CLAS 1120G, CLAS 1120U, CLAS 1145, CLAS 1750H, LATN 1110H, and with instructor permission for those who are very advanced in Latin: LATN 2080F and LATN 2090I.
Latin

Four Latin courses on the 1000-level or above, at least one of which is to be:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LATIN 1810</td>
<td>Survey of Republican Literature</td>
<td>3</td>
</tr>
<tr>
<td>or LATIN 1820</td>
<td>Survey of Roman Literature II: Empire</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1310</td>
<td>Roman History I: The Rise and Fall of an Imperial Republic</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1320</td>
<td>Roman History II: The Roman Empire and Its Impact</td>
<td>2</td>
</tr>
<tr>
<td>or HIST 1201B</td>
<td>Roman History II: The Empire</td>
<td>1</td>
</tr>
</tbody>
</table>

Two additional courses in classics, including classical archaeology, Greek, Latin, or related areas to be approved by the concentration advisor. At least one of these two courses must be offered through the Department of Classics.

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics.

Total Credits: 9

Greek and Latin

Four Latin courses on the 1000-level or above, at least one of which is to be:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LATIN 1810</td>
<td>Survey of Republican Literature</td>
<td>3</td>
</tr>
<tr>
<td>or LATIN 1820</td>
<td>Survey of Roman Literature II: Empire</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1310</td>
<td>Roman History I: The Rise and Fall of an Imperial Republic</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1320</td>
<td>Roman History II: The Roman Empire and Its Impact</td>
<td>2</td>
</tr>
<tr>
<td>or HIST 1201B</td>
<td>Roman History II: The Empire</td>
<td>1</td>
</tr>
</tbody>
</table>

Four Greek courses on the 1000-level or above, at least one of which is to be:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREK 1810</td>
<td>Greek Literature Survey to 450 BCE</td>
<td>4</td>
</tr>
<tr>
<td>or GREK 1820</td>
<td>Greek Literature Survey after 450 BCE</td>
<td>2</td>
</tr>
<tr>
<td>CLAS 1210</td>
<td>Mediterranean Culture Wars: Archaic Greek History, c. 1200 to 479 BC</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1220</td>
<td>The Fall of Empires and Rise of Kings: Greek History 478 to 323 BC</td>
<td>1</td>
</tr>
<tr>
<td>or HIST 1200B</td>
<td>The Fall of Empires and Rise of Kings: Greek History to 478 to 323 BCE</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1310</td>
<td>Roman History I: The Rise and Fall of an Imperial Republic</td>
<td>1</td>
</tr>
<tr>
<td>CLAS 1320</td>
<td>Roman History II: The Roman Empire and Its Impact</td>
<td>1</td>
</tr>
<tr>
<td>or HIST 1201B</td>
<td>Roman History II: The Empire</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 12

South Asian Classics

At least one Sanskrit course above Sanskrit 0300

Three of the Sanskrit Classics Courses in Translation

Four other courses in Classics or related areas (such as Comparative Literature, Religious Studies, South Asian Studies, Early Cultures, etc.) to be approved by the concentration advisor

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics.

Total Credits: 9

Sanskrit

Two Sanskrit courses at the 1000-level or above

Two of the Sanskrit Classics Courses in Translation

Four other courses in Classics or related areas (such as Comparative Literature, Religious Studies, South Asian Studies, Early Cultures, etc.) to be approved by the concentration advisor

One further course offered by the Department of Classics and designated “Classics and Beyond,” OR a DIAP course offered by the Department of Classics.

Total Credits: 9
**Greek and Sanskrit**

Four Sanskrit courses at any level

Four Greek courses on the 1000-level or above, at least one of which is to be:

- **GREK 1810** or **GREK 1820**
  - Greek Literature Survey to 450 BCE
  - Greek Literature Survey after 450 BCE

- **CLAS 1210**
  - Mediterranean Culture Wars: Archaic
  - Mediterranean History, c. 1200 to 479 BC

- **CLAS 1220**
  - The Fall of Empires and Rise of Kings: Greek History 478 to 323 BC
  - The Fall of Empires and Rise of Kings: Greek History to 478 to 323 BCE

Two additional courses in Classics or related areas (such as Comparative Literature, Religious Studies, South Asian Studies, Early Cultures, etc.) to be approved by the concentration advisor

Total Credits

**Honors**

Students may earn honors in the concentration by presenting a satisfactory thesis, for the preparation of which they will ordinarily enroll in the relevant 1990 courses; these courses may not be used to satisfy the standard requirements for a concentration. In order to qualify, the candidate for honors in the Department of Classics ordinarily will be entering his/her seventh semester of study and must have an “A” average (3.50 or higher on a 4.00 scale) in the concentration.

**Cognitive Neuroscience**

Cognitive neuroscience is the study of higher cognitive functions in humans and their underlying neural bases. It is an integrative area of study drawing primarily from cognitive science, psychology, neuroscience, and linguistics. There are two broad directions that can be taken in this concentration - one is behavioral/experimental and the other is computational/modeling. In both, the goal is to understand the nature of cognition from a neural perspective. The standard concentration for the Sc.B. degree requires courses on the foundations, systems level, and integrative aspects of cognitive neuroscience as well as laboratory and elective courses that fit within a particular theme or category such as general cognition, perception, language development or computational/modeling. Concentrators must also complete a senior seminar course or an independent research course. Students may also participate in the work of the Brown Institute for Brain Science, an interdisciplinary program that unites ninety faculty from eleven departments.

**Standard Program for the AB degree (Effective Class of 2019)**

The A.B. concentration requires 12 courses. The Sc.B concentration additionally requires 1 laboratory course and 4 approved science courses, totaling to a total of 17 required courses.

**Common Core**

The introductory course, “CLPS 0010 Mind, Brain, and Behavior,” surveys the broad territory of the scientific study of the mind, as uniquely represented by our department. The course maps the breadth of the science of the mind, focusing on fascinating questions, garnered insights, common commitments, and successful techniques and approaches. The course could be taken by students interested in the CLPS concentrations or as an introductory survey course at the beginning of one’s college career. AP Psychology is not an acceptable equivalent for CLPS 0010.

Careers in Cognitive Neuroscience and related fields requires familiarity with statistics. Therefore, the Cognitive Neuroscience concentration requires a course in Quantitative Methods (CLPS 0900). CLPS 0900 is a prerequisite for most of the laboratory courses, so concentrators should plan to take this course by their fourth semester. The department does not grant concentration credit of AP Statistics, regardless of score. Students who feel that CLPS 0900 is too elementary can complete an approved alternative course (e.g., APMA 1650, CLPS 2906, PHP 1501, ECON 1629, APMA 1660).

**Foundations**

To provide students with a solid foundation of knowledge in their area of concentration and to minimize redundancy, the Cognitive Neuroscience concentration requires four foundation courses in Neuroscience, Cognitive Neuroscience, Cognitive Neupropsychology, and Computational Methods.

**Electives**

Each concentrator will take four additional courses that allow the student to go into depth in some of the relevant topics. Three of these courses
must be 1000-level courses. Some courses designed to count as electives will often have foundation courses as prerequisites and may include laboratory courses, content courses, or seminars.

Research Methods
Another element in the Cognitive Neuroscience concentration is a research methods course that builds on the introductory statistics course (which will be a prerequisite) but exposes students to a variety of topics in research of the mind: to empirical methods (e.g., surveys, chronometry, eye tracking, brain imaging), to common designs (e.g., factorial experimental, correlational, longitudinal), to research ethics, and to best practices of literature review. Alternatively, students may take an approved laboratory course.

Capstone
Concentrators will additionally take either a seminar course or an independent research course to serve as their capstone experience.

Additional requirements for Sc.B.
In line with university expectations, the Sc.B. requirements include a greater number of courses and especially science courses. The definition of "science" is flexible. A good number of these courses will be outside of CLPS, but several CLPS courses might fit into a coherent package as well. In addition, the Sc.B. degree also requires a lab course to provide these students with in-depth exposure to research methods in a particular area of the science of the mind.

Honors Requirement
An acceptable upper level Research Methods, for example CLPS 1900 or Honors Requirement of the science of the mind. students with in-depth exposure to research methods in a particular area of CLPS, but several CLPS courses might fit into a coherent package as well.

FOR DETAILED UPDATES, PLEASE REFER TO THE COGNITIVE, LINGUISTIC, AND PSYCHOLOGICAL SCIENCES (CLPS) UNDERGRADUATE PAGE.

Requirements for the A.B. degree

STANDARD PROGRAM FOR THE A.B. DEGREE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0010</td>
<td>Mind, Brain and Behavior: An Interdisciplinary Approach</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
<td>1</td>
</tr>
<tr>
<td>One approved course in Cognitive Neuroscience, such as:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0150</td>
<td>Behavioral Neuroscience: Introduction to Biological Psychiatry</td>
<td></td>
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<tr>
<td>CLPS 0400</td>
<td>Cognitive Neuroscience</td>
<td></td>
</tr>
<tr>
<td>CLPS 0450</td>
<td>Brain Damage and the Mind</td>
<td></td>
</tr>
<tr>
<td>One approved course in Neuroscience, such as:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>NEUR 0010</td>
<td>The Brain: An Introduction to Neuroscience</td>
<td></td>
</tr>
<tr>
<td>NEUR 1020</td>
<td>Principles of Neurobiology</td>
<td></td>
</tr>
<tr>
<td>NEUR 1030</td>
<td>Neural Systems</td>
<td></td>
</tr>
<tr>
<td>One approved course in Cognitive Neuropsychology, such as:</td>
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<tr>
<td>CLPS 0200</td>
<td>Human Cognition</td>
<td></td>
</tr>
<tr>
<td>CLPS 0450</td>
<td>Brain Damage and the Mind</td>
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</tr>
<tr>
<td>CLPS 1420</td>
<td>Cognitive Neuropsychology</td>
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</tr>
<tr>
<td>One approved course in Computational Methods, such as:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0950</td>
<td>Introduction to programming</td>
<td></td>
</tr>
<tr>
<td>CLPS 1291</td>
<td>Computational Methods for Mind, Brain and Behavior</td>
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<tr>
<td>CLPS 1492</td>
<td>Computational Cognitive Neuroscience</td>
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<tr>
<td>CLPS 1950</td>
<td>Deep Learning in Brains, Minds</td>
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<td>CSCI 0111</td>
<td>Computing Foundations: Data</td>
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<td>CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
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</tr>
<tr>
<td>NEUR 1440</td>
<td>Mechanisms and Meaning of Neural Dynamics</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 17

Requirements for the Sc.B. degree
The Sc.B. requires all twelve of the courses required by the AB, above.

Plus five additional courses as outlined, below:

One Approved Laboratory Course, such as: 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 1630</td>
<td>Big Data Neuroscience Lab</td>
</tr>
<tr>
<td>NEUR 1680</td>
<td>Computational Neuroscience</td>
</tr>
</tbody>
</table>

Four Approved Electives: 4

Any 1000-level course in CLPS or NEUR that is not being used to fulfill another requirement and fits with a unified theme is acceptable. Themes could be any of the foundation areas or some other theme that has three available 1000-level courses, for example, language, developmental or decision-making. Courses outside CLPS and NEUR may also be acceptable if they fit with the unified theme.

One Approved Seminar, such as: 1

Acceptable seminars: Any 1000-level seminar in CLPS or NEUR.

Research Methods: 1

Acceptable Laboratory courses: Any 1000-level course in CLPS or NEUR. Laboratory courses outside of CLPS or NEUR are not acceptable.

Total Credits: 12

Four Approved Science Courses, such as: 4

Any 1000-level course in CLPS or NEUR.

Any course that is acceptable for concentrations in APMA, BIOL, CHEM, CSCI, MATH or PHYS is acceptable as a science course.

Total Credits: 17

Cognitive Science

The field of Cognitive Science uses scientific methods of experimentation, computational modeling, and brain imaging to study mental abilities as well as the development and evolution of those processes. Students must become knowledgeable in four areas of emphasis: perception, cognition, language, and computational methods, as well as a set of methods relevant to Cognitive Science research. Students then create their own focus area of study, potentially integrating coursework from the Cognitive, Linguistic, and Psychological Sciences department with a diverse subset of fields including Computer Science, Neuroscience, Philosophy, Anthropology, Applied Math and Education. The A.B. program is primarily for students interested in studying human mental processes and acquiring a research orientation to the study of the mind. The Sc.B. program is designed for students who wish to develop a stronger background in Cognitive Science and requires students to engage in a specific research project in the focus area of their choosing. We recommend that prospective concentrators register for one of the gateway courses and at least one other core course in their first or second year.

Concentration Requirements (Effective, Class of 2019)
The A.B. concentration requires 12 courses. The Sc.B concentration additionally requires 1 laboratory course and 4 approved science courses, totaling to a total of 17 required courses.
Common Core

The introductory course, “CLPS 0010 Mind, Brain, and Behavior,” surveys the broad territory of the scientific study of the mind, as uniquely represented by our department. The course maps the breadth of the science of the mind, focusing on fascinating questions, garnered insights, common commitments, and successful techniques and approaches. The course could be taken by students interested in the CLPS concentrations or as an introduction at the beginning of one’s college career or as an integration after having completed a number of specialized courses in a particular concentration.

Careers in Cognitive Science and related fields require familiarity with statistics. Therefore, the Cognitive Science concentration requires a course in Quantitative Methods (CLPS 0900). CLPS 0900 is a prerequisite for most of the laboratory courses, so concentrators should plan to take this course by their fourth semester. The department does not grant concentration credit of AP Statistics, regardless of score. Students who feel that CLPS 0900 is too elementary can complete an approved alternative course (e.g., APMA 1650, CLPS 2906).

Electives

Each concentrator will take four additional courses that allow the student to go into depth in some of the relevant topics. These electives must include at least two courses in one of the four foundation topics (i.e., Human Cognition, Perception, Language, and Computational Methods). The courses designed to count as electives will often have foundation courses as prerequisites and may include laboratory courses, content courses, or seminars.

Research Methods and Capstone

Another element in the Cognitive Science concentration is a research methods and capstone course. The introductory statistics course, though not required for outstanding senior concentrators to receive their undergraduate degree with Honors, Participation in the program allows students to develop an understanding of research and acquire research skills and background.

Additional requirements for Sc.B.

In line with university expectations, the Sc.B. requirements include a greater number of courses and especially science courses. The definition of “science” is flexible. A good number of these courses will be outside of CLPS, but several CLPS courses might fit into a coherent package as well. In addition, the Sc.B. degree also requires a lab course to provide these students with in-depth exposure to research methods in a particular area of the science of the mind.

Honors Requirement

The Honors Program in Cognitive Science gives undergraduates a special opportunity to carry out a research project under the direction of a faculty member. The program also provides the opportunity for outstanding senior concentrators to receive their undergraduate degree with Honors. Participation in the program allows students to develop an understanding of research and acquire research skills and background.

Candidates for Honors in Cognitive Science must meet all of the requirements of the concentration as described above. Candidates submit their application for the program in semester 7. We encourage students to seek out a faculty mentor prior to semester 7 as well as complete certain course requirements before semester 7. Normally a 3.5 grade-point average in the concentration is required for admission to the Honors program. Please refer to the CLPS Honors Program page for specific requirements for the honors program in Cognitive Science.

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Requirements for the A.B. degree

STANDARD PROGRAM FOR THE A.B. DEGREE

<table>
<thead>
<tr>
<th>Two Common Core Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0010 Mind, Brain and Behavior: An Interdisciplinary Approach</td>
</tr>
<tr>
<td>CLPS 0900 Statistical Methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Four Approved Foundation Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>One approved course in Human Cognition, such as:</td>
</tr>
<tr>
<td>CLPS 0200 Human Cognition</td>
</tr>
<tr>
<td>CLPS 0220 Making Decisions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>One approved course in Perception:</th>
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</thead>
<tbody>
<tr>
<td>CLPS 0500 Perception and Mind</td>
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<tr>
<th>One approved course in Language, such as:</th>
</tr>
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<tbody>
<tr>
<td>CLPS 0800 Language and the Mind</td>
</tr>
<tr>
<td>CLPS 0300 Introduction to Linguistics</td>
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</tbody>
</table>

<table>
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<tr>
<th>One approved course in Computational Methods, such as:</th>
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<tr>
<td>CLPS 0950 Introduction to programming</td>
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<tr>
<td>CLPS 1291 Computational Methods for Mind, Brain and Behavior</td>
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</table>

<table>
<thead>
<tr>
<th>Four Approved Electives related to Cognitive Science, such as:</th>
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<tbody>
<tr>
<td>APMA 1690 Computational Probability and Statistics</td>
</tr>
<tr>
<td>BIOL 0480 Evolutionary Biology</td>
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<tr>
<td>CLPS 1100 Animal Cognition</td>
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<td>CLPS 1210 Human Memory and Learning</td>
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<td>CLPS 1470 Mechanisms of Motivated Decision Making</td>
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<td>CLPS 1800 Language Processing</td>
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<td>CSCI 1010 Theory of Computation</td>
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<tr>
<td>CSCI 1480 Building Intelligent Robots</td>
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<td>ENGN 1580 Communication Systems</td>
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<tr>
<td>PHIL 1770 Philosophy of Mind</td>
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<tr>
<th>One Independent Study or Approved Seminar, such as:</th>
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<tbody>
<tr>
<td>CLPS 1400 The Neural Bases of Cognition</td>
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<tr>
<td>CLPS 1480B Cognitive Aging and Dementia</td>
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<td>CLPS 1480C Cognitive Control Functions of the Prefrontal Cortex</td>
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<td>CLPS 1495 Affective Neuroscience</td>
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<tr>
<td>CLPS 1900 Research Methods And Design</td>
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Total Credits: 12

Requirements for the Sc.B. degree

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</table>

Total Credits: 12

Cognitive Science
Comparative Literature

The concentration in Comparative Literature enables students to study an illustrative range of literary topics and to develop a focused critical understanding of how cultures differ from one another and what those differences mean. Our courses provide opportunities to engage with literary works across linguistic and cultural boundaries, exploring the traditions and innovations of the literatures of the world.

In the spirit of Brown’s Open Curriculum, a concentration in Comparative Literature affords great academic freedom. Advanced literature courses from any literature department at Brown count for concentration credit. Any language—ancient or modern—supported at Brown may form part of a Comparative Literature concentration program. All students take a course in literary theory and have the opportunity to complete a senior essay.

There are three concentration tracks and requirements:

- **Track 1: Comparative Literature in Two Languages**
- **Track 2: Comparative Literature in Three Languages**
- **Track 3: Literary Translation**

**Genre and Period Requirements for all concentrators:**

- One course in each literary genre (poetry, narrative, and drama/film)
- At least two advanced (1000-level) courses in each of the two literatures chosen
- At least five courses from Comparative Literature and other literature departments (up to two 100-level courses may count in this category).

**Track 1: Concentration in Comparative Literature in two languages**

Ten literature courses including:

- COLT 1210 Introduction to the Theory of Literature
- At least two advanced (1000-level) courses in each of the two literatures chosen
- At least five courses from Comparative Literature and other literature departments (up to two 100-level courses may count in this category).

**Track 2: Concentration in Comparative Literature in three languages**

Ten literature courses including:

- COLT 1210 Introduction to the Theory of Literature
- At least two advanced (1000-level) courses in each of the three literatures chosen
- At least three courses from Comparative Literature and other literature departments (up to two 100-level courses may count in this category).

**Track 3: Concentration in Literary Translation**

Ten courses including:

- COLT 1210 Introduction to the Theory of Literature
- COLT 1710 Literary Translation
- At least one course in linguistics (including COLT 2720 Literary Translation and history of the language courses).
- At least one workshop in Literary Arts
- At least two advanced (1000-level) courses in each of the two literatures chosen
- At least two courses from Comparative Literature and other literature departments (up to two 100-level courses may count in this category).
- A senior thesis, eligible for Honors, consisting of substantial work in translation with a critical introduction. Completing a thesis is required of all Track 3 students but does not guarantee departmental honors.
Notes:
Prerequisites in languages:
Students must demonstrate proficiency in the languages of their selected literatures. We recommend that prerequisite(s) for taking 1000-level courses in their languages be completed by Semester V.

Selecting literature courses in your language areas:
Readings must normally be in the original language. If English is one of your languages, courses need to be devoted chiefly to literature originally written in English.

Honors in Comparative Literature
Students in all tracks may earn honors in the concentration by successfully completing a thesis that is granted honors upon submission. Completing a thesis in any track does not guarantee departmental honors. Honors are granted upon the recommendation of the two thesis readers.

Tracks 1 & 2. Theses are analytical studies of literary topics, comparative in nature, based upon research, and usually between 50 and 100 pages. They are usually composed of 3 chapters, with an introduction and a conclusion. Students are expected to choose a topic that involves work in each of the literatures of their concentration in the original language.

Track 3. Theses consist of a substantial work in translation with a critical introduction outlining the method used and specific problems encountered, and commenting on the history of the original work together with other translations, if any.

(See detailed Guidelines for Honors Theses (http://www.brown.edu/academics/comparative-literature/undergraduate-program/honors-thesis/) in Comparative Literature on Departmental website).

Capstone option
Students in Tracks 1 & 2 not taking Honors are urged, but not required, to complete a senior essay, which may be less extensive in scope and length than the Honors thesis but which should constitute an integration of some aspect of their study.

Transfer of Credits:
Two courses per semester of study abroad may be applied to the concentration, up to a total of four courses (for two semesters abroad). A maximum of five courses from external venues (study abroad; transfer credits from other institutions, including summer study) may be applied to the concentration.

Joint or Double Concentration:
Joint or double concentration programs may also be arranged. Students may also combine a concentration in Comparative Literature with a teaching certificate in English or a modern language. A student interested in such a program should consult the advisor in the Education Department (http://www.brown.edu/academics/education/) and the advisor in Comparative Literature as early as possible (preferably by Semester V). In accordance with University policy, double concentrators are allowed a maximum overlap of two courses between concentrations.

Computational Biology
Computational biology involves the analysis and discovery of biological phenomena using computational tools, and the algorithmic design and analysis of such tools. The field is widely defined and includes foundations in computer science, applied mathematics, statistics, biochemistry, molecular biology, genetics, ecology, evolution, anatomy, neuroscience, and visualization.

Students may pursue a Bachelor of Arts or a Bachelor of Science. Students pursuing the ScB have the option of electing a concentration in Computational Biology with one of three focus areas: Computer Sciences, Biological Sciences, or Applied Mathematics & Statistics. Both programs require a senior capstone experience that pairs students and faculty in creative research collaborations.

Standard program for the A.B. degree

<table>
<thead>
<tr>
<th>Prerequisites:</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100 or MATH 0170</td>
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<tr>
<td>BIOL 0200</td>
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General Core Requirements: Biology

<table>
<thead>
<tr>
<th>General Core Requirements: Biology</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 0470</td>
<td>Genetics</td>
</tr>
<tr>
<td>BIOL 0280 or BIOL 0500</td>
<td>Biochemistry and Cell and Molecular Biology</td>
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General Core Requirements: Chemistry

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<tr>
<th>General Core Requirements: Chemistry</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 0330 or CHEM 0350</td>
<td>Equilibrium, Rate, and Structure Organic Chemistry</td>
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General Core Requirements: Computer Science

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<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
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OR

<table>
<thead>
<tr>
<th>General Core Requirements: Computer Science</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
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</table>

OR

<table>
<thead>
<tr>
<th>General Core Requirements: Computer Science</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0190 &amp; CSCI 0180 &amp; CSCI 0320 &amp; CSCI 0330 &amp; CSCI 1010</td>
<td>Accelerated Introduction to Computer Science and Computer Science: An Integrated Introduction and Introduction to Software Engineering and Introduction to Computer Systems and Theory of Computation</td>
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</table>

General Core Requirements: Probability & Statistics

<table>
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<tr>
<th>General Core Requirements: Probability &amp; Statistics</th>
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<tbody>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
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OR

<table>
<thead>
<tr>
<th>General Core Requirements: Probability &amp; Statistics</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1450</td>
<td>Probability for Computing and Data Analysis</td>
</tr>
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OR

<table>
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<tr>
<th>General Core Requirements: Probability &amp; Statistics</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1610</td>
<td>Probability</td>
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Comp Bio Core Course Requirements

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<tr>
<th>Comp Bio Core Course Requirements</th>
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<tbody>
<tr>
<td>CSCI 1810</td>
<td>Computational Molecular Biology</td>
</tr>
<tr>
<td>APMA 1080</td>
<td>Inference in Genomics and Molecular Biology</td>
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AND two of the following:

<table>
<thead>
<tr>
<th>Comp Bio Core Course Requirements</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1820</td>
<td>Algorithmic Foundations of Computational Biology</td>
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<tr>
<td>BIOL 1430</td>
<td>Population Genetics</td>
</tr>
<tr>
<td>BIOL 1465</td>
<td>Human Population Genomics</td>
</tr>
<tr>
<td>CSCI 1420</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>APMA 1690</td>
<td>Computational Probability and Statistics</td>
</tr>
<tr>
<td>APMA 1660</td>
<td>Statistical Inference II</td>
</tr>
</tbody>
</table>

Additional course with Director approval

Total Credits 12

University Writing Requirement:
As part of Brown’s writing requirement, all students must demonstrate that they have worked on their writing both in their general studies and their concentration. There are a number of ways for Computational Biology concentrators to fulfill these requirements:
- Writing an Honors Thesis
- Taking a “WRIT” course in the final two years

### Capstone Experience

Students enrolled in the computational biology concentration will complete a research project in their senior year under faculty supervision. The themes of such projects evolve with the field and the technology, but should represent a synthesis of the various specialties of the program. The requirements are either one semester of reading and research with a CCMB Faculty member or approved advisor, or a 2000-level Computational Biology course.

### Standard program for the Sc.B. degree

#### Prerequisites

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td></td>
</tr>
<tr>
<td>or MATH 0170</td>
<td></td>
</tr>
<tr>
<td>BIOL 0200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics (prerequisite BIOL 0200 or equivalent)</td>
<td></td>
</tr>
<tr>
<td>BIOL 0280</td>
<td></td>
</tr>
<tr>
<td>or BIOL 0500</td>
<td></td>
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</table>

#### General Core Course Requirements: Biology

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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<tbody>
<tr>
<td>BIOL 0470</td>
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<tr>
<td>BIOL 0470</td>
<td></td>
</tr>
<tr>
<td>or BIOL 0500</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics (prerequisite BIOL 0200 or equivalent)</td>
<td></td>
</tr>
<tr>
<td>Biochemistry</td>
<td></td>
</tr>
<tr>
<td>or Cell and Molecular Biology</td>
<td></td>
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</table>

#### General Core Requirements: Chemistry

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td></td>
</tr>
<tr>
<td>or CHEM 0350</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equilibrium, Rate, and Structure</td>
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</tr>
<tr>
<td>or Organic Chemistry</td>
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#### General Core Requirements: Computer Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>2-4</td>
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<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
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</tr>
<tr>
<td>CSCI 0190 &amp; CSCI 0180 &amp; CSCI 0320 &amp; CSCI 0330</td>
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</tr>
<tr>
<td>CSCI 0220</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Object-Oriented Programming</td>
<td></td>
</tr>
<tr>
<td>Introduction to Algorithms and Data Structures</td>
<td></td>
</tr>
<tr>
<td>Computer Science: An Integrated Introduction</td>
<td></td>
</tr>
<tr>
<td>Computer Science: An Integrated Introduction</td>
<td></td>
</tr>
<tr>
<td>Accelerated Introduction to Computer Science</td>
<td></td>
</tr>
<tr>
<td>and Computer Science: An Integrated Introduction</td>
<td></td>
</tr>
<tr>
<td>and Introduction to Software Engineering and Introduction to Computer Systems</td>
<td></td>
</tr>
<tr>
<td>Introduction to Discrete Structures and Probability</td>
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#### General Core Requirements: Probability & Statistics

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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<tbody>
<tr>
<td>APMA 1650 or CSCI 1450</td>
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</tr>
<tr>
<td>or MATH 1610</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical Inference I</td>
<td></td>
</tr>
<tr>
<td>or Probability for Computing and Data Analysis</td>
<td></td>
</tr>
</tbody>
</table>

#### General Core Requirements: Computational Biology

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1810</td>
<td></td>
</tr>
<tr>
<td>APMA 1080</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Computational Molecular Biology</td>
<td></td>
</tr>
<tr>
<td>Inference in Genomics and Molecular Biology</td>
<td></td>
</tr>
</tbody>
</table>

#### Capstone Experience

<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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<tbody>
<tr>
<td>BIOL 1950/1960</td>
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<tr>
<td>CSCI 1970</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Directed Research/Independent Study</td>
<td></td>
</tr>
<tr>
<td>Individual Independent Study</td>
<td></td>
</tr>
</tbody>
</table>

#### Six courses in one of the following three tracks:

- **Computer Science Track**
  - Three of the following:
    - CSCI 1230 Introduction to Computer Graphics
    - CSCI 1270 Database Management Systems

- **Biological Sciences track**
  - At least four courses comprising a coherent theme in one of the following areas: Biochemistry, Ecology, Evolution, or Neurobiology.
  - AND select two courses from the following:
    - CSCI 1820 Algorithmic Foundations of Computational Biology
    - PHP 2620 Statistical Methods in Bioinformatics, I
    - APMA 1660 Statistical Inference II
    - BIOL 1430 Population Genetics

- **Applied Mathematics & Statistics Track**
  - At least three courses from the following:
    - APMA 1660 Statistical Inference II
    - APMA 1690 Computational Probability and Statistics
    - CSCI 1410 Artificial Intelligence
    - APMA 0340 Methods of Applied Mathematics I, II
    - & APMA 0330 and Methods of Applied Mathematics I, II
    - OR
    - APMA 0360 & APMA 0350 and Applied Ordinary Differential Equations I

- **Honors:**
  - In order to be considered a candidate for honors, students will be expected to maintain an outstanding record, with no ‘C’s’ in concentration courses and with a minimum of an ‘A’ - average in concentration courses. In addition, students should take at least one semester, and are strongly encouraged to take 2 semesters, of reading and research with a CCMB faculty member or approved advisor. Students must submit to a public defense of their theses to be open to the CCMB community.
  - • Students seeking honors are advised to choose a Thesis Advisor prior to the end of their Junior year
  - • Students must complete the Registration form for Comp Bio and submit it to CCMB@BROWN.EDU

Any deviation from these rules must be approved by the director of undergraduate studies, in consultation with the student's advisor.
Computer Science

Computer science is now a critical tool for pursuing an ever-broadening range of topics, from outer space to the workings of the human mind. In most areas of science and in many liberal arts fields, cutting-edge work depends increasingly on computational approaches. The undergraduate program at Brown is designed to combine breadth in practical and theoretical computer science with depth in specialized areas. These areas range from traditional topics, such as analysis of algorithms, artificial intelligence, databases, distributed systems, graphics, mobile computing, networks, operating systems, programming languages, robotics and security, to novel areas including games and scientific visualization.

Our requirements are built on a collection of pathways, each representing a well defined area within computer science. Concentrators interested in particular areas can choose the courses included in particular pathways. Conversely, concentrators who are unsure of their area of interest but who have particularly enjoyed certain courses can choose pathways that include these concentrations. Students may not use more than two CSCI 1970 courses to complete the requirements for the Sc.B. and one CSCI 1970 course for the A.B. requirements.

Requirements for the Standard Track of the Sc.B. degree

**Prerequisites (0-3 courses)**

- Calculus prerequisite: students must complete or place out of second semester calculus.
  - MATH 0100 Introductory Calculus, Part II or MATH 0170 Advanced Placement Calculus or MATH 0190 Advanced Placement Calculus (Physics/Engineering)

**Concentration Requirements**

**Core-Computer Science:**

Select one of the following introductory course Series: 2

<table>
<thead>
<tr>
<th>Series A</th>
<th>Series B</th>
<th>Series C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160 Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
<td>CSCI 0170 &amp; CSCI 0180 Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
<td>CSCI 0190 Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level course, or an advanced course)</td>
</tr>
</tbody>
</table>

Thirteen CS courses numbered 0220 or higher. 13

### Additional intermediate courses so that a total of five are taken, with at least one from each of the three categories

- Two complete pathways (at least one core course from each)
- Each requires two 1000-level courses as well as one-to-three intermediate courses
- One of the courses used in one pathway must be a capstone course (defined below)
- The core and related courses used in one pathway may not overlap with those used in another
- 2000-level courses beyond those explicitly mentioned may also be used toward the concentration. They will be considered to be part of the same pathway as their thematically-related 1000-level courses

### Intermediate Courses

- One additional 1000-level course that is neither a core nor a related course for the pathways used above

**Intermediate Courses**

Students must complete the intermediate courses defined for the pathway they choose. In addition, ScB students must take at least one course from each intermediate course category to ensure they span all areas. Taking additional courses beyond those listed for the pathway may be required.

<table>
<thead>
<tr>
<th>Foundations</th>
<th>Mathematics</th>
<th>Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0220 Introduction to Discrete Structures and Probability</td>
<td>CSCI 1010 Theory of Computation</td>
<td>CSCI 0320 Introduction to Software Engineering</td>
</tr>
<tr>
<td>CSCI 0530 Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
<td>CSCI 0540 Honors Linear Algebra</td>
<td>CSCI 0330 Introduction to Computer Systems</td>
</tr>
<tr>
<td>CSCI 1450 Probability for Computing and Data Analysis</td>
<td>CSCI 1455 Statistical Inference I</td>
<td>CSCI 0340 Introduction to Discrete Structures and Probability</td>
</tr>
<tr>
<td>or MATH 0520 Linear Algebra</td>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1450 Programming and Computer Science</td>
</tr>
<tr>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1455 Statistical Inference I</td>
</tr>
<tr>
<td>CSCI 1455 Statistical Inference I</td>
<td>CSCI 1450 Programming and Computer Science</td>
<td>CSCI 0340 Introduction to Discrete Structures and Probability</td>
</tr>
<tr>
<td>or MATH 0520 Linear Algebra</td>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1455 Statistical Inference I</td>
</tr>
<tr>
<td>or CSCI 1450 Programming and Computer Science</td>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1455 Statistical Inference I</td>
</tr>
<tr>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1455 Statistical Inference I</td>
<td>or CSCI 0320 Introduction to Software Engineering</td>
</tr>
<tr>
<td>or MATH 0540 Honors Linear Algebra</td>
<td>or CSCI 1455 Statistical Inference I</td>
<td>or CSCI 0330 Introduction to Computer Systems</td>
</tr>
</tbody>
</table>

**Pathways**

Completing a pathway entails taking two courses in the pathway of which at least one is a course course for the pathway. One must also take the intermediate courses specified as part of the pathway. Certain graduate courses can also satisfy pathway requirements, see the CS Pathway page for more info:https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-requirements-2020/pathways-for-undergraduate-and-masters-students/g

**SYSTEMS: studies the design, construction, and analysis of modern, multi-faceted computing systems**

**Core Courses**

- CSCI 1380 Distributed Computer Systems
- or CSCI 1670 Operating Systems
- or CSCI 1680 Computer Networks

**Related Courses**

- CSCI 1270 Database Management Systems
- or CSCI 1310 Fundamentals of Computer Systems
- or CSCI 1320 Creating Modern Web & Mobile Applications
- or CSCI 1600 Real-Time and Embedded Software
- or CSCI 1650 Software Security and Exploitation
- or CSCI 1660 Introduction to Computer Systems Security
- or CSCI 1730 Design and Implementation of Programming Languages
- or CSCI 1760 Multiprocessor Synchronization
- or CSCI 1950Y Logic for Systems
- or ENGN 1640 Design of Computing Systems

**Intermediate Courses**

- CSCI 0330 Introduction to Computer Systems
- CSCI 0220 Introduction to Discrete Structures and Probability
- or CSCI 0320 Introduction to Software Engineering

**SOFTWARE PRINCIPLES: studies the design, construction, and analysis of modern software systems**

**Core Courses**
ARTIFICIAL INTELLIGENCE / MACHINE LEARNING:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1410</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>or CSCI 1420</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>or CSCI 1430</td>
<td>Computer Vision</td>
</tr>
<tr>
<td>or CSCI 1460</td>
<td>Computational Linguistics</td>
</tr>
<tr>
<td>or CSCI 1470</td>
<td>Deep Learning</td>
</tr>
<tr>
<td>or CSCI 1951R</td>
<td>Introduction to Robotics</td>
</tr>
<tr>
<td>CSCI 1550</td>
<td>Probabilistic Methods in Computer Science</td>
</tr>
<tr>
<td>or CSCI 1951A</td>
<td>Data Science</td>
</tr>
<tr>
<td>or CSCI 1951C</td>
<td>Designing Humanity Centered Robots</td>
</tr>
<tr>
<td>or CSCI 1951K</td>
<td>Algorithmic Game Theory</td>
</tr>
<tr>
<td>or ENGN 1610</td>
<td>Image Understanding</td>
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</table>

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1260</td>
<td>Compilers and Program Analysis</td>
</tr>
<tr>
<td>or CSCI 1320</td>
<td>Creating Modern Web &amp; Mobile Applications</td>
</tr>
<tr>
<td>or CSCI 1600</td>
<td>Real-Time and Embedded Software</td>
</tr>
<tr>
<td>or CSCI 1730</td>
<td>Design and Implementation of Programming Languages</td>
</tr>
<tr>
<td>or CSCI 1950Y</td>
<td>Logic for Systems</td>
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</table>

Related Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CSCI 1270</td>
<td>Database Management Systems</td>
</tr>
<tr>
<td>or CSCI 1380</td>
<td>Distributed Computer Systems</td>
</tr>
<tr>
<td>or CSCI 1650</td>
<td>Software Security and Exploitation</td>
</tr>
<tr>
<td>or CSCI 1680</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>or CSCI 1951I</td>
<td>CS for Social Change</td>
</tr>
<tr>
<td>or CSCI 1951T</td>
<td>Surveying VR Data Visualization Software for Research</td>
</tr>
</tbody>
</table>

DATA: Studies the management and use of large data collections

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1270</td>
<td>Database Management Systems</td>
</tr>
<tr>
<td>or CSCI 1420</td>
<td>Machine Learning</td>
</tr>
<tr>
<td>or CSCI 1951A</td>
<td>Data Science</td>
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Related Courses

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CSCI 1550</td>
<td>Probabilistic Methods in Computer Science</td>
</tr>
<tr>
<td>or CSCI 1580</td>
<td>Information Retrieval and Web Search</td>
</tr>
<tr>
<td>or ECON 1660</td>
<td>Big Data</td>
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Intermediate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CSCI 0220</td>
<td>Introduction to Discrete Structures and Probability</td>
</tr>
<tr>
<td>CSCI 0320</td>
<td>Introduction to Software Engineering</td>
</tr>
<tr>
<td>CSCI 0330</td>
<td>Introduction to Computer Systems (Data)</td>
</tr>
</tbody>
</table>

SECURITY: studies the design, construction, analysis, and defense of techniques to protect systems, data, and communications

Core Courses

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CSCI 1510</td>
<td>Introduction to Cryptography and Computer Security</td>
</tr>
<tr>
<td>or CSCI 1550</td>
<td>Probabilistic Methods in Computer Science</td>
</tr>
<tr>
<td>or CSCI 1570</td>
<td>Design and Analysis of Algorithms</td>
</tr>
<tr>
<td>or CSCI 1760</td>
<td>Multiprocessor Synchronization</td>
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Related Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CSCI 1590</td>
<td>Introduction to Computational Complexity</td>
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<tr>
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<td>Computational Molecular Biology</td>
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<tr>
<td>or CSCI 1820</td>
<td>Algorithmic Foundations of Computational Biology</td>
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<td>Computational Topology</td>
</tr>
<tr>
<td>or CSCI 1950Y</td>
<td>Logic for Systems</td>
</tr>
<tr>
<td>or CSCI 1951G</td>
<td>Optimization Methods in Finance</td>
</tr>
<tr>
<td>or CSCI 1951K</td>
<td>Algorithmic Game Theory</td>
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Intermediate Courses

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1010</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSCI 1450</td>
<td>Probability for Computing and Data Analysis</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>or MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>or CSCI 0530</td>
<td>Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
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</tbody>
</table>

Probabilistic Methods in Computer Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1230</td>
<td>Creating Modern Web &amp; Mobile Applications</td>
</tr>
<tr>
<td>or CSCI 1380</td>
<td>Distributed Computer Systems</td>
</tr>
<tr>
<td>or CSCI 1670</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>or CSCI 1680</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>or CSCI 1730</td>
<td>Design and Implementation of Programming Languages</td>
</tr>
<tr>
<td>or CSCI 1800</td>
<td>Cybersecurity and International Relations</td>
</tr>
<tr>
<td>or CSCI 1805</td>
<td>Computers, Freedom and Privacy</td>
</tr>
<tr>
<td>or CSCI 1950Y</td>
<td>Logic for Systems</td>
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</tbody>
</table>

Intermediate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0330</td>
<td>Introduction to Computer Systems</td>
</tr>
<tr>
<td>CSCI 1010</td>
<td>Theory of Computation</td>
</tr>
<tr>
<td>CSCI 0220</td>
<td>Introduction to Discrete Structures and Probability (Or Probability and Statistics (see options below))</td>
</tr>
<tr>
<td>or CSCI 1450</td>
<td>Probability for Computing and Data Analysis</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
</tbody>
</table>
Intermediate Courses

CSCI 1450 Introduction to Computer Graphics
or CSCI 1450 Introduction to Computer Animation
or CSCI 1420 Intermediate 3D Computer Animation
or CSCI 1290 Computational Photography
or CSCI 1300 User Interfaces and User Experience
or CSCI 1370 Virtual Reality Design for Science
or CSCI 1430 Computer Vision
or CSCI 1950T Advanced Animation Production

Related Courses

CSCI 1950N 2D Game Engines
or CSCI 1470 Deep Learning
or CSCI 1950U Topics in 3D Game Engine Development
or ENGN 1610 Image Understanding
or CLPS 1520 Computational Vision
or DATA 1200 Reality Remix - Experimental VR

Intermediate Courses

CSCI 0320 Introduction to Software Engineering
or CSCI 0330 Introduction to Computer Systems
MATH 0520 Linear Algebra
or MATH 0540 Honors Linear Algebra
or CSCI 0530 Coding the Matrix: An Introduction to Linear Algebra for Computer Science

COMPUTER ARCHITECTURE: studies the design, construction, and analysis of computer architecture and hardware

Core Courses

ENGN 1630 Digital Electronics Systems Design
or ENGN 1640 Design of Computing Systems
or ENGN 1650 Embedded Microprocessor Design

Related Courses

CSCI 1600 Real-Time and Embedded Software
or CSCI 1760 Multiprocessor Synchronization
or ENGN 1600 Design and Implementation of Digital Integrated Circuits

Intermediate Course

CSCI 0330 Introduction to Computer Systems

COMPUTATIONAL BIOLOGY: studies the foundations and applications of algorithms for analyzing biological data and processes

Core Courses

CSCI 1810 Computational Molecular Biology
CSCI 1820 Algorithmic Foundations of Computational Biology
CSCI 1850 Deep Learning in Genomics

Related Courses

CSCI 1420 Machine Learning
or CSCI 1430 Computer Vision
or CSCI 1951A Data Science
or CLPS 1520 Computational Vision

Intermediate Courses

CSCI 0220 Introduction to Discrete Structures and Probability
CSCI 1010 Theory of Computation
CSCI 1450 Probability for Computing and Data Analysis

or APMA 1655 Statistical Inference I

VISUAL COMPUTING: studies the creation, interaction, and analysis of images and visual information, including animation and games

Core Courses

CSCI 1300 User Interfaces and User Experience
or CSCI 1370 Virtual Reality Design for Science
or CSCI 1951C Designing Humanity Centered Robots

Related Courses

CSCI 1230 Introduction to Computer Graphics
or CSCI 1320 Creating Modern Web & Mobile Applications
or CSCI 1600 Real-Time and Embedded Software
or CSCI 1900 csclStartUp
or CSCI 1951A Data Science
or CSCI 1951I CS for Social Change
or CSCI 1951T Surveying VR Data Visualization Software for Research
or CSCI 1760 Physical Computing

Intermediate Courses

CSCI 0320 Introduction to Software Engineering
or CSCI 0330 Introduction to Computer Systems
CSCI 1450 Probability for Computing and Data Analysis
or APMA 1650 Statistical Inference I
or APMA 1655 Statistical Inference I

SELF-DESIGNED: This pathway is modeled after the Brown programs for designing one’s own concentration. Students electing this pathway must write a proposal for their pathway and have it approved by an advisor and the director of undergraduate studies. The proposal must meet the breadth and overall course requirements. This must be done by the end of the student’s seventh semester.

1 Capstone: a one-semester course, taken in the student’s last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic in depth, to produce a culminating artifact such as a paper or software project.

2 Certain 1000-level courses may be used to fill the additional 1000-level course requirements for both the AB and ScB. No more than one such course may be used for the AB concentration and no more than three for the ScB concentration. A list of approved non-CS courses is on our web page. Unless explicitly stated on our web page, such non-CS courses may not be used as part of pathways.

3 https://cs.brown.edu/degrees/undergrad/concentrating-in-cs/concentration-requirements-2020/pathways-for-undegraduate-and-masters-students/

Requirements for the Professional Track of the Sc.B. degree.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student’s concentration advisor:

- Which courses were put to use in your summer’s work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses
that would have helped you over the summer if you had been more familiar with them?
• Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
• What did you learn from the experience that probably could not have been picked up from course work?
• Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
• Would you recommend your summer experience to other Brown students? Explain.

Requirements for the Standard Track of the A.B. degree

Prerequisites (0-3 courses) 0-3
Students must complete or place out of second semester calculus.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
</tr>
<tr>
<td>or MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
</tr>
</tbody>
</table>

Concentration Requirements (9 courses)

Core Computer Science:
Select one of the following series:

Series A

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
</tr>
</tbody>
</table>

Series B

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
</tr>
</tbody>
</table>

Series C

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0190</td>
<td>Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level course, or an advanced course)</td>
</tr>
</tbody>
</table>

Seven CS courses numbered 0220 or higher 7

## One complete pathway (see ScB for pathways)

## Additional intermediate courses so that a total of three are taken with at least one in each of two different intermediate-course categories (see the ScB requirements for a listing of these categories)

## One additional 1000-level course that is neither a core nor a related course for the pathways used above

## Of the remaining two courses, at least one must be at the 1000-level or higher (i.e., one may be an intermediate course not otherwise used as part of the concentration). One course may be an approved 1000-level course from another department. Unless explicitly stated in a pathway, such non-CS courses may not be used as part of pathways.

Requirements for the Professional Track of the A.B. degree.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs.

Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:

• Which courses were put to use in your summer's work? Which topics, in particular, were important?
• In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
• Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
• What did you learn from the experience that probably could not have been picked up from course work?
• Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
• Would you recommend your summer experience to other Brown students? Explain.

Computer Science-Economics

The joint Computer Science-Economics concentration exposes students to the theoretical and practical connections between computer science and economics. It prepares students for professional careers that incorporate aspects of economics and computer technology and for academic careers conducting research in areas that emphasize the overlap between the two fields. Concentrators may choose to pursue either the A.B. or the Sc.B. degree. While the A.B. degree allows students to explore the two disciplines by taking advanced courses in both departments, its smaller number of required courses is compatible with a liberal education. The Sc.B. degree achieves greater depth in both computer science and economics by requiring more courses, and it offers students the opportunity to creatively integrate both disciplines through a design requirement. In addition to courses in economics, computer science, and applied mathematics, all concentrators must fulfill the Computer Science department's writing requirement by passing a course that involves significant expository writing.


Prerequisites (3 courses):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>or MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>or CSCI 0530</td>
<td>Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
</tr>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
</tr>
</tbody>
</table>

Required Courses: 17 courses: 8 Computer Science, 8 Economics, and a Capstone

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 1450</td>
<td>Probability for Computing and Data Analysis</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
</tr>
</tbody>
</table>

Select one of the following Series:

Series A

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
</tr>
</tbody>
</table>

Series B

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
</tr>
</tbody>
</table>

Series C
A senior thesis, which involved two semesters of work, to produce a culminating artifact such as a paper or software. One capstone course in either CS or Economics: a one-

### Two of the following intermediate courses, one of which must be math-oriented and one systems-oriented.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0190</td>
<td>Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level CS course, or a 1000-level course.)</td>
</tr>
<tr>
<td>CSCI 0220</td>
<td>Introduction to Discrete Structures and Probability (math)</td>
</tr>
<tr>
<td>CSCI 0320</td>
<td>Introduction to Software Engineering (systems)</td>
</tr>
<tr>
<td>CSCI 0330</td>
<td>Introduction to Computer Systems (systems)</td>
</tr>
<tr>
<td>CSCI 1010</td>
<td>Theory of Computation (math)</td>
</tr>
</tbody>
</table>

A pair of 1000-level CS courses that, along with the intermediate courses and math courses, satisfy one of the CS Pathways.

An additional CS course that is either at the 1000-level or an intermediate course not already used to satisfy concentration requirements. CSCI 1450 may not be used to satisfy this requirement.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I</td>
</tr>
</tbody>
</table>

### Three courses from the ‘mathematical economics’ group (CSCI 1951K can be counted as one of them, if it has not been used to satisfy the computer science requirements of the concentration and if the student has taken either ECON 1470 or ECON 1870):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
</tbody>
</table>

and any graduate Economics course

Two additional 1000-level Economics courses excluding 1620, 1960, 1970.

### A list of pre-approved pairs may be found at the approved-pairs web page (http://www.cs.brown.edu/grad/concentrations/approvedpairs.html). You are not restricted to pairs on this list, but any pair not on the list must be approved by the Computer Science director of undergraduate studies. CS Pathways can be found on the New Pathways (https://concentrations/pathways-for-undergraduate-and-masters-students/) page.

### Or ECON 1110, with permission.

Students may use either ECON 1070 or ECON 1090 toward the concentration, but not both. Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.

One capstone course (http://cs.brown.edu/degrees/undergrad/concentrations/capstone/) in either Computer Science or Economics: a one-semester course, taken in the student’s last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic (preferably at the intersection of computer science and economics) in depth, to produce a culminating artifact such as a paper or software project.

### Standard Program for the A.B. degree:

#### Prerequisites (3 courses):

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</tr>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
</tr>
</tbody>
</table>

#### Required Courses: 13 courses: 7 Computer Science and 6 Economics

<table>
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<th>Course Name</th>
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</thead>
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<tr>
<td>CSCI 1450</td>
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</tr>
</tbody>
</table>

Select one of the following series:

#### Series A

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</thead>
<tbody>
<tr>
<td>CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
</tr>
<tr>
<td>&amp; CSCI 0160</td>
<td>Introduction to Algorithms and Data Structures</td>
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</tbody>
</table>

#### Series B

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0170</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
<tr>
<td>&amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
</tbody>
</table>

#### Series C

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0190</td>
<td>Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level course, or a 1000-level course)</td>
</tr>
</tbody>
</table>

Two of the following intermediate courses, one of which must be math-oriented and one systems-oriented:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0220</td>
<td>Introduction to Discrete Structures and Probability (math)</td>
</tr>
<tr>
<td>CSCI 0320</td>
<td>Introduction to Software Engineering (systems)</td>
</tr>
</tbody>
</table>

---

1. CSCI 1450 was formerly known as CSCI 0450: they are the same course and hence one may be taken for credit. APMA 1650 or APMA 1655 may be used in place of CSCI 1450 in CS pathway requirements. However, concentration credit will be given for only one for APMA 1650, APMA 1655, and CSCI 1450.

2. CSCI 1010 may be used either as a math-oriented intermediate course or as an advanced course. CSCI 0510: They are the same course and hence only one may be taken for credit.

3. A list of pre-approved pairs may be found at the approved-pairs web page (http://www.cs.brown.edu/grad/concentrations/approvedpairs.html). You are not restricted to pairs on this list, but any pair not on the list must be approved by the Computer Science director of undergraduate studies. CS Pathways can be found on the New Pathways (https://concentrations/pathways-for-undergraduate-and-masters-students/) page.

4. Or ECON 1110, with permission.

5. Students may use either ECON 1070 or ECON 1090 toward the concentration, but not both. Note that ECON 1620, ECON 1960, and ECON 1970 (independent study) cannot be used for concentration credit. However, 1620 and 1960 can be used for university credit and up to two 1970s may be used for university credit.

6. One capstone course (http://cs.brown.edu/degrees/undergrad/concentrations/capstone/) in either Computer Science or Economics: a one-semester course, taken in the student’s last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic (preferably at the intersection of computer science and economics) in depth, to produce a culminating artifact such as a paper or software project.
Following prompts, to be approved by the student's concentration advisor:

On completion of each professional experience, the student must write a paper that is related to their concentration program. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member. Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:

- Which courses were put to use in your summer's work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?

- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.

## Contemplative Studies

The concentration in Contemplative Studies investigates the underlying philosophical, psychological, and scientific bases of human contemplative experience. Students pursue a 'third person' approach drawn from the humanities and sciences to analyze the cultural, historical, and scientific underpinnings of contemplative experiences in religion, art, music, and literature. This is developed in combination with a 'critical first-person' approach based in practical experience of contemplative techniques and methods to provide an integrated understanding of the role of contemplative thought and experience in societies and on the individuals who constitute them.

### Concentration Core (6 courses including the Senior Concentration Seminar)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>COST 0100</td>
<td>Introduction to Contemplative Studies</td>
</tr>
<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems</td>
</tr>
<tr>
<td>CLPS 0200</td>
<td>Human Cognition</td>
</tr>
<tr>
<td>CLPS 0500</td>
<td>Perception and Mind</td>
</tr>
<tr>
<td>NEUR 0010</td>
<td>The Brain: An Introduction to Neuroscience</td>
</tr>
<tr>
<td>Others with approval</td>
<td></td>
</tr>
<tr>
<td>Select one from following list:</td>
<td></td>
</tr>
<tr>
<td>COST 0200</td>
<td>Meditation and the Brain</td>
</tr>
<tr>
<td>COST 1020</td>
<td>Cognitive Neuroscience of Meditation</td>
</tr>
<tr>
<td>COST 1080</td>
<td>Meditation, Mindfulness and Health</td>
</tr>
</tbody>
</table>

Two humanities courses that present important themes that can emerge from bringing a Contemplative Studies perspective to the study of contemplative religious traditions and to the philosophical analysis of the key questions of human existence.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 1240</td>
<td>Religion and Culture</td>
</tr>
<tr>
<td>CLAS 0990</td>
<td>Karma and Free Will: The Self in Indian Philosophy</td>
</tr>
<tr>
<td>CLAS 1120G</td>
<td>The Idea of Self</td>
</tr>
<tr>
<td>COST 0040</td>
<td>Great Contemplative Traditions of Asia (or RELS 0040)</td>
</tr>
<tr>
<td>COST 0145</td>
<td>Great Contemplative Traditions of Asia (or RELS 0145)</td>
</tr>
<tr>
<td>COST 0410</td>
<td>Engaged Buddhism</td>
</tr>
<tr>
<td>COST 0420</td>
<td>The Theory and Practice of Buddhist Meditation</td>
</tr>
<tr>
<td>COST 0450</td>
<td>Stages of the Contemplative Path</td>
</tr>
<tr>
<td>PHIL 0010</td>
<td>The Place of Persons</td>
</tr>
<tr>
<td>PHIL 0220</td>
<td>Introduction to Philosophy</td>
</tr>
<tr>
<td>PHIL 0650</td>
<td>Psychology and Philosophy of Happiness</td>
</tr>
<tr>
<td>PHIL 1520</td>
<td>Consciousness</td>
</tr>
</tbody>
</table>

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### Honors

Students who meet stated requirements are eligible to write an honors thesis in their senior year. Students should consult the listed honors requirements of whichever of the two departments their primary thesis advisor belongs to, at the respective departments’ websites.

**Professional Track**

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two two-to-four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student's concentration advisor:

- Which courses were put to use in your summer's work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?

Total Credits: 13

1. Or ECON 1110, with permission.
2. CSCI 1951K can be counted as one of them, if it has not been used to satisfy the computer science requirements of the concentration and if the student has taken either ECON 1470 or ECON 1870.
3. Note that ECON 1620, ECON 1660, and ECON 1870 (independent study) cannot be used for concentration credit. However, 1620 and 1870 can be used for university credit and up to two 1970s may be used for university credit.

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### Table:

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>CSCI 0330</td>
<td>Introduction to Computer Systems (systems)</td>
</tr>
<tr>
<td>CSCI 1010</td>
<td>Theory of Computation (math)</td>
</tr>
<tr>
<td>ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I</td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
</tr>
<tr>
<td>or any graduate Economics course</td>
<td>3</td>
</tr>
</tbody>
</table>

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### List:

- BIOL 0200 The Foundation of Living Systems
- CLPS 0200 Human Cognition
- CLPS 0500 Perception and Mind
- NEUR 0010 The Brain: An Introduction to Neuroscience
- COST 0200 Meditation and the Brain
- COST 1020 Cognitive Neuroscience of Meditation
- COST 1080 Meditation, Mindfulness and Health

Total Credits: 2
also to provide a method of self-inquiry that can be used to augment any investigate these types of questions not only for academic scholarship, but formulating third-person tests of the effects of practice on brain function the become well-versed in how to study first-person reports related to both for individuals and for the general public. Students will be taught how practice and their potential implications on physical and mental health the biological, psychological, and neurological effects of contemplative foundational understanding of the scientific methods used to investigate The Science track in Contemplative Studies gives concentrators a concentration core. Students must complete either a Science or Humanities track in addition to Including a Capstone Course) Track Requirements (6 additional courses Including a Capstone Course) Students must complete either a Science or Humanities track in addition to the concentration core. Science Track The Science track in Contemplative Studies gives concentrators a foundational understanding of the scientific methods used to investigate the biological, psychological, and neurological effects of contemplative practice and their potential implications on physical and mental health both for individuals and for the general public. Students will be taught how to critique current research as well as how to develop, operationalize, and test hypotheses related to contemplative practice. Students will become well-versed in how to study first-person reports related to the phenomenology of contemplative experience as a foundation for formulating third-person tests of the effects of practice on brain function and behavior. The Contemplative Studies Science Track trains students to investigate these types of questions not only for academic scholarship, but also to provide a method of self-inquiry that can be used to augment any area of life. Five thematic science courses, including a Capstone Course, drawn primarily from BIOL,COST, NEUR, CLPS, and PHP, at least one of which must include laboratory work and two of which must be 1000-level; and one Statistics course for a total of six courses. The Capstone Course is intended to be a culmination of the students’ concentration in which they will bring to bear what their interests have been in developing their focused work in the program. The Capstone course can be either: a. A one semester Independent Reading and Research course, either COST 1910 or 1920 OR BIOL 1950 or 1960, depending on the semester; OR b. A special project done within an existing Contemplative Studies core or related course at the 1000-level in which the student brings to bear the larger concerns of her concentration on a problem or issue within the course. It is expected that such Capstone research papers will be more substantial than a term paper. BIOL 0280 Biochemistry (lab) BIOL 0470 Genetics (lab) BIOL 0530 Principles of Immunology BIOL 0800 Principles of Physiology (lab) BIOL 1880 Comparative Biology of the Vertebrates CLPS 0700 Social Psychology CLPS 0710 The Psychology and Philosophy of Happiness CLPS 1193 Laboratory in Genes and Behavior CLPS 1194 Sleep and Chronobiology Research CLPS 1291 Computational Methods for Mind, Brain and Behavior CLPS 1400 The Neural Bases of Cognition CLPS 1490 Functional Magnetic Resonance Imaging: Theory and Practice CLPS 1492 Computational Cognitive Neuroscience CLPS 1570 Perceptual Learning CLPS 1590 Visualizing Vision CLPS 1791 Laboratory in Social Cognition COST 0200 Meditation and the Brain COST 1020 Cognitive Neuroscience of Meditation COST 1080 Meditation, Mindfulness and Health NEUR 1020 Principles of Neurobiology NEUR 1030 Neural Systems NEUR 1540 Neurobiology of Learning and Memory NEUR 1600 Experimental Neurobiology NEUR 1940L Neural Correlates of Consciousness PHP 1600 Obesity in the 21st Century: Causes, Consequences and Countermeasures PHP 1920 Social Determinants of Health Humanities Track The Humanities track explores the origin and development of contemplative practices within specific religious, cultural, and historical contexts and gives students a foundation in the Philosophy of Mind relevant to the scientific study of contemplative practice. Students will choose a concentration program that includes three intermediate and three advanced seminars drawn from the two areas below. While it is recommended that students focus primarily on one of these two areas, the precise balance of the individual concentration program for each student will be established with the concentration advisor when the student applies to enter the concentration, normally in their fourth semester of study. Six courses, including a Capstone Course, from across the two areas below: The Capstone Course is intended to be a culmination of the students’ concentration in which they will bring to bear what their interests have been in developing their focused work in the program. The Capstone course can be either: a. A one semester Independent Reading and Research course, either COST 1910 or 1920 OR BIOL 1950 or 1960, depending on the semester; OR b. A special project done within an existing Contemplative Studies core or related course at the 1000-level in which the student brings to bear the larger concerns of her concentration on a problem or issue within the course. It is expected that such Capstone research papers will be more substantial than a term paper. Contemplative Religious Traditions CLAS 0210Y The Philosophy of Classical Indian Yoga CLAS 0820 Epics of India CLAS 0850 Mythology of India CLAS 0990 Karma and Free Will: The Self in Indian Philosophy CLAS 0995 India’s Classical Performing Arts CLAS 1140 Classical Philosophy of India CLAS 1160 Love and Devotion, Power and Poverty: India’s Literary Classics COST 0145 Karma, Rebirth and Liberation: Life and Death in South Asian Religions COST 0420 The Theory and Practice of Buddhist Meditation COST 0530 Laozi and the Daodejing Others with approval CLAS 0900 Perspective on the Enlightenment COST 0910Y Indian Religious Traditions CLAS 1160Y Classics of South Asia Others with approval
international development. Towards this end, they benefit from extensive faculty and peer support. The Development Studies concentration will only accept new declarations through the class of 2023. Students in any class year can learn more about the new concentration (https://watson.brown.edu/iapa/about/faqs/) in International and Public Affairs: Development Track.

Requirements

The Development Studies concentration will be available to students graduating through the class of 2023.

10 Courses + Language + Capstone

**CORE**

All core courses must be taken prior to senior year

Choose TWO from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 1620</td>
<td>Globalization and Social Conflict</td>
</tr>
<tr>
<td>POLS 1240</td>
<td>Politics, Markets and States in Developing Countries</td>
</tr>
<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems: Environment, Development, and Governance</td>
</tr>
</tbody>
</table>

Seminar in Sociology of Development

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAPA 0010/</td>
<td>Sophomore Seminar in Development Studies</td>
</tr>
<tr>
<td>SOC 1871D</td>
<td>(Pre-requisites: sophomore or junior standing, and completion of SOC 1620, POLS 1240, or ANTH 0110)</td>
</tr>
</tbody>
</table>

Development Economics - Choose ONE of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0510</td>
<td>Development and the International Economy</td>
</tr>
<tr>
<td>ECON 0511</td>
<td>(Prerequisite: ECON 0110, or AP Microeconomics 4 and AP Macroeconomics 4, or IB HL Economics 6)</td>
</tr>
<tr>
<td>ECON 1510</td>
<td>Economic Development (Prerequisite: ECON 1110 or ECON 1130; and APMA 1850 or ECON 1620 or ECON 1630)</td>
</tr>
</tbody>
</table>

Research Methods and Design

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAPA 1500</td>
<td>Methods in Development Research (junior year)</td>
</tr>
</tbody>
</table>

**Regional Courses**

Two courses that focus on the same region of the developing world. Should complement the student's foreign language.

**Elective Courses**

Three courses chosen from a list of pre-approved electives or by special approval.

**Foreign Language**

Equivalent of three full years of university study or above.

**Senior Capstone**

a. Thesis option: DEVL 1980 (fall senior year) and DEVL 1990 (spring senior year), or

b. Capstone seminar option: approved senior seminar in Development Studies, with seminar-length paper requirement.

See the Development Studies website (http://brown.edu/academics/development-studies/about/what-ds-capstone/) for the list of pre-approved elective courses.

**East Asian Studies**

East Asian Studies is a multidisciplinary concentration designed for students wishing to attain reasonable fluency in Chinese, Japanese, or Korean with specialized exposure to selected East Asian subjects. It serves students with two types of interests: those who aim to pursue active professional careers related to the East Asian region; and those who want to pursue graduate study in the humanities or social sciences with particular emphasis on China, Japan, or Korea. Students in East Asia may complete the concentration in one of two ways:

1. **Major**

   - **Core Courses**
     - Two courses (three credits each) from the following:
       - RELS 0025
       - RELS 0035
       - RELS 0100
     - One course (three credits) from the following:
       - RELS 0120
       - RELS 0121
       - RELS 0122
     - One course (three credits) from the following:
       - RELS 0141
       - RELS 0142
       - RELS 0143
   - **Regional Courses**
     - Three courses (nine credits) chosen from a list of pre-approved electives or by special approval.
   - **Foreign Language**
     - Equivalent of three full years of university study or above.

2. **Minor**

   - **Core Courses**
     - Two courses (three credits each) from the following:
       - RELS 0025
       - RELS 0035
       - RELS 0100
     - One course (three credits) from the following:
       - RELS 0120
       - RELS 0121
       - RELS 0122
   - **Regional Courses**
     - Three courses (nine credits) chosen from a list of pre-approved electives or by special approval.
   - **Foreign Language**
     - Equivalent of three full years of university study or above.

See the Development Studies website (http://brown.edu/academics/development-studies/about/what-ds-capstone/) for the list of pre-approved elective courses.
Asian Studies will gain language proficiency and familiarity with East Asia through advanced courses in a variety of disciplines. Concentrators are strongly encouraged, but not required, to study in East Asia for one or two semesters. The concentration requires students to demonstrate a basic proficiency in Chinese, Japanese, or Korean.

**The Language Requirement**

The concentration requires students to demonstrate a basic proficiency in Chinese, Japanese, or Korean. For the purposes of the concentration, proficiency is determined to be consistent with successful completion of the Department’s third-year course sequence in Chinese, Japanese, or Korean (0500-0600), or its equivalent. Native speakers of these languages may, for example, demonstrate competency such that language courses may be unnecessary. Department language instructors may also determine that course work completed at one of the language-intensive study abroad programs attended by our undergraduates is comparable to courses offered at Brown. Up to three upper level (700-999) may count as electives for concentration credit.

Note that we do not equate completion of third-year Chinese, Japanese, or Korean with fluency in these languages. Rather, we believe that students who have demonstrated the skills associated with third-year Chinese, Japanese, or Korean have acquired a foundational understanding of the languages’ grammar, vocabularies, and conversational patterns, such that they are able to make themselves understood in everyday situations, and to understand both spoken and written communication.

For the purposes of the concentration, language courses through the third-year are treated as an accompanying requirement.

**Language Prerequisites (demonstrating proficiency through the third-year or 0600 level in one of the three languages below)**

**Chinese**
- CHIN 0100 & CHIN 0200: Basic Chinese
- CHIN 0300 & CHIN 0400: Intermediate Chinese
- CHIN 0350 & CHIN 0450: Advanced Chinese for Heritage Learners
- CHIN 0500 & CHIN 0600: Advanced Modern Chinese I
**Japanese**
- JAPN 0100 & JAPN 0200: Basic Japanese
- JAPN 0300 & JAPN 0400: Intermediate Japanese
- JAPN 0500 & JAPN 0600: Advanced Japanese I
**Korean**
- KREA 0100 & KREA 0200: Korean
- KREA 0300 & KREA 0400: Intermediate Korean
- KREA 0500 & KREA 0600: Advanced Korean

**Language Electives (language courses that may be counted for concentration credit)**

**Chinese**
- CHIN 0700 & CHIN 0800: Advanced Modern Chinese II
- CHIN 0920D: Business Chinese
- CHIN 0920E: Two Sides of the Coin: Advanced Chinese Conversation
- CHIN 1010: Stories from the Chinese Empire: Scholars, Demons and Swindlers
- CHIN 1040: Modern Chinese Literature

**Japanese**
- JAPN 0700 & JAPN 0800: Advanced Japanese II
- JAPN 0910A: Classical Japanese
- JAPN 0910C: Japanese Linguistics
- JAPN 1310: Japanese Linguistics: Communication and Understanding Utterances

**Korean**
- KREA 0910B: Media Korean

**Electives**

The concentration requires that students complete a total of eight electives tied to their course of study, which may be defined in linguistic, chronological, thematic, or cultural terms. Students should choose their courses with the following three requirements in mind.

- **EAST Requirement:** At least three of the eight electives must be East Asian Studies (EAST) courses at any level; Chinese (CHIN), Japanese (JAPN), or Korean (KREA) courses at the 1000-level and above may also count towards this requirement.

- **Breadth Requirement:** At least one of the eight electives must focus on an East Asian country or culture other than those associated with the language the student is using to satisfy the concentration’s language requirement. A concentrator studying Chinese, for example, must choose at least one course that focuses on Korea and/or Japan.

- **Senior Seminar Requirement:** At least one of the eight elective courses must be an advanced research seminar, taken in the senior year.

As is common for interdisciplinary concentrations, a wide range of courses, including many taught by faculty in other departments, may be counted toward the concentration. These include courses offered by East Asian Studies faculty, faculty with courtesy appointments in the Department, and courses with a significant focus on East Asia offered in such disciplines as American Studies, Art History, Economics, International Relations, and many others.

**Sample Electives offered by East Asian Studies**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAST 0500</td>
<td>Childhood and Culture in Japan</td>
</tr>
<tr>
<td>EAST 0650</td>
<td>Language, Culture, and Society: Korea</td>
</tr>
<tr>
<td>EAST 1030</td>
<td>Words on Things: Literature and Material Culture in Early Modern China</td>
</tr>
<tr>
<td>EAST 1070</td>
<td>China Modern: An Introduction to the Literature of Twentieth-Century China</td>
</tr>
<tr>
<td>EAST 1290</td>
<td>The Korea &quot;Brand&quot;: Understanding KPop, Film, and Culture of the Two Koreas in the Global Context</td>
</tr>
</tbody>
</table>

For additional elective choices, visit [http://brown.edu/academics/east-asian-studies/courses/more-course-offerings](http://brown.edu/academics/east-asian-studies/courses/more-course-offerings).

1. China-centric
2. Japan-centric
3. Korea-centric
4. East Asia-centric

**Advanced Research Seminars**

At least one of the eight elective courses must be an advanced research seminar, taken in the senior year. The research seminar will normally provide students with the opportunity to develop a project or paper focusing on one or more of their areas of inquiry within the concentration. Students are strongly encouraged to find ways to incorporate the use of Chinese, Japanese or Korean language materials in their research and learning in these courses. Courses falling into this category include the East Asian Studies 1950 series as well as designated seminars offered by faculty in such departments as History, Religious Studies, and Comparative Literature among others. The Department will provide a list of pre-approved advanced seminars every semester. Students wishing to
add courses to that list must submit their requests in writing to the Director of Undergraduate Studies at the start of the semester.

Sample advanced seminars offered by East Asian Studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAST 1951B</td>
<td>From Desktop to Stage: Drama and Performance in Late Imperial China</td>
<td>1</td>
</tr>
<tr>
<td>EAST 1950G</td>
<td>Market Economy, Popular Culture, and Mass Media in Contemporary China</td>
<td>1</td>
</tr>
</tbody>
</table>

Honors

East Asian Studies offers qualified students, in their senior year, the opportunity to undertake a sustained research and writing project, ideally, will result not merely in a long term paper, but in a piece of original scholarship. To enroll in the Honors Program, the student must be a senior East Asian Studies concentrator, with at least a high B average in concentration courses. Candidates for Honors are required to have developed a competence in an East Asian language sufficient to allow them to use East Asian language materials in carrying out their research. Students must also successfully obtain the support of at least two faculty members who will agree to serve as primary and secondary advisors for the thesis. Prospective writers submit a thesis prospectus, brief bibliography, and completed application forms (with signatures), ordinarily late in the student’s six semester, to the Director of Undergraduate Studies, who provides the final permission to proceed. Synopses of successful thesis proposals will be distributed to Department faculty. Thesis writers enroll in advisor-specific sections of the thesis-writing course EAST 1930 (Fall) and EAST 1940 (Spring), meet regularly with their advisors over the course of both semesters, and submit final versions of their theses to the Department in mid-April. Advisors and students are required to provide updates of their progress to the Director of Undergraduate Studies at regular intervals.

The completed thesis is evaluated for Honors by the thesis director and by a second reader. In case of a difference of judgment between the two readers, a third opinion may be sought. The awarding of Honors in East Asian Studies will occur only if the Honors Thesis receives a final grade of A. If an A is not received, the student will still receive academic credit for EAST 1930-1940. Students are notified in mid-May whether the Department has recommended the awarding of Honors. Copies of readers’ comments are provided to the student.

All graduating concentrators will present the results of their senior theses in the department’s Senior Project Forum. The Forum will usually take place at the end of the spring semester, but may also occur at the end of the fall semester to accommodate mid-year graduates.

Double Concentrations

Students who are interested in developing a double concentration, including East Asian Studies as one of the two concentrations, should bear in mind that normally no more than two courses may be double-counted toward satisfying the course requirements of either of the two concentration programs involved.

Study Abroad

Concentrators are strongly encouraged, but not required, to study in East Asia for one or two semesters during their undergraduate years. Course credits earned abroad are generally transferable to Brown. However, a maximum of three courses taken abroad, of genuine intellectual substance and significantly related to East Asian Studies, may be considered for concentration credit.

Summary of requirements:

- Language study through the level of 0600 or the equivalent of Chinese, Japanese, or Korean
- Eight elective courses
  - At least three of the eight must be East Asian Studies (EAST) courses at any level or Chinese (CHIN), Japanese (JAPN), or Korean (KREA) courses at the 1000-level and above
  - At least one of the eight electives must focus on an East Asian country or culture other than those associated with the language the student is using to satisfy the concentration’s language requirement. A concentrator studying China, for example, would choose at least one course that focuses on Korea and/or Japan.

- At least one of the eight must be an advanced research seminar, taken in the senior year.
- EAST 1930 (Senior Thesis, Semester 1)- EAST 1940 (Senior Thesis, Semester 2) for Honors candidates only

Economics

Economics is the study of how individuals, businesses, and governments allocate resources to satisfy their objectives. The study of economics helps students understand markets, firms, financial organizations, and public debate about economic policy, including taxation, government expenditure, trade, globalization, health, and welfare. The concentration in Economics prepares students for graduate study in fields such as business and law, for graduate study leading to teaching and research in economics, and can be a stepping-stone to employment in business, finance, non-profit, and government organizations. Students may choose the standard concentration or the business track, both of which have a corresponding professional track.

Students are required to begin with ECON 0110, an introductory course that stresses the economic problems of our society, and the vocabulary and principles of economic analysis. Intermediate level courses in microeconomics (ECON 1110 or ECON 1130), macroeconomics (ECON 1210), and econometrics (ECON 1620 followed by ECON 1629 or ECON 1630) round out the list of foundation courses for the concentration. Economics students must also fulfill a calculus requirement.

The economics department sponsors a number of concentration options. The most popular is the standard economics concentration, described below. Three additional concentration options are administered jointly with other departments and are described separately under their respective titles. They are the concentrations in applied mathematics–economics, mathematical-economics, and in computer science–economics. The first two are especially recommended for students interested in graduate study in economics.

The department offers many of the required courses in an interdepartmental concentration called Business, Entrepreneurship and Organizations (BEO). BEO is jointly run by the departments of economics and sociology, and the school of engineering. BEO has three track offerings remain in place through the class of 2023, after which it will be discontinued. Please contact the BEO administrator for more details, including information about advising in that concentration. A new Business Economics track within the economics concentration is now available to classes of 2020 and beyond. Please see the requirements for this track listed below.

Standard Economics Concentration

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 0170</td>
<td>Essential Mathematics for Economics</td>
<td></td>
</tr>
<tr>
<td>or a higher-level math course.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 1110</td>
<td>Intermediate Microeconomics</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td></td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1620</td>
<td>Introduction to Econometrics</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 1620</td>
<td>Mathematical Statistics</td>
<td></td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
<td></td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
<td></td>
</tr>
<tr>
<td>ECON 1629</td>
<td>Applied Research Methods for Economists</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 1630</td>
<td>Mathematical Econometrics</td>
<td></td>
</tr>
<tr>
<td>At least five additional 1000-level Economics courses.</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total Credits</td>
<td></td>
<td>11</td>
</tr>
</tbody>
</table>
Students who place out of ECON 0110 on the basis of qualifying scores on the AP, IB, or A-level exams must take an additional 1000-level course (6 instead of 5).

Students can satisfy the mathematics requirement with qualifying scores on the AP, IB, or A-level exams (but not the math department's self-placement exam). Note that certain advanced economics courses may impose additional math prerequisites.

Students may use either ECON 1070 or ECON 1090 toward the concentration, but not both. Note that ECON 1960 (thesis course) and ECON 1970 (independent research) do not count toward the concentration.

**Business Economics Track**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 0170</td>
<td>Essential Mathematics for Economics</td>
<td>1</td>
</tr>
<tr>
<td>or a higher level math course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECON 0710</td>
<td>Financial Accounting</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1110</td>
<td>Intermediate Microeconomics</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1620</td>
<td>Introduction to Econometrics</td>
<td>1</td>
</tr>
<tr>
<td>or MATH 1620</td>
<td>Mathematical Statistics</td>
<td>1</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
<tr>
<td>or APMA 1655</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1629</td>
<td>Applied Research Methods for Economists</td>
<td>1</td>
</tr>
<tr>
<td>or ECON 1630</td>
<td>Mathematical Econometrics I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1710</td>
<td>Investments I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1720</td>
<td>Corporate Finance</td>
<td>1</td>
</tr>
<tr>
<td>Two Business Economics electives from the following:</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>ECON 1310</td>
<td>Labor Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 1400</td>
<td>The Economics of Mass Media</td>
<td></td>
</tr>
<tr>
<td>ECON 1450</td>
<td>Economic Organizations and Economic Systems</td>
<td></td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
<td></td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
<td></td>
</tr>
<tr>
<td>ECON 1540</td>
<td>International Trade</td>
<td></td>
</tr>
<tr>
<td>ECON 1550</td>
<td>International Finance</td>
<td></td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
<td></td>
</tr>
<tr>
<td>ECON 1730</td>
<td>Venture Capital, Private Equity, and Entrepreneurship</td>
<td></td>
</tr>
<tr>
<td>ECON 1740</td>
<td>Mathematical Finance</td>
<td></td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
<td></td>
</tr>
<tr>
<td>ECON 1760</td>
<td>Financial Institutions</td>
<td></td>
</tr>
<tr>
<td>ECON 1780</td>
<td>Advanced Topics in Corporate Finance</td>
<td></td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
<td></td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits**: 12

**Concentration Requirements**

Students who wish to pursue honors in economics should consult the department’s undergraduate web site to obtain a complete description of the requirements. See the description of Capstone Projects there, as well. Courses taken to prepare an honors thesis are in addition to the regular concentration requirements.

**Professional Track**

Students wishing to complete the Professional Track for either the standard concentration or the Business Economics track will complete the requirements for the standard/Business Economics track, as well as the following:

Students must complete full-time professional experiences doing work that is related to their concentration programs, totaling 2-6 months, whereby each internship must be at least one month in duration in cases where students choose to do more than one internship experience. Such work is normally done at a company, but may also be at a university under the supervision of a faculty member. Internships that take place between the end of the fall and the start of the spring semesters cannot be used to fulfill this requirement. On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience, to be approved by the student's concentration advisor.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience, to be approved by the student's concentration advisor:

International students must declare the professional track of their concentration in order for U.S. based internships to qualify for Curricular Practical Training (CPT). In addition to their other concentration requirements, students must complete two two-to-four month full time professional experiences, doing work that is related to their concentration program. Each internship must be completed at a company or a non-profit, but may also be at a university under the supervision of a faculty member. Upon completion of each professional experience, the student must write a reflective essay on ASK, to be approved by their concentration advisor.

**Education Studies**

Welcome to Education Studies! Undergraduate concentrators study education in a rigorous, multi-dimensional way that allows them to investigate the complex relationship between education, society, and social policy. Our ever-expanding array of education courses allows undergraduates to explore fundamental issues of race, class, power, privilege, equity and identity through the lens of education. From introductory courses to advanced seminars, our classes examine how to teach for social justice, how students learn and develop, and how education policies promote or limit opportunity and equity.

Our faculty includes experts in teaching and learning, human development, education policy, and the history of education. We take a multi-disciplinary approach to the field, offering courses from perspectives in anthropology, economics, history, human development, political science, social work, and sociology, among others.

**Concentration Requirements**

Redesigned for the 2020-2021 academic year, the concentration in Education Studies requires a total of 10 credit-bearing courses and 1 non-credit-bearing experiential component, allowing students to develop a personalized plan of study to structure their Education experiences. The new Education Studies coursework is as follows:

- **3 Core Courses:** 2 introductory courses (EDUC 0300 and EDUC 0750) will provide students with a broad-based introduction to the field of education and empirical methods used in the field, while 1 Senior Seminar, EDUC 1900, offers a culmination of students’ experiences in the concentration.

- **4 Specialization Courses:** Students must take 4 courses total in their chosen area of emphasis (Education Policy Analysis; Human Development; Education and Inequality; Education for Social Justice; Adolescence; Immigrant Families; Communities & Education; Child...
Concentration

Studies Concentration

Foundational Courses Required for Education

Education Studies Concentration Plan of Study

3 Elective courses related to the field of education and the student’s field of study. Only 1 independent study can count towards concentration requirements. No more than 3 courses in an Education Studies concentration can come from other departments outside of Education, and all courses should be approved by the student’s advisor and meaningfully tied to education.

1 Experiential Component: By the end of fall semester of senior year, students must complete an Experiential Component designed to promote practice-based engagement with the field of education and reflect on their experiences, tying them into their academic learning in the Education Studies concentration. Students can satisfy this requirement in one of three ways:

- a. By completing the reflection in an independent study-like course “Reflecting on Fieldwork.”
- b. By writing a paper reflecting on their experience through the lens of their coursework in the Department. The student’s academic advisor will assess the paper. It is to be completed independently of coursework and is not credit bearing (although students may do it as an additional assignment associated with a class they are taking).
- c. By completing the reflection in an independent study-like course “Reflecting on Fieldwork.”

Education Studies Concentration Plan of Study

Foundational Courses Required for Education Studies Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDUC 0300</td>
<td>Introduction to Education and Society: Foundations of Opportunity and Inequality</td>
</tr>
<tr>
<td>EDUC 0750</td>
<td>Evidence and Method in Education Research</td>
</tr>
<tr>
<td>EDUC 1900</td>
<td>Senior Seminar</td>
</tr>
</tbody>
</table>

3 Electives

EDUC 1100 Introduction to Qualitative Research Methods
EDUC 1110 Introductory Statistics for Education Research and Policy Analysis
EDUC 1130 Economics of Education I
EDUC 1150 Education, the Economy and School Reform
EDUC 1270 Adolescence in Social Context
EDUC 1380 Language and Education Policy in Multilingual Contexts
EDUC 1430 Social Psychology of Race, Class, and Gender
EDUC 1450 The Psychology of Teaching and Learning
EDUC 1520 Ethnic Studies & Education
EDUC 1580 Cross-Cultural Perspectives on Child Development
EDUC 1650 Policy Implementation in Education
EDUC 1690 Literacy, Community, and the Arts: Theory into Practice
EDUC 1720 Urban Schools in Historical Perspective
EDUC 1760A Beauty Pageants as an American Institution
EDUC 1780A Women, Race, and Social Change
EDUC 1800A Latin America and the United States
EDUC 1890 Family Engagement in Education

3 Foundational course in Education (from the table above) 3
3 Electives 3
1 Experiential Component 0

Total Credits 10

Honors

Concentrators seeking to graduate with honors must apply for honors candidacy by the end of their sixth semester. Successful candidates must meet all requirements for the concentration; maintain a minimum grade average that includes more A’s than B’s in Education courses (a B must be counterbalanced by two A’s); and successfully complete EDUC 1990 and EDUC 1991, in which they write a senior thesis under the guidance of a thesis advisor. Honors are awarded on the basis of thesis quality. Students whose theses meet or exceed the standards established in the Department Rubric earn honors upon graduation. Students interested in writing an Honors thesis should contact David Rangel, the Honors/Capstone Advisor.

Capstone

Capstones are voluntary, student-initiated projects or experiences outside the classroom that build on and contribute to students’ Education Studies concentration. They can take various forms, including a research project, website design, curriculum design, policy analysis, or scholarly paper. Capstones can be designed and executed in the senior year, or can be based on a previous experience that the student wants to explore further in some way, such as an internship or teaching experience. While capstones do not confer academic credit or departmental honors, students who complete capstones will be recognized at the department graduation ceremony and will have the opportunity to present their work at a conference in the spring of their senior year. Through capstones, students have the opportunity to work closely with a faculty member in an area of their interest and are able to reflect on and extend their learning in the concentration.
Concurrent Baccalaureate/Master of Arts in Teaching Degree

Beginning in 2020-2021, the Education Department offers a concurrent degree program in which Brown undergraduates can apply to earn a B.A. or B.S. in a subject field (English, history, math, biology, chemistry, physics, engineering and allied concentrations) and MAT degree in 5 years.

Brown undergraduates can apply through the Education Department during their junior year. During their first four years, candidates must complete all baccalaureate requirements and may take up to two of the required graduate courses. In their fifth year, they will complete the remaining required graduate courses, including the one-year teaching residency. The minimum requirements to complete both degrees are 36 credits, of which a maximum of two may count toward the concurrent baccalaureate/MAT degree.

Engaged Scholars Program

The Engaged Scholars Program (http://brown.edu/go/engagedscholars/) in Education is intended for Education Studies concentrators interested in making connections between their concentration curriculum and long-term engagement, including internships, public service, humanitarian and development work, school-based education work, social service in education, or other forms of community and clinical involvement. The program combines preparation, experience, and reflection to provide students with opportunities to integrate academic learning and social engagement. (Note: This program is separate from the department's required experiential component.) Students can learn more about the program and its requirements on the ESP in Education website (https://education.brown.edu/academics/undergraduate/engaged-scholars-program/).

Egyptology and Assyriology

The concentration in Egyptology and Assyriology offers students a choice of two tracks: Assyriology or Egyptology. The department promotes collaborations with other academic units at Brown devoted to the study of ancient Egypt, such as early science. Ancient Near Eastern World (WRIT), Egyptology, History, History of Art and Architecture, Judaic Studies, Philosophy, or Literature, East Asian Studies, Egyptology, History, History of Art and Architecture, Judaic Studies, Philosophy, or Religious Studies. The elective course must be approved by the undergraduate concentration advisor.

Assyriology Track

Also known as the Near East or Middle East, Western Asia includes present-day Iraq, Syria, Turkey, and other neighboring states, a broad geographic area that was connected in antiquity with the wider world—the Mediterranean, North Africa, the Arabian Peninsula, Central Asia, and the Asian subcontinent. Students will be exposed to the critical study of the ancient cultures of this region (ca. 3400 B.C.E.–100 C.E.) using the tools of archaeology, epigraphy, and historical inquiry. A variety of interdisciplinary, comparative, and theoretical approaches will be introduced to give students the tools and methods to explore this region's ancient languages and literatures, political and socio-economic modes of organization, art and architecture, religious traditions and other systems of knowledge, such as early science.

The Assyriology (ASYR) track requires a total of at least ten (10) courses that are determined in the following way:

<table>
<thead>
<tr>
<th>Introductory courses:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASYR 0800 or ARCH 1600</td>
<td>The Cradle of Civilization? An Introduction to the Near East Archaeologies of the Near East</td>
</tr>
<tr>
<td>ASYR 1000 or ARCH 1010</td>
<td>Introduction to Akkadian Intermediate Akkadian</td>
</tr>
<tr>
<td>Foundational Courses: (at least one course from each of the following three areas):</td>
<td>1</td>
</tr>
<tr>
<td>History and Culture of Ancient Western Asia:</td>
<td>1</td>
</tr>
<tr>
<td>ASYR 1100</td>
<td>Imagining the Gods: Myths and Myth-making in Ancient Mesopotamia (WRIT)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ancient Scholarship in Western Asia:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASYR 1300</td>
<td>The Age of Empires: The Ancient Near East in the First Millennium BC</td>
</tr>
<tr>
<td>ASYR 1500</td>
<td>Ancient Babylonian Magic and Medicine</td>
</tr>
<tr>
<td>ASYR 2310B</td>
<td>Assyriology I (WRIT)</td>
</tr>
<tr>
<td>ASYR 2310C</td>
<td>Assyriology II (WRIT)</td>
</tr>
<tr>
<td>ASYR 2600</td>
<td>Topics in Cuneiform Studies</td>
</tr>
<tr>
<td>EGYT 1410</td>
<td>Ancient Egyptian Literature 1</td>
</tr>
<tr>
<td>EGYT 1420</td>
<td>Ancient Egyptian Religion and Magic</td>
</tr>
<tr>
<td>EGYT 1450</td>
<td>History of Egypt I</td>
</tr>
<tr>
<td>EGYT 1460</td>
<td>History of Egypt II</td>
</tr>
<tr>
<td>ARCH 1200F</td>
<td>City and the Festival: Cult Practices and Architectural Production in the Ancient Near East (WRIT)</td>
</tr>
<tr>
<td>ARCH 1200I</td>
<td>Material Worlds: Art and Agency in the Near East and Africa</td>
</tr>
<tr>
<td>ARCH 1810</td>
<td>Under the Tower of Babel: Archaeology, Politics, and Identity in the Modern Middle East (WRIT)</td>
</tr>
<tr>
<td>ARCH 2010C</td>
<td>Architecture, Body and Performance in the Ancient Near Eastern World (WRIT)</td>
</tr>
<tr>
<td>ARCH 2300</td>
<td>The Rise of the State in the Near East</td>
</tr>
</tbody>
</table>

Depth Requirement: At least two additional courses offered in ASYR or ARCH dealing with ancient Western Asia. These courses must be approved by the undergraduate concentration advisor.

Breadth Requirement: At least one course offered in EGYT or ARCH on the archaeology, art, history, culture, or language of ancient Egypt.

Elective: At least one elective course on the ancient world broadly defined. Usually, this course will be offered in Assyriology, Anthropology, Archaeology, Classics, Comparative Literature, East Asian Studies, Egyptology, History, History of Art and Architecture, Judaic Studies, Philosophy, or Religious Studies. The elective course must be approved by the undergraduate concentration advisor.

Total Credits | 10

1 This list contains possible offerings but should not be considered exhaustive.

Egyptology Track

The Egyptology track requires a total of at least ten courses. Six of these must be taken by all concentrators, but the remaining four can be chosen from a fairly broad range of courses, to suit individual interests.

Introductory Courses:

<table>
<thead>
<tr>
<th>EGYT 1310 &amp; EGYT 1320</th>
<th>Introduction to Classical Hieroglyphic Egyptian Writing and Language (Middle Egyptian I) and Introduction to Classical Hieroglyphic Egyptian Writing and Language (Middle Egyptian II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EGYT 1430 &amp; EGYT 1440</td>
<td>Ancient Egyptian Language (WRIT)</td>
</tr>
<tr>
<td>ARCH 0150</td>
<td>Introduction to Egyptian Archaeology and Art 1</td>
</tr>
<tr>
<td>EGYT 1420 &amp; EGYT 1625</td>
<td>Ancient Egyptian Religion and Magic</td>
</tr>
<tr>
<td>EGYT 1330</td>
<td>Selections from Middle Egyptian Hieroglyphic Texts 1</td>
</tr>
<tr>
<td>EGYT 1410</td>
<td>Ancient Egyptian Literature 2</td>
</tr>
</tbody>
</table>
Breadth Course - Any course covering the ancient Near East or Mediterranean world outside Egypt, such as:

- ASYR 0800 The Cradle of Civilization? An Introduction to the Ancient Near East
- ARCH 1600 Archaeologies of the Near East

Elective Course: Any course germane to ancient Egypt or the ancient Near East or Mediterranean world. Alternative and elective courses must be approved by the undergraduate concentration advisor. Such courses will normally be offered by Egyptology and Assyriology, the Joukowsky Institute for Archaeology and the Ancient World, Religious Studies, Classics, Judaic Studies, Anthropology, History of Art and Architecture, History, or Philosophy. Concentrators are welcome to take most courses offered by Egyptology and Assyriology (EGYT and ASYR), Archaeology (ARCH), or related departments, though some may require the instructor's approval. Concentrators should consult with the concentration advisor to discuss the courses most suitable to their interests.

Total Credits 10

1 Required for all students pursuing the Egyptology track.
2 Or an EGYT or ARCH course in material culture.

Capstone

All concentrators in Egyptology and Assyriology are required to complete a capstone project. The project can take many forms, but the common feature shared among all possible projects will be a public presentation. Typically in the final semester before graduating, the concentrator will give this capstone presentation before faculty, fellow students, and other interested audiences. If the concentrator is writing an undergraduate honors thesis, the procedure for which is detailed below, this work should provide the content for the capstone presentation. Students not writing an honors thesis will base their presentation on a research project more in depth than a class project, though the topic may stem from a course project or paper. The format of the presentation may vary; suggestions range from an illustrated lecture to a video or an installation presented with discussion. Both the content and the format of the capstone project should be discussed with and agreed upon by the concentration advisor no later than the end of the first semester of the senior year.

Honors in Egyptology and Assyriology

1. Becoming an honors candidate

Students who wish to consider pursuing honors should meet with the Undergraduate Concentration Advisor in the first half of their sixth semester.

Eligibility is dependent on:

- Being in good standing
- Having completed at least two thirds of the concentration requirements by the end of the sixth semester.
- Having earned two-thirds ‘quality grades’ in courses counted towards the concentration. A ‘quality grade’ is defined as a grade of ‘A’ or a grade of ‘S’ accompanied by a course performance report indicating a performance at the ‘A’ standard.

To pursue honors candidacy, eligible students must:

- Secure a faculty advisor and discuss plans for the proposed thesis project well before the established deadline; this can be done by email when a student is abroad.
- Prepare a thesis prospectus (see below).
- Submit the prospectus to the advisor, one other proposed faculty reader (at least one of the readers must be in the department) and the department chair no later than the first week of the seventh semester.

The structure of a thesis prospectus:

An honors thesis in Egyptology or Assyriology is a substantial piece of research with some degree of originality that demonstrates the student's ability to frame an appropriate question and deal critically with the range of original and secondary sources. A thesis prospectus is a short analytical document consisting of several parts. It will normally include a concise and focused research question; a justification for that question that demonstrates familiarity with previous research on the topic; a project description that includes a discussion of the types of evidence available and appropriate to answering the proposed question; a discussion of methods of collecting and analyzing that evidence; a conclusion that returns to the research question and assures the reader that the project will add value to our understanding of the topic; and a bibliography. The prospectus will ordinarily be in the range of 5-7 pages in length, exclusive of bibliography. The prospectus will include proper citations throughout. Determination of whether or not a student may pursue the proposed project will be made on review of the prospectus by the readers and department chair. Prospectuses will be evaluated on the following scale:

1. No concerns about the viability of the project.
2. No concerns about the viability of the project, but minor weaknesses in the execution of the prospectus.
3. Concerns about the viability of the project, but willingness to reevaluate a revised prospectus submitted within two weeks of receipt of evaluation.
4. Reservations that the prospectus does not describe an honors-worthy project.
5. Poorly conceived and shoddy work.

Prospectuses will be returned to the student with this numerical evaluation and comments one week after submission of the prospectus. A prospectus must receive an evaluation of 1 or 2 prior to the third week of the seventh semester for a student to be admitted to the honors track. Students who submit an original prospectus that is graded 4 or 5 will not be permitted to rework the prospectus for the second submission.

2. Developing, completing and submitting the honors project

Once accepted as honors candidates, students will pursue a course of study that goes beyond what is expected of a regular concentrator. This includes:

- Enrollment in two semesters of independent study in Egyptology or Assyriology (these do not fulfill course requirements towards the concentration).
- Twice-monthly meetings with the thesis advisor and once-monthly meetings with the second reader. These meetings will be scheduled at the beginning of each term.
- Submission of a comprehensive outline to both readers no later than October 15 (for May graduates)
- Submission of drafts. A partial draft including a complete version of at least one chapter or section is due before Reading Period of the seventh semester.
- A complete draft is due to both readers no later than March 15 (for May graduates).
- The revised final thesis is due in both electronic and physical form to both readers and department chair April 5 (for May graduates).

Failure to meet any deadline will result in automatic termination of the honors process. No extensions will be granted. If a thesis is turned in late but before the end of the term, credit and grade for the Independent Study may still be granted.

3. Evaluating the submitted work of honors candidates

In order to receive honors a student must be found to have:

- Remained in good academic standing throughout the academic year.
- Not violated the Academic Code of Conduct during honors candidacy.
- Complete or be about to complete all concentration requirements.
- Produced a thesis that is judged by the readers to meet the department's expectations for honors work (see below), and turned it in by the established deadlines.
- Successfully defended the thesis during a half hour public presentation held during the final exam period of the eighth semester.

Students who submit theses that are deemed to fall short of the expectations will graduate without honors. In that case, the theses will count as a capstone project.

4. Expectations for honors theses

Originality:

An honors thesis in Egyptology or Assyriology is expected to add to existing scholarship. The thesis must be based on close work with primary
sources (usually in publication rather than in person), supplemented by critical engagement with a substantial amount of relevant secondary literature. While the resulting study is not necessarily expected to be ground-breaking or original, and may engage with a well-studied topic, it will usually include a new insight into or interpretation of the material considered.

Scope:
An honors thesis is not a book or dissertation. It is, however, a very serious piece of research and writing for which two dedicated study courses have provided substantial time to the honors student. The question upon which the honors thesis is based should be focused enough to allow an in-depth treatment, generally in under 100 pages or 30,000 words (exclusive of bibliography and illustrations). Appropriate length will vary considerably depending on the topic itself and the nature of the primary sources being considered, particularly if substantial translation of ancient textual sources is required.

Argument:
The thesis should present a sustained analytic argument in answer to its structuring question. A thesis should not be primarily descriptive or narrative in nature. Each chapter should contain a sub-argument that is clearly related to the overall argument of the thesis. The significance of the argument and its relationship to prior scholarship should be clearly articulated. Honors theses are not expected to demonstrate comprehensive familiarity with the secondary literature, but they are expected to engage critically and maturely with important works on the defined topic.

Methodology:
Egyptology and Assyriology are very broad fields, and the appropriate methods will be determined in conjunction with the thesis advisor on the basis of the questions and types of evidence - textual, archaeological, art historical - under consideration. With very few exceptions the methodology of the thesis is expected to be conventional rather than innovative, rooted in the accepted practices of the field in question.

Organization and writing:
An honors thesis must be well organized and written. It should include an introduction and conclusion as well as well-considered chapters that allow the reader to follow the line of reasoning easily. The relationship of any section to the larger whole should be clear, and seques should help the reader move between sections. Writing should be grammatically correct, well copy-edited, professional, and consistent. Citations and bibliography must be in an accepted style as determined in consultation with the advisor.

Engineering
The concentration in Engineering equips students with a solid foundation for careers in engineering, to advance the knowledge base for future technologies, and to merge teaching, scholarship, and practice in the pursuit of solutions to human needs. The concentration offers one standard Bachelor of Arts (A.B.) program and eight Bachelor of Science (Sc.B.) degree programs. Of these, the Sc.B. programs in biomedical, chemical, computer, electrical, materials, and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET (http://www.abet.org/). The Sc.B. degree program in environmental engineering is not currently accredited by the Engineering Accreditation Commission of ABET, but will seek accreditation during the 2020-21 academic year. The engineering physics program is also offered, but is not accredited by ABET. Other programs leading to the Sc.B. or A.B. degrees in Engineering may be designed in consultation with a faculty advisor. These programs must meet the general requirements for concentration programs in the School of Engineering. Students interested in an individualized program should consult with an Engineering faculty member willing to serve as an advisor and obtain the approval of the Engineering Concentration Committee. Engineering students with a particular interest in using their technical skills for the public benefit might also consider the Engaged Scholars Program (https://www.brown.edu/academics/engineering/undergraduate-study/engaged-scholars-program/).

Please note that all student concentration forms must be approved by the Engineering Concentration Committee, which reviews them for compliance with all relevant program and accreditation requirements.

Mathematics
Mathematics 0190, 0200 is the preferred sequence of courses to be taken in the freshman year. Students who would prefer a more introductory level calculus course may start in MATH 0100 and take MATH 0200 or MATH 0180 in second semester. Students without one year of secondary school level preparation in calculus should take MATH 0090, MATH 0100 in their first year, and should begin their sequence of engineering courses with ENGN 0030 in sophomore year. The courses APMA 0330 & APMA 0340 (Methods of Applied Math I, II) can be taken in the sophomore year as well.

Advanced Placement
Students who have taken Advanced Placement courses in high school and/or have shown proficiency through advanced placement examinations are often able to start at a higher level than suggested by the standard programs below. However, please note that Advanced Placement credit cannot be used to satisfy any concentration requirements. For example, our Sc.B. programs specify that students must take 4 semesters of math while enrolled here at Brown, beginning with MATH 0190 or MATH 0170. If a student comes in with advanced placement credit (e.g. placing out of MATH 0190 or MATH 0200), he/she is strongly recommended to take a higher level math course as a replacement. Examples of such courses are MATH 0520 (Linear Algebra), MATH 1260 (Complex Analysis), MATH 1610 (Probability), MATH 1620 (Statistics), APMA 1170 (Numerical Analysis), APMA 1210 (Operations Research), or APMA 1650 (Statistical Inference). However, the student with advanced placement credit for MATH 0190 or MATH 0200 also has the option of replacing the math course with an advanced-level science course, subject to the approval of the concentration advisor.

Transfer Credit
Students who have successfully completed college courses elsewhere may apply to the University for transfer credit. (See the “Study Elsewhere” section of the University Bulletin for procedures, or contact the Dean of the College.) Transfer courses that are used to meet Engineering concentration requirements must be approved by the student’s concentration advisor, and must be described briefly on the student’s electronic concentration form. Transfer courses that are determined by the concentration advisor to be substantially equivalent to a required Brown course automatically fulfill concentration requirements. In rare cases, students may petition the concentration committee to use courses that do not have an equivalent offered at Brown to meet a concentration requirement. Substitutions of this nature can only be approved if the student’s overall program meets published educational outcomes for the concentration and has sufficient basic science, mathematics, and engineering topics courses to meet relevant accreditation requirements. Students should consult their concentration advisor for assistance with drafting a petition. The decision whether to award concentration credit is made by majority vote of the Engineering Concentration Committee.

Substitutions for Required Courses
A student may petition the Concentration Adviser to substitute a course in place of a requirement. Such substitutions can only be approved if the student’s modified program continues to meet the published educational outcomes for the concentration, and has sufficient basic science, mathematics, and engineering topics courses to meet accreditation requirements. If the substitution involves taking an equal or higher level course in substantially the same area, whether at Brown or elsewhere, it can be approved by the Concentration Adviser. (For courses taken elsewhere, the credit must be officially transferred.) Students wishing to make substitutions of a broader nature should consult their Concentration Adviser for assistance with drafting their petition to the Engineering Concentration Committee, which may be approved by a majority vote.

Standard Program for the A.B. degree:
Candidates for the Bachelor of Arts (A.B.) degree with a concentration in Engineering must complete at least eight approved Engineering courses. The eight courses must include at least two 1000-level Engineering courses. Of these 1000-level courses, one must be a design or independent study course and the other an in-classroom experience.
The set of Engineering courses must be chosen with careful attention to the prerequisites of the 1000-level courses. Please note that this A.B. degree program is not accredited by ABET.

Not all engineering courses may be used to satisfy the engineering course requirement for the A.B. degree. For example, the following courses cannot be used to satisfy the engineering course requirement for the A.B. degree: ENGN 0020, ENGN 0090, ENGN 0900, ENGN 0930A, ENGN 0930C, ENGN 1010. Therefore, the program of study must be developed through consultation with the concentration advisor.

The A.B. program also requires preparation in Mathematics equivalent to MATH 0200 and APMA 0330, as well as at least one college-level science course from the general areas of chemistry, life sciences, physics, or geological sciences. Remedial courses, such as CHEM 0100, cannot be used to satisfy this requirement. A programming course is also recommended, but not required. The entire program is subject to approval by an Engineering Concentration Advisor and the Chair of the Engineering Concentration Committee.

**Standard programs for the Sc.B. degree**

All Bachelor of Science (Sc.B.) program tracks build upon a common core of engineering knowledge and skills applicable across all engineering disciplines. The goal of this engineering core curriculum is to prepare students for practice engineering in an age of rapidly changing technology. Two-thirds of this four-year program consists of a core of basic mathematics, physical sciences and engineering sciences common to all branches of engineering, including a thorough grounding in programming and technical problem solving. This core provides our graduates with the basis of theory, design, and analysis that will enable them to adapt to whatever may come along during their careers.

At the same time, the core course assists students in making informed choices in determining their areas of specialization, at the end of their sophomore year. To this end, first-year students are given an introduction to engineering - featuring case studies from different disciplines in engineering, as well as career fairs from industry. This aspect of the program is different from that at many other schools where students are expected to select a specific branch of engineering much earlier in their academic program.

In addition, all Sc.B. programs in Engineering must be complemented by at least four courses in humanities and social sciences. The minimum four-course humanities and social sciences requirement for the Sc.B. in Engineering cannot be met by advanced placement credit.

**Special Concentrations**

In addition to the standard programs described above, students may also petition the Engineering Concentration Committee to pursue a special engineering Sc.B. degree of their own design. Such special Sc.B. programs are not ABET-accredited. Students with a special concentration will receive an Sc.B. degree in engineering, but a specific area of specialization will not be noted on their transcript. A special Sc.B. concentration is intended to prepare graduates for advanced study in engineering or for professional practice, but in an area that is not covered by one of the existing Sc.B. programs. Accordingly, special concentration programs are expected to consist of a coherent set of courses with breadth, depth and rigor comparable to an accredited degree. A total of 21 engineering, mathematics, and basic science courses are required. The program must include at least 3 courses in mathematics, at least 2 courses in physical or life sciences; and at least 12 courses in engineering. At least five of the engineering courses must be upper level courses, and one must be a capstone design course or independent study, which must be advised or co-advised by a member of the regular engineering faculty. Note that not all engineering courses may be used to meet Sc.B. requirements: for example, the courses not allowed to count toward the A.B., will not qualify. Petitions should be prepared in consultation with an engineering faculty adviser, who will submit the petition to the Engineering Concentration Committee. Petitions must include: (i) a statement of the objectives of the degree program, and an explanation of how the courses in the program meet these objectives; (ii) course descriptions for any courses in the program that are not part of standard ScB engineering concentrations; (iii) a detailed description of any independent study courses used for concentration credit, signed by the faculty adviser for this course; and (iv) an up-to-date internal transcript.

**Professional Tracks**

While we do not give course credit for internships, we officially recognize their importance via the optional Professional Tracks. The requirements for the professional tracks include all of those of the standard tracks, as well as the following: Students must complete two full-time professional experiences, lasting two to four months each (or two part-time experiences of equivalent total effort), doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be done at a university under the supervision of a faculty member. For the work to be considered related to a concentration program, the job responsibilities must make use of the material from one or more courses of the concentration (regardless of whether the student has taken those courses or not at the time of the internship). On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts:

1. Describe the organization you worked in and the nature of your responsibilities.
2. Which courses were put to use in your work? Which topics, in particular, were important?
3. In retrospect, which courses should you have taken before embarking on your work experience?
4. What are the topics from these courses that would have helped you if you had been more familiar with them?
5. What topics would have been helpful in preparation for this work experience that you did not learn at Brown?
6. What did you learn from the experience that probably could not have been picked up from course work?
7. Is the sort of work you did something you would like to continue doing once you graduate? Explain.
8. Would you recommend your work experience to other Brown students? Explain.

The reflective essays are subject to the approval of the student’s concentration adviser.

Entry to the Professional Track requires a simple application form to be completed by the student and approved by the Concentration Advisor at the time of the concentration declaration. If the student has not yet declared a concentration, the form may be approved by the Chair of the Concentration Committee. The Concentration Advisor will certify that all Professional Track students have completed the necessary internships and will grant approval for the associated reflective essays. All other requirements remain identical to those in the standard tracks in the concentrations.

**Chemical Engineering Track:**

The Chemical Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The education objectives of the Chemical Engineering program are to prepare productive scientific and technical careers, beginning with entry-level engineering positions in industry, or graduate study in chemical engineering or related fields; or to successfully pursue other careers that benefit from the analytical or quantitative skills acquired through the Brown ChE Program; to effectively apply the principles of chemical engineering, problem-solving skills, and critical and independent thinking, to a broad range of complex, multidisciplinary technological and societal problems; to communicate effectively, both orally and in writing, to professionals and audiences of diverse backgrounds, and to pursue technical approaches and innovations that address the needs of society in an ethical, safe, sustainable, and environmentally responsible manner. The student outcomes of this program are the ABET (1-7) Student Outcomes as defined by the ’ABET Criteria for Accrediting Engineering Programs’ (available online at http://www.abet.org/accreditation-criteria-policies-documents/).
1. Core Courses:

ENGN 0030 Introduction to Engineering 1
or ENGN 0031 Honors Introduction to Engineering
ENGN 0040 Dynamics and Vibrations 1
ENGN 0410 Materials Science 1
ENGN 0510 Electricity and Magnetism 1
ENGN 0520 Electrical Circuits and Signals 1
ENGN 0720 Thermodynamics 1
ENGN 0810 Fluid Mechanics 1
BIOL 0200 The Foundation of Living Systems 1
CHEM 0330 Equilibrium, Rate, and Structure 1
MATH 0190 Advanced Placement Calculus (Physics/Engineering)
or MATH 0170 Advanced Placement Calculus
MATH 0200 Intermediate Calculus (Physics/Engineering)
or MATH 0180 Intermediate Calculus
or MATH 0350 Honors Calculus
APMA 0330 Methods of Applied Mathematics I, II 1
or APMA 0350 Applied Ordinary Differential Equations
APMA 0340 Methods of Applied Mathematics I, II 1
or APMA 0360 Applied Partial Differential Equations

2. Upper-Level Chemical & Biochemical Engineering Curriculum:
ENGN 1110 Transport and Biotransport Processes 1
ENGN 1120 Reaction Kinetics and Reactor Design 1
ENGN 1130 Chemical Engineering Thermodynamics 1
ENGN 1710 Heat and Mass Transfer 1
CHEM 0350 Organic Chemistry 1
Advanced Chemistry elective course 2
CHEM 0360 Organic Chemistry 1
or CHEM 0400 Biophysical and Bioinorganic Chemistry
or CHEM 0500 Inorganic Chemistry
or CHEM 1140 Physical Chemistry: Quantum Chemistry
Advanced Natural Sciences elective course 3

3. Capstone Design Course
ENGN 1140 Chemical Process Design 1

*In addition to program requirements above, students must take four courses in the humanities and social sciences.

Total Credits 21

1 Note: ENGN 1120 and 1130 are only offered in alternate years.
2 An advanced chemistry course approved by concentration advisor; the following courses are pre-approved for this requirement.
3 An advanced course in the natural sciences approved by the concentration advisor. For suggestions of acceptable courses that fulfill this requirement, please see the concentration advisor.

Computer Engineering Track:
The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org (http://www.abet.org/). The education objectives of the Computer Engineering program are to prepare graduates: (1) to pursue distinctive multidisciplinary scientific and technical careers beginning with either entry-level computer engineering positions in industry or graduate study in computer engineering and related fields; (2) to participate on multidisciplinary teams that cooperate in applying problem-solving skills and critical and independent thinking to a broad range of projects that can produce the technical innovations aimed at satisfying the future needs of society. The student outcomes of this program are the ABET (1) (7) Student Outcomes as defined by the ‘ABET Criteria for Accrediting Engineering Programs’ (available online at http://www.abet.org/ accreditation-criteria-policies-documents/).

1. Core Courses:

ENGN 0030 Introduction to Engineering 1
or ENGN 0031 Honors Introduction to Engineering
ENGN 0040 Dynamics and Vibrations 1
ENGN 0510 Electricity and Magnetism 1
ENGN 0520 Electrical Circuits and Signals 1
APMA 1650 Statistical Inference I 1
or APMA 1655 Statistical Inference I 1
MATH 0190 Advanced Placement Calculus (Physics/Engineering)
or MATH 0170 Advanced Placement Calculus
MATH 0200 Intermediate Calculus (Physics/Engineering)
or MATH 0180 Intermediate Calculus
or MATH 0350 Honors Calculus
APMA 0330 Methods of Applied Mathematics I, II 1
or APMA 0350 Applied Ordinary Differential Equations
APMA 0340 Methods of Applied Mathematics I, II 1
or APMA 0360 Applied Partial Differential Equations

2. Upper-Level Computer Engineering Curriculum:
ENGN 1570 Linear System Analysis 1
ENGN 1630 Digital Electronics Systems Design 1
ENGN 1640 Design of Computing Systems 1
MATH 0520 Linear Algebra 1
or MATH 0540 Honors Linear Algebra
One advanced Computer Engineering foundations course:
ENGN 1580 Communication Systems 1
ENGN 1600 Design and Implementation of Digital Integrated Circuits 1
ENGN 1610 Image Understanding 1
ENGN 1620 Analysis and Design of Electronic Circuits 1
ENGN 2530 Digital Signal Processing 1
One advanced Computer Science course with significant systems programming:
CSCI 0330 Introduction to Computer Systems 1
or CSCI 0320 Introduction to Software Engineering 1
or CSCI 1230 Introduction to Computer Graphics 1
or CSCI 1380 Distributed Computer Systems 1

The Computer Engineering concentration shares much of the core with the other engineering programs, but is structured to include more courses in computer science, and a somewhat different emphasis in mathematics.
Select three upper-level electives from the list below (other ENGN or CSCI courses subject to approval). At least one must be an ENGN course and at least one must be a CSCI course. 

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ENGN 1220</td>
<td>Neuroengineering</td>
</tr>
<tr>
<td>ENGN 1450</td>
<td>Properties and Processing of Electronic Materials</td>
</tr>
<tr>
<td>ENGN 1560</td>
<td>Optics</td>
</tr>
<tr>
<td>ENGN 1580</td>
<td>Communication Systems</td>
</tr>
<tr>
<td>ENGN 1590</td>
<td>Introduction to Semiconductors and Semiconductor Electronics</td>
</tr>
<tr>
<td>ENGN 1600</td>
<td>Design and Implementation of Digital Integrated Circuits</td>
</tr>
<tr>
<td>ENGN 1610</td>
<td>Image Understanding</td>
</tr>
<tr>
<td>ENGN 1620</td>
<td>Analysis and Design of Electronic Circuits</td>
</tr>
<tr>
<td>ENGN 1680</td>
<td>Design and Fabrication of Semiconductor Devices</td>
</tr>
<tr>
<td>ENGN 1690</td>
<td>Photonics Devices and Sensors</td>
</tr>
<tr>
<td>ENGN 1930B</td>
<td>Biomedical Optics</td>
</tr>
<tr>
<td>ENGN 1931A</td>
<td>Photovoltaics Engineering</td>
</tr>
<tr>
<td>ENGN 1931F</td>
<td>Introduction to Power Engineering</td>
</tr>
<tr>
<td>ENGN 1931I</td>
<td>Design of Robotic Systems</td>
</tr>
<tr>
<td>ENGN 1931Y</td>
<td>Control Systems Engineering</td>
</tr>
<tr>
<td>ENGN 1931Z</td>
<td>Interfaces, Information and Automation</td>
</tr>
<tr>
<td>ENGN 2520</td>
<td>Pattern Recognition and Machine Learning</td>
</tr>
<tr>
<td>ENGN 2530</td>
<td>Digital Signal Processing</td>
</tr>
<tr>
<td>ENGN 2560</td>
<td>Computer Vision</td>
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<tr>
<td>ENGN 2610</td>
<td>Physics of Solid State Devices</td>
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<tr>
<td>ENGN 2620</td>
<td>Solid State Quantum and Optoelectronics</td>
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<tr>
<td>ENGN 2910A</td>
<td>Advanced Computer Architecture</td>
</tr>
<tr>
<td>ENGN 2911X</td>
<td>Reconfigurable Computing for Machine/Deep Learning</td>
</tr>
<tr>
<td>ENGN 2912B</td>
<td>Scientific Programming in C++</td>
</tr>
<tr>
<td>ENGN 2912E</td>
<td>Low Power VLSI System Design</td>
</tr>
<tr>
<td>CSCI 0320</td>
<td>Introduction to Software Engineering</td>
</tr>
<tr>
<td>CSCI 1230</td>
<td>Introduction to Computer Graphics</td>
</tr>
<tr>
<td>CSCI 1270</td>
<td>Database Management Systems</td>
</tr>
<tr>
<td>CSCI 1300</td>
<td>User Interfaces and User Experience</td>
</tr>
<tr>
<td>CSCI 1320</td>
<td>Creating Modern Web &amp; Mobile Applications</td>
</tr>
<tr>
<td>CSCI 1380</td>
<td>Distributed Computer Systems</td>
</tr>
<tr>
<td>CSCI 1410</td>
<td>Artificial Intelligence</td>
</tr>
<tr>
<td>CSCI 1480</td>
<td>Building Intelligent Robots</td>
</tr>
<tr>
<td>CSCI 1570</td>
<td>Design and Analysis of Algorithms</td>
</tr>
<tr>
<td>CSCI 1600</td>
<td>Real-Time and Embedded Software</td>
</tr>
<tr>
<td>CSCI 1660</td>
<td>Introduction to Computer Systems Security</td>
</tr>
<tr>
<td>CSCI 1670</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>CSCI 1680</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSCI 1730</td>
<td>Design and Implementation of Programming Languages</td>
</tr>
<tr>
<td>CSCI 1760</td>
<td>Multiprocessor Synchronization</td>
</tr>
<tr>
<td>CSCI 1900</td>
<td>csciStartup</td>
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<tr>
<td>CSCI 1970</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>CSCI 1980</td>
<td>Computer Networks</td>
</tr>
<tr>
<td>CSCI 1990</td>
<td>Projects in Engineering Design I</td>
</tr>
</tbody>
</table>

3. Capstone Design |

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>ENGN 1650</td>
<td>Embedded Microprocessor Design</td>
</tr>
<tr>
<td>or ENGN 1000</td>
<td>Projects in Engineering Design I</td>
</tr>
<tr>
<td>or ENGN 1001</td>
<td>Projects in Engineering Design II</td>
</tr>
</tbody>
</table>

4. General Education Requirement: At least four approved courses must be taken in humanities and social sciences |

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 0200</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
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<tr>
<td>or ENGR 0031</td>
<td>Honors Introduction to Engineering</td>
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<tr>
<td>or ENGR 0040</td>
<td>Dynamics and Vibrations</td>
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<tr>
<td>or ENGR 0410</td>
<td>Materials Science</td>
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<tr>
<td>or ENGR 0510</td>
<td>Electricity and Magnetism</td>
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<tr>
<td>or ENGR 0520</td>
<td>Electrical Circuits and Signals</td>
</tr>
<tr>
<td>or ENGR 0720</td>
<td>Thermodynamics</td>
</tr>
<tr>
<td>or ENGR 0810</td>
<td>Mechanics of Solids and Structures</td>
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<tr>
<td>or APMA 0360</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>or APMA 1710</td>
<td>Introduction to Algorithms and Data Structures</td>
</tr>
<tr>
<td>or CSCI 0180</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
<tr>
<td>or MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
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<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
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<td>Intermediate Calculus (Physics/Engineering)</td>
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<td>Intermediate Calculus</td>
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<td>or MATH 0350</td>
<td>Honors Calculus</td>
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<tr>
<td>or APMA 0330</td>
<td>Methods of Applied Mathematics I, II</td>
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<tr>
<td>or APMA 0350</td>
<td>Applied Ordinary Differential Equations</td>
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<tr>
<td>or APMA 0340</td>
<td>Methods of Applied Mathematics I, II</td>
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<tr>
<td>or APMA 0360</td>
<td>Applied Partial Differential Equations</td>
</tr>
<tr>
<td>or APMA 1650</td>
<td>Statistical Inference I</td>
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<tr>
<td>or APMA 1710</td>
<td>Information Theory</td>
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<tr>
<td>or MATH 0520</td>
<td>Linear Algebra</td>
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<tr>
<td>or MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>or CSCI 0150</td>
<td>Introduction to Object-Oriented Programming and Computer Science</td>
</tr>
<tr>
<td>or CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
</tr>
</tbody>
</table>

Total Credits: 21

1. Core Courses: |

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<tbody>
<tr>
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<td>Introduction to Engineering</td>
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<td>or ENGR 0031</td>
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<td>ENGR 0410</td>
<td>Materials Science</td>
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<td>ENGR 0510</td>
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<td>ENGR 0810</td>
<td>Mechanics of Solids and Structures</td>
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<td>or APMA 0360</td>
<td>Fluid Mechanics</td>
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<tr>
<td>or APMA 1710</td>
<td>Introduction to Algorithms and Data Structures</td>
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<tr>
<td>or CSCI 0180</td>
<td>Computer Science: An Integrated Introduction</td>
</tr>
<tr>
<td>or MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
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<tr>
<td>or MATH 0170</td>
<td>Advanced Placement Calculus</td>
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<td>or MATH 0200</td>
<td>Intermediate Calculus (Physics/Engineering)</td>
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<td>Introduction to Object-Oriented Programming and Computer Science</td>
</tr>
<tr>
<td>or CSCI 0040</td>
<td>Introduction to Scientific Computing and Problem Solving</td>
</tr>
</tbody>
</table>
2. Upper-Level Electrical Engineering Curriculum

ENGN 1570 Linear System Analysis 1
ENGN 1620 Analysis and Design of Electronic Circuits 1
ENGN 1630 Digital Electronics Systems Design 1
PHYS 0790 Physics of Matter 1
or PHYS 1410 Quantum Mechanics A 1

3. Electrical Engineering Specialization - Complete at least three courses from the following groups:

At least one advanced Electrical Engineering foundations course:

ENGN 1230 Instrumentation Design
ENGN 1580 Communication Systems
ENGN 1590 Introduction to Semiconductors and Semiconductor Electronics
ENGN 1600 Design and Implementation of Digital Integrated Circuits
ENGN 1610 Image Understanding
ENGN 1640 Design of Computing Systems

Up to two other Electrical Engineering Courses 5

ENGN 1220 Neuroengineering
ENGN 1560 Optics
ENGN 1650 Embedded Microprocessor Design
ENGN 1680 Design and Fabrication of Semiconductor Devices
ENGN 1690 Photonics Devices and Sensors
ENGN 1930B Biomedical Optics
ENGN 1931A Photovoltaics Engineering
ENGN 1931F Introduction to Power Engineering
ENGN 1931I Design of Robotic Systems
ENGN 1931Y Control Systems Engineering
ENGN 1931Z Interfaces, Information and Automation

Up to one interdisciplinary engineering science course:

CLPS 1491 Neural Modeling Laboratory
CLPS 1520 Computational Vision
CSCI 0330 Introduction to Computer Systems 4
ENGN 1370 Advanced Engineering Mechanics
ENGN 1450 Properties and Processing of Electronic Materials
NEUR 2110 Statistical Neuroscience
PHYS 1420 Quantum Mechanics B

4. Capstone Design: At least one course from the following: 1

ENGN 1650 Embedded Microprocessor Design
or ENGN 1000 Projects in Engineering Design I
or ENGN 1001 Projects in Engineering Design II

5. General Education Requirement: At least four approved courses must be taken in humanities and social sciences

Total Credits 21

1 Or 1000-level Applied Mathematics or Mathematics course subject to Concentration Advisor Approval
2 ENGN 1931Z may replace CSCI 0150 or meet an elective requirement, but not both.
3 Or 2000-level Electrical Engineering graduate course (such as ENGN 2500, ENGN 2520, ENGN 2530, ENGN 2560, ENGN 2912K).
4 Or Computer Science course beyond CSCI 0150/CSCI 0170 subject to Concentration Advisor approval

5 Subject to approval by the concentration advisor, an independent study course (ENGN 1970/ ENGN 1971) may be used to fulfill the Engineering Capstone Design requirement. To qualify for such approval, the independent study project must: (1) contain a significant and definable design component; (2) be based on the knowledge and skills acquired in earlier course work, (3) incorporate appropriate engineering standards; and (4) address multiple realistic constraints.

Environmental Engineering Track:

Brown’s Environmental Engineering program was launched in 2013. The first graduates completed the program with the Sc.B. degree in Environmental Engineering in Spring 2017. The program has graduated Sc.B. degree recipients every year since then. The program will seek accreditation from the Engineering Accreditation Commission of ABET during Brown’s upcoming review period in 2020-2021 when the rest of the School of Engineering’s existing accredited programs will be reviewed.

The education objectives of the program are: (1) to prepare students to pursue scientific or technical careers, starting with entry-level positions in industry, or in graduate study in environmental engineering; (2) to develop critical thinking and problem-solving skills that yield sustainable solutions to complex environmental problems for the protection of human health and the environment. The student outcomes of this program are intended to be those enumerated in items (1) - (7) Student Outcomes as defined by the ‘ABET Criteria for Accrediting Engineering Programs’ (available online at http://www.abet.org/accreditation-criteria-policies-documents/).

1. Core Courses:

ENGN 0030 Introduction to Engineering 1
or ENGN 0031 Honors Introduction to Engineering 1
ENGN 0040 Dynamics and Vibrations 1
ENGN 0410 Materials Science 1
ENGN 0490 Fundamentals of Environmental Engineering 1
ENGN 0510 Electricity and Magnetism 1
or ENGN 0520 Electrical Circuits and Signals 1
ENGN 0720 Thermodynamics 1
ENGN 0810 Fluid Mechanics 1
BIOL 0200 The Foundation of Living Systems 1
CHEM 0330 Equilibrium, Rate, and Structure 1
MATH 0190 Advanced Placement Calculus (Physics/Engineering) 1
or MATH 0170 Advanced Placement Calculus 1
MATH 0200 Intermediate Calculus (Physics/Engineering) 1
or MATH 0180 Intermediate Calculus 1
or MATH 0350 Honors Calculus 1
APMA 0330 Methods of Applied Mathematics I, II 1
or APMA 0350 Applied Ordinary Differential Equations 1
APMA 0650 Essential Statistics 1
or APMA 1650 Statistical Inference I 1

2. Advanced Science Courses:

EEPS 1370 Environmental Geochemistry 1
or EEPS 1310 Global Water Cycle 1
or EEPS 1330 Global Environmental Remote Sensing 1
or EEPS 1520 Ocean Circulation and Climate 1
or EEPS 1580 Quantitative Elements of Physical Hydrology 1
or EEPS 1960B Special Topics in Geological Sciences: Physical Hydrology 1
BIOL 0420 Principles of Ecology 1
or BIOL 0480 Evolutionary Biology 1
or BIOL 1470 Conservation Biology 1

3. Upper-Level Environmental Engineering Curriculum (5 Credits)
ENGN 1340 Water Supply and Treatment Systems - Technology and Sustainability 1
ENGN 1931P Energy and the Environment 1
Three advanced Engineering courses from the list below: 1 3
ENGN 1110 Transport and Biotransport Processes 1
ENGN 1120 Reaction Kinetics and Reactor Design 1
ENGN 1130 Chemical Engineering Thermodynamics 1
ENGN 1710 Heat and Mass Transfer 1
ENGN 1860 Advanced Fluid Mechanics 1
ENGN 1930U Renewable Energy Technologies 1
ENGN 1931A Photovoltaics Engineering 1
ENGN 1931F Introduction to Power Engineering 1
ENGN 1931R Chemistry of Environmental Pollution 1
ENGN 2911P Fate and Transport of Environmental Contaminants 1
4. Capstone Design 2
ENGN 1150 Environmental Engineering Design 1
* In addition to program requirements above, students must take four courses in the humanities and social sciences.

Total Credits 21

1 Or any other advanced Engineering course approved by the concentration advisor

2 Subject to approval by the concentration advisor, an independent study course (ENGN1970/1971) may be used to fulfill the Engineering Capstone Design requirement. To qualify for such approval, the independent study project must: (1) contain a significant and definable design component; (2) be based on the knowledge and skills acquired in earlier course work, (3) incorporate appropriate engineering standards; and (4) address multiple realistic constraints. To request approval, please complete the online form available at: http://www.brown.edu/academics/engineering/undergraduate-study

Materials Engineering Track:
The Materials Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The education objectives of the Materials Engineering program are to prepare graduates: (1) to pursue multidisciplinary scientific and technical careers beginning with entry level engineering positions in industry, from start-ups to multinational corporations, or graduate study in materials science and engineering and related fields; (2) to apply an engineering problem-solving approach combined with a broad appreciation for the liberal arts to inform and develop their understanding of current societal needs and values to achieve leadership positions in their chosen fields of endeavor. The student outcomes of this program are the (1) - (7) Student Objectives of the Materials Engineering program (available online at http://www.abet.org/accreditation-criteria-policies-documents/).

1. Core Courses:
ENGN 0030 Introduction to Engineering 1
or ENGN 0031 Honors Introduction to Engineering 1
ENGN 0040 Dynamics and Vibrations 1
ENGN 0410 Materials Science 1
ENGN 0510 Electricity and Magnetism 1
ENGN 0520 Electrical Circuits and Signals 1
ENGN 0720 Thermodynamics 1
ENGN 0310 Mechanics of Solids and Structures 1
or ENGN 0810 Fluid Mechanics 1
CHEM 0330 Equilibrium, Rate, and Structure 1
MATH 0190 Advanced Placement Calculus (Physics/Engineering) 1
or MATH 0170 Advanced Placement Calculus 1
MATH 0200 Intermediate Calculus (Physics/Engineering) 1
or MATH 0180 Intermediate Calculus 1
or MATH 0350 Honors Calculus 1
APMA 0330 Methods of Applied Mathematics I, II 1
or APMA 0350 Applied Ordinary Differential Equations 1
APMA 0340 Methods of Applied Mathematics I, II 1
or APMA 0360 Applied Partial Differential Equations I 1
or MATH 0520 Linear Algebra 1
or APMA 1210 Operations Research: Deterministic Models 1
or APMA 1650 Statistical Inference I 1
CHEM 0350 Organic Chemistry 1
or CSCI 0040 Introduction to Scientific Computing and Problem Solving 1
or CSCI 0111 Computing Foundations: Data 1
or CSCI 0150 Introduction to Object-Oriented Programming and Computer Science 1
or CSCI 0170 Computer Science: An Integrated Introduction 1
or CSCI 0190 Accelerated Introduction to Computer Science 1
or ENGN 1230 Instrumentation Design 1
or ENGN 1740 Computer Aided Visualization and Design 1
or ENGN 1750 Advanced Mechanics of Solids 1
or APMA 0160 Introduction to Scientific Computing 1

2. Advanced Science and Engineering Courses:

MATH 0170 Advanced Placement Calculus 1
or MATH 0190 Advanced Placement Calculus (Physics/Engineering) 1
or MATH 0350 Honors Calculus 1
APMA 0330 Methods of Applied Mathematics I, II 1
or APMA 0350 Applied Ordinary Differential Equations 1
APMA 0340 Methods of Applied Mathematics I, II 1
or APMA 0360 Applied Partial Differential Equations I 1
or MATH 0520 Linear Algebra 1
or APMA 1210 Operations Research: Deterministic Models 1
or APMA 1650 Statistical Inference I 1
CHEM 0350 Organic Chemistry 1
or CSCI 0040 Introduction to Scientific Computing and Problem Solving 1
or CSCI 0111 Computing Foundations: Data 1
or CSCI 0150 Introduction to Object-Oriented Programming and Computer Science 1
or CSCI 0170 Computer Science: An Integrated Introduction 1
or CSCI 0190 Accelerated Introduction to Computer Science 1
or ENGN 1230 Instrumentation Design 1
or ENGN 1740 Computer Aided Visualization and Design 1
or ENGN 1750 Advanced Mechanics of Solids 1
or APMA 0160 Introduction to Scientific Computing 1

3. Upper-Level Materials Engineering Curriculum
ENGN 1410 Physical Chemistry of Solids 1
ENGN 1420 Kinetics Processes in Materials Science and Engineering 1
ENGN 1440 Mechanical Properties of Materials 1
PHYS 0790 Physics of Matter 1
or CHEM 0350 Organic Chemistry 1
or CHEM 1140 Physical Chemistry: Quantum Chemistry 1

Five of the following: 1
ENGN 1450 Properties and Processing of Electronic Materials 1
ENGN 1470 Structure & Properties of Nonmetallic Materials 1
ENGN 1475 Soft Materials 1
ENGN 1480 Metallic Materials 1
ENGN 1490 Biomaterials 1

3. Capstone Design 2
ENGN 1000 Projects in Engineering Design I 1
or ENGN 1001 Projects in Engineering Design II 1
or ENGN 1930L Biomedical Engineering Design and Innovation 1

* In addition to program requirements above, students must take four courses in the humanities and social sciences.

Total Credits 21

1 These courses are taken in either the junior or senior year. Note that ENGN 1450, ENGN 1475, ENGN 1470 and ENGN 1480 are typically offered in alternate years.

2 Subject to approval by the concentration advisor, an independent study course (ENGN1970/1971) may be used to fulfill the Engineering Capstone Design requirement. To qualify for such approval, the independent study project must: (1) contain a significant and definable design component; (2) be based on the knowledge and skills acquired in earlier course work, (3) incorporate appropriate engineering standards; and (4) address multiple realistic constraints. To request approval, please complete the online form available at: http://www.brown.edu/academics/engineering/undergraduate-study

http://www.brown.edu/academics/engineering/undergraduate-study/
Mechanical Engineering Track:
The Mechanical Engineering program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org. The educational objectives of the Mechanical Engineering program are to prepare graduates: (1) to pursue scientific and technical careers beginning with either graduate study in mechanical engineering and related fields or mechanical engineering positions in industry; (2) to work on interdisciplinary teams that make use of the engineering problem solving method and a broad background in the liberal arts to address societal needs. The student outcomes of this program are the (1) - (7) Student Outcomes as defined by the 'ABET Criteria for Accrediting Engineering Programs' (available online at http://www.abet.org/accreditation-criteria-policies-documents/).

1. Core Courses:
   - ENGN 0030 Introduction to Engineering 1
   - or ENGN 0031 Honors Introduction to Engineering
   - ENGN 0040 Dynamics and Vibrations 1
   - ENGN 0310 Mechanics of Solids and Structures 1
   - ENGN 0410 Materials Science 1
   - ENGN 0510 Electricity and Magnetism 1
   - ENGN 0520 Electrical Circuits and Signals 1
   - ENGN 0720 Thermodynamics 1
   - ENGN 0810 Fluid Mechanics 1
   - CHEM 0330 Equilibrium, Rate, and Structure 1
   - MATH 0190 Advanced Placement Calculus (Physics/Engineering) 1
   - or MATH 0170 Advanced Placement Calculus
   - MATH 0200 Intermediate Calculus (Physics/Engineering) 1
   - or MATH 0180 Intermediate Calculus
   - or MATH 0350 Honors Calculus
   - APMA 0330 Methods of Applied Mathematics I, II 1
   - or APMA 0350 Applied Ordinary Differential Equations
   - APMA 0340 Methods of Applied Mathematics I, II 1
   - or APMA 0360 Applied Partial Differential Equations I
   - CSCI 0040 Introduction to Scientific Computing and Problem Solving 1
   - or CSCI 0111 Computing Foundations: Data
   - or CSCI 0150 Introduction to Object-Oriented Programming and Computer Science
   - or CSCI 0170 Computer Science: An Integrated Introduction
   - or CSCI 0190 Accelerated Introduction to Computer Science
   - or APMA 0160 Introduction to Scientific Computing
   - or ENGN 1931Z Interfaces, Information and Automation

2. Upper-Level Mechanical Engineering Curriculum: Complete at least 6 courses from the following groups:
   - Mechanical Systems: At least one course from:
     - ENGN 1300 Structural Analysis
     - ENGN 1370 Advanced Engineering Mechanics
     - ENGN 1735 Vibration of Mechanical Systems
     - ENGN 1750 Advanced Mechanics of Solids
   - Fluids/Thermal Systems: At least one course from:
     - ENGN 1860 Advanced Fluid Mechanics
     - ENGN 1700 Aerospace Fluid Mechanics
     - ENGN 1710 Heat and Mass Transfer
   - Capstone: At least one course from the following must be taken in the final two semesters:
     - ENGN 1000 Projects in Engineering Design I
     - or ENGN 1001 Projects in Engineering Design II
     - ENGN 1930T Aircraft Design
     - ENGN 1930M Industrial Design
     - ENGN 1931D Design of Mechanical Assemblies
     - ENGN 1380 Design of Civil Engineering Structures
     - ENGN 1720 Design of Thermal Engines
     - ENGN 1760 Design of Space Systems

Design Electives: Up to two courses from:
- ENGN 1230 Instrumentation Design
- ENGN 1740 Computer Aided Visualization and Design

Bioengineering Electives: Up to two courses from:
- ENGN 1210 Biomechanics
- ENGN 1220 Neuroengineering
- ENGN 1490 Biomaterials

Robotics and Control Systems Electives: up to two courses from:
- ENGN 1931I Design of Robotic Systems
- ENGN 1931Y Control Systems Engineering

Engineering Analysis and Computation Electives: up to two courses from:
- ENGN 1840 Numerical Methods in Engineering
- ENGN 1950 Advanced Engineering Optimization

Energy and Environmental Engineering Electives: up to two courses from:
- ENGN 1930U Renewable Energy Technologies
- ENGN 1931P Energy and the Environment

Interdisciplinary Electives: up to one course from:
- ENGN 1620 Analysis and Design of Electronic Circuits
- or ENGN 1340 Water Supply and Treatment Systems - Technology and Sustainability
- or ENGN 1440 Mechanical Properties of Materials
- or ENGN 1470 Structure & Properties of Nonmetallic Materials
- or ENGN 1570 Linear System Analysis
- or ENGN 1931F Introduction to Power Engineering
- or ENGN 1931X Instrumentation for Research: A Biomaterials/ Materials Project Laboratory
- or ENGN 1931Z Interfaces, Information and Automation

3. Upper-Level Advanced Science Course: at least one course from:
- PHYS 0790 Physics of Matter
- or BIOL 0800 Principles of Physiology
- or CHEM 0350 Organic Chemistry
- or CHEM 1140 Physical Chemistry: Quantum Chemistry
- or EEPS 1450 Structural Geology
- or EEPS 1370 Environmental Geochemistry

4. General Education Requirement: At least four approved courses must be taken in humanities and social sciences

Total Credits: 21

1. ENGN 1490 may be substituted if taken in Sophomore year.
2. Other advanced courses in mathematics or applied mathematics may be substituted with approval of the concentration advisor.
3. Subject to approval by the concentration advisor, an independent study course (ENGN 1970/ENGN 1971) may be used to fulfill the Engineering Capstone Design requirement. To qualify for such approval, the independent study project must: (1) contain a significant and definable design component; (2) be based on the knowledge and skills acquired in earlier course work, (3) incorporate appropriate engineering standards; and (4) address multiple realistic constraints.
4. ENGN 1931Z may replace CSCI 0040 or meet an elective requirement, but not both.
5. Other non-introductory courses in physics, chemistry, neuroscience, geology, or biology may be substituted with the permission of the concentration advisor.
Engineering and Physics

The Sc.B. program in Engineering and Physics is sponsored jointly by the School of Engineering and the Department of Physics. The program is designed to ensure that students take a significant portion of the usual curriculum in Engineering and in Physics, obtain substantial laboratory experience, and take several upper-level elective courses, focusing on applied science. Students may take either the standard Physics or Engineering programs during their freshman and sophomore years and then switch to this combined program. The Sc.B. degree program in Engineering and Physics is not accredited by ABET.

The following standard program assumes that a student begins in Engineering or Physics is not accredited by ABET. Students who begin in MATH 0200 can substitute an additional science, engineering or higher-level mathematics course for the MATH 0170 or MATH 0190 requirement. To accommodate the diverse preparation of individual students, variations of the following sequences and their prerequisites are possible with permission of the appropriate concentration advisor and the instructors involved. We recommend that each student's degree program be submitted for prior approval (typically in semester four) and scrutinized for compliance (in semester seven) by one faculty member from the Department of Physics and one faculty member from the School of Engineering.

Select one of the following two course sequences:

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGN 0030 &amp; ENGN 0040</td>
<td>Introduction to Engineering and Dynamics and Vibrations (ENGN 0031 may be substituted for ENGN 0030)</td>
</tr>
<tr>
<td>PHYS 0050 &amp; PHYS 0060</td>
<td>Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics</td>
</tr>
<tr>
<td>PHYS 0070 &amp; PHYS 0160</td>
<td>Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics</td>
</tr>
<tr>
<td>MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
</tr>
<tr>
<td>or MATH 0170</td>
<td>Intermediate Calculus (Physics/Engineering)</td>
</tr>
<tr>
<td>MATH 0200</td>
<td>Advanced Placement Calculus</td>
</tr>
<tr>
<td>or MATH 0180</td>
<td>Intermediate Calculus</td>
</tr>
<tr>
<td>or MATH 0350</td>
<td>Honors Calculus</td>
</tr>
<tr>
<td>Select three additional higher-level math, applied math, or mathematical physics courses.</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits 19

English

The English Department fosters the study of British, American, and Anglophone literature—old and new—in ways that are both intensive and open. We study how English literature works, how we understand and appreciate it, and how we write about it. We offer a wide array of courses in poetry, drama, fiction, creative nonfiction, film, digital media, and theory. All our courses emphasize the development of student skills in writing, textual analysis, and argument. The department’s faculty members are deeply committed to undergraduate teaching and advising. You will find considerable diversity in our critical methods, including cross-disciplinary approaches that relate the study of literature to history, politics, science, as well as to other art forms. We encourage students in our classes likewise to forge their own new ways of understanding literature and culture.

In addition to the standard English concentration, we offer an English concentration track in the practice of Nonfiction Writing. The concentration in English and the English/Nonfiction track follow the same core requirements, and students in the English concentration may elect Nonfiction Writing courses as electives. We invite applications from qualified juniors to the honors programs in both English and Nonfiction.

One of the largest humanities concentrations at Brown, English provides a strong foundation for a liberal education and for employment in many sectors, especially those that centrally involve writing and working with texts (in any form). In addition to authorship, scholarship, and teaching, these include: journalism, publishing, advertising, visual media, consulting, public relations, public service, finance, government, corporate research, and administration. Our English concentrators routinely go on to law, medical, and professional schools as well as to graduate education in literature and the arts.

About the Concentration

We encourage students interested in concentrating in English to come into the department offices at 70 Brown Street and speak with a concentration advisor. Students in English courses who are considering an English concentration are welcome to make an appointment to speak with their instructor. Concentration programs must be approved by a concentration advisor. To declare a concentration, students must fill out an online Concentration form via ASK and enter their plan of study indicating the requirements that each course fulfills.
Concentration Requirements (10 courses):

1. ONE course in ‘How Literature Matters’ (ENGL0100, 0101): 1
   Addressing topics about which professors are especially passionate, these introductory courses aim to deepen and refine students' understanding of how literature matters: aesthetically, ethically, historically and politically. Students not only engage with larger questions about literature’s significance, exploring the particular kinds of insights and thinking it is especially suited for conveying, they also gain a deeper awareness of the critical methods we use to understand and analyze it, engaging with matters of form, genre and media. Finally, these courses help students develop their skills as close, careful readers of literary form and language.
   ENGL 0100A How To Read A Poem
   ENGL 0100C Altered States
   ENGL 0100D Matters of Romance
   ENGL 0100F Devils, Demons, Do-Gooders
   ENGL 0100G The Literature of Identity
   ENGL 0100J Cultures and Countercultures: The American Novel after World War II
   ENGL 0100M Writing War
   ENGL 0100N City Novels
   ENGL 0100P Love Stories
   ENGL 0100Q How Poems See
   ENGL 0100R American Histories, American Novels
   ENGL 0100S Being Romantic
   ENGL 0100T The Simple Art of Murder
   ENGL 0100U Serial Fictions
   ENGL 0100V Inventing Asian American Literature
   ENGL 0100W Literature Reformatted
   ENGL 0100Y Do the Right Thing
   ENGL 0101A Independence and Modern Literature
   ENGL 0101B Earth Poetics: Literature and Climate Change
   ENGL 0101C America Dreaming

2. ONE course in Medieval and Renaissance Literatures (Pre-1700): 1
   These courses, which center on Medieval and Renaissance literary works, cast light on periods that can come across to us as both familiar and strange. They focus our attention on how literatures from these periods depict concepts such as aesthetics, romance, gender, sexuality, race, power and politics in ways that are like and unlike how we tend to think of them today—on how pre-modern or early modern works can both defamiliarize the categories of experience and identity we tend to take for granted and also suggest something of their origins. Several courses under this rubric will also engage with recent literary and filmic adaptations of works from these eras, exploring how many such works continue to function as vibrant and at times ambivalent inspirations for the literary imaginings of later periods.
   ENGL 0101A Independence and Modern Literature
   ENGL 0101B Earth Poetics: Literature and Climate Change
   ENGL 0101C America Dreaming

3. ONE course in Literatures of Modernity (Post-1700): 1
   These courses explore the many strands of writing in English that have emerged from the eighteenth century through the present, shaping the contemporary world. These literatures reflect on political, economic, and intellectual history, from the idea of the nation and the structures of capital through the rise and dissolution of empire and the emergence of postcolonial states, including the forms of race, gender and sexuality that cut across them. Courses also examine how aesthetic works can shape and critique their moment: they look at genres like the novel and short story, poetry, drama, essays, and new, hybrid forms that have arisen with expanding digital media; they also take up a multitude of literary movements whose influences remain with us today, including Romanticism, realism, naturalism, modernism, and post-modernism.
   ENGL 0101A Independence and Modern Literature
   ENGL 0101B Earth Poetics: Literature and Climate Change
   ENGL 0101C America Dreaming

4. ONE course in Literatures of the Color Line: 1
   In 1903, W. E. B. Du Bois famously proclaimed in ‘The Souls of Black Folk’ that “The problem of the twentieth century is the problem of the color-line,—the relation of the darker to the lighter races of men in Asia and Africa, in America and the islands of the sea.” Courses in this category explore the complex ways in which literary texts have addressed American histories of race, ethnicity, and empire. They may do so from the vantage point of ideas about difference and hierarchy that predate the modern conception of race and by engaging with earlier histories of conflict and contact. These courses explore issues of intersectionality as well, highlighting how race operates in relation to other structures of difference such as gender, sexuality and class.
   ENGL 0100F Devils, Demons, Do-Gooders
   ENGL 0100N City Novels
   ENGL 0100S Being Romantic
   ENGL 0100V Inventing Asian American Literature
   ENGL 0101A Independence and Modern Literature
   ENGL 0105X The Claims of Fiction
   ENGL 0105Y Bretónés y Bretónologies
   ENGL 0700E Postcolonial Literature
   ENGL 0700G American Fiction and Mass Culture
   ENGL 0701B African American Literature and the Legacy of Slavery
   ENGL 0701Q American Literature in the Era of Segregation
   ENGL 0710V Death and Dying in Black Literature
   ENGL 0710W Readings in Black and Queer
   ENGL 0710X Black Poetics
   ENGL 0710Y Literature of US Inequality, 1945-2020
   ENGL 0710Z American Literature and the Constitution
   ENGL 1310H The Origins of American Literature
   ENGL 1511A American Literature and the Civil War
   ENGL 1511C Lincoln, Whitman, and The Civil War
   ENGL 1511P Realism, Modernism, Postmodernism: The American Novel and its Traditions
   ENGL 1710J Modern African Literature
   ENGL 1710K Literature and the Problem of Poverty
   ENGL 1710P The Literature and Culture of Black Power Reconsidered
   ENGL 1711D Reading New York
   ENGL 1711F India in English
   ENGL 1711H Lyric Concepts: The Question of Identity in Modern and Contemporary Poetry
   ENGL 1711J Art for an Undivided Earth / Transnational Approaches to Indigenous Art and Activism
   ENGL 1711K The Politics of Perspective: Post-war British Fiction
5. ONE course in Literary Theory and Cultural Critique:
The late-twentieth century saw a revolution in the field of literary studies in the United States, as critics turned their attention to the contextual and historical nature of our categories of knowledge. This turn to theory was influenced by developments in psychoanalysis, linguistics, philosophy, political theory and sociology and by the emergence of social movements that challenged such structures as patriarchy, homophobia, racism, imperialism, economic inequality, and environmental violence. The avenues of inquiry opened up brought an increased awareness of the implication of literature in the operations of power and ideology; a sense of the potential for literary modes of presentation to challenge and displace such operations; and a new attention to the role of gender, race, empire, class, and sexuality in the formation of the literary work. Courses that satisfy the Literary Theory and Cultural Critique requirement explore some dimension of these issues – either directly, taking as their primary focus a set of theoretical questions or debates, or indirectly, by examining a compelling topical question of social and political significance through works of literature and literary theory.

6. FIVE electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1711L</td>
<td>Contemporary Black Women's Literature</td>
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<tr>
<td>ENGL 1711N</td>
<td>Monsters in our Midst: The Plantation and</td>
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<tr>
<td></td>
<td>the Woods in Trans-American Literature</td>
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<tr>
<td>ENGL 1711O</td>
<td>Radical Pasts, Radical Futures: Literature</td>
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<td>and the Left</td>
</tr>
<tr>
<td>ENGL 1760U</td>
<td>American Modernism and its Aftemaths</td>
</tr>
<tr>
<td>ENGL 1760Y</td>
<td>Toni Morrison</td>
</tr>
<tr>
<td>ENGL 1761B</td>
<td>Narratives of Blackness in Latinx and Latin</td>
</tr>
<tr>
<td></td>
<td>America</td>
</tr>
<tr>
<td>ENGL 1761E</td>
<td>Blackness and Being</td>
</tr>
<tr>
<td>ENGL 1761F</td>
<td>Toni Morrison</td>
</tr>
<tr>
<td>ENGL 1761V</td>
<td>The Korean War in Color</td>
</tr>
<tr>
<td>ENGL 1900D</td>
<td>Literature and Politics</td>
</tr>
<tr>
<td>ENGL 1901J</td>
<td>Fanon and Spillers</td>
</tr>
<tr>
<td>ENGL 1950H</td>
<td>The Recent Novel and its Cultural Rivals</td>
</tr>
</tbody>
</table>

**Total Credits**: 10

1. Each course may fulfill ONE requirement. Five courses must be 1000-level courses. With advisor approval, two of the ten required courses may be taken in departments other than English.

2. Only TWO courses dealing primarily with the practice of writing at the 1000-level may be counted as electives. ENGL0900 and ENGL0930 do not count toward the concentration, however they do fulfill prerequisites for upper-level Nonfiction courses. One ENGL200 may be counted toward the 10-course requirement only as an elective.

All substitutions and/or exceptions must be approved by the concentration advisor in consultation with the Director of Undergraduate Studies. A substitution or exception is not approved until specified in writing in the student's concentration file housed in the English Department.

**English Concentration -- Nonfiction Writing Track (10 courses)**
The English concentration also includes a Nonfiction Writing Track. The requirements are the same as 1 through 6 above, but three of the five electives must be 1000-level Nonfiction Writing courses (only ONE of which may be intermediate: ENGL1030, ENGL1050). Only THREE Nonfiction courses may count toward the track.

**Honors in English**
The English Honors program is intended for students who have been highly successful in their English concentration coursework and who want the opportunity to pursue a research project in more depth than is possible in an undergraduate seminar. The program is intended for those students with a strong desire to conduct independent research under the supervision of a thesis advisor and culminating in the writing of a thesis during the senior year.

**Admission**
Students apply to the Honors Program early in the second semester of their junior year. December or mid-year graduates may apply in their 6th semester, but are encouraged to apply during their 5th semester and write their theses alongside May graduates. Interested concentrators should speak to the Honors Advisor early in their junior year to discuss their plans. Specific deadlines for admission are announced annually and are available on the department website. Students who are studying off campus are expected to meet the application submission deadline.

Admission to the English Honors Program depends on evidence of ability and promise in the study of literature. To be eligible for admission, students must have received more As than Bs (and no Cs or below) in concentration courses completed. Students must complete an application; supply a brief writing sample, and request two letters of recommendation from English faculty with whom they have taken courses. If necessary, letters may come from faculty in related departments. Letters from teaching assistants may only serve as supporting recommendations. Candidates must also submit a one-page project proposal signed by the faculty member who has agreed to serve as the thesis advisor.

See procedures and application (http://brown.edu/academics/english/english-honors-procedures/) for more details.

December or mid-year graduates who wish to apply to honors have two options, but the first is highly encouraged:

Option 1: In their 5th semester (Spring), students apply to the honors program along with the other juniors. Accepted students will be incorporated into the regular honors cohort and must meet the same deadlines: i.e. they must complete their theses at the same time as the other honors students (though for mid-years this will be at the end of their 7th semester). They register for ENGL 1991 English Honors Seminar in the Fall, and ENGL 1992 Senior Honors Thesis in the Spring.

Option 2: In the 7th semester (the Spring of their final year), students take an independent study with their thesis advisor, under whose direction they will begin to research and write their theses. This course must be taken S/NC. In the 8th semester (the Fall of their final year), as they complete their theses, students take ENGL 1992 for a grade. Mid-year graduates should consult with the Honors Director for information about deadlines.

**Requirements**
The course requirements for the English Honors Program are the same as those for the regular concentration, with the following additions:

As part of regular coursework, and counting toward the concentration requirements, honors candidates must complete at least three upper-level seminars or comparable small courses in which students have the opportunity to do independent research, take significant responsibility for discussion, and do extensive scholarly and critical writing. Students are encouraged to include at least one graduate seminar in their program. (Permission to take a graduate course must be obtained from the instructor.) Honors candidates should discuss their proposed course of study with the Honors Advisor.

During the Fall and Spring of the senior year, honors candidates must complete two additional courses beyond the ten courses required by the regular concentration: ENGL 1991 and ENGL 1992. ENGL 1991 is the Senior Honors Seminar, in which students begin to research and write their theses, as well as meet to discuss their work. This is a mandatory S/NC course. ENGL 1992, the Senior Honors Thesis is an independent research course that must be taken for a grade.

Honors candidates must continue to receive more As than Bs in courses taken as part of the concentration. Courses completed with a grade of C will not count toward an Honors concentration. A student who receives such a grade and wishes to continue in the program must complete a comparable course with a grade higher than C.

**The Honors Thesis**
The Honors thesis is an extended essay, usually between 50 and 80 pages, written under the supervision of a department faculty advisor and second reader. (Where appropriate, the advisor or the reader, but not both, may be in another department.) The thesis may be an interdisciplinary or creative project, but it is usually an essay on a scholarly or critical problem dealing with works of literature in English. The specific topic and approach of the thesis are worked out between the student and the thesis advisor, with assistance from the student's second reader. This process would begin in the latter part of the student's junior year. A good way to get an idea of what sorts of projects are possible is to visit the Hay Library, which stores theses from previous years, or to meet with the Honors Advisor.

A prospectus describing the project and endorsed by the faculty advisor must be submitted to the Honors Advisor at the beginning of the senior year. At the end of the senior year fall term, a student must submit approximately 25 pages of draft material toward the thesis. Full thesis drafts are due by mid-March; final bound copies of the thesis are due in mid-April. Late theses will not be accepted for honors after the April deadline; students who hand in theses after the deadline but before the end of the term will receive a grade for the thesis course, but they will not be eligible for departmental honors. The completed thesis will be evaluated by the student's advisor and a second reader, each of whom provides written commentary and suggests a grade for ENGL 1992.

Evaluation

The English Department reviews the academic record as well as the thesis evaluations for each senior completing the Honors Program. Following a successful review, the student will be eligible to graduate with Honors in English.

Honors in Nonfiction Writing

The Nonfiction Writing Honors Program is intended for students who have been highly successful in their English concentration work. Specifically, it allows those who have an expressed and proven interest in nonfiction writing to pursue more completely a single project under the supervision of a first reader. The intention is to help students to complete work worthy of publication. The program culminates in the writing of a thesis during the senior year.

Admission

Students apply to the Nonfiction Writing Honors Program in the second semester of their junior year. December or mid-year graduates may apply in their 6th semester, but are encouraged to apply during their 5th semester and write their theses alongside May graduates. Interested concentrators should have already made contact with at least one member of the Nonfiction Writing faculty and should meet with the Honors Advisor early in their junior year to discuss their plans. Specific deadlines for admission are announced annually and are available on the department website. Students who are studying off campus are expected to meet the application submission deadline.

Admission to the Honors Program in Nonfiction Writing depends upon a student's demonstrated superior ability in nonfiction writing. Students must have taken either one intermediate and one advanced writing course, or two advanced writing courses by the end of their sixth semester and completed each of them with an S. To be eligible for admission, students must have earned more As than Bs (and no Cs or below) in other courses in the concentration plan. Students must submit an application, two letters of recommendation, a writing sample from an advanced writing course, and a project proposal.

See procedures and application (http://brown.edu/academics/english/nonfiction-honors-procedures/) for more details.

December or mid-year graduates who wish to apply for nonfiction honors have two options, but the first is highly encouraged:

Option 1:

In their 5th semester (Spring), students can apply to the nonfiction honors program along with the other juniors. Accepted students will be incorporated into the regular nonfiction honors cohort and must meet the same deadlines: i.e., they must complete their theses at the same time as the other honors students (though for mid-years this will be at the end of their 7th semester). They register for ENGL 1993 Nonfiction Honors Seminar in the Fall and ENGL 1994 Senior Honors Thesis in Nonfiction in the Spring.

Option 2:

In their 7th semester (the Spring of their final year) students take ENGL 1200 and in their 8th semester (the Fall of their final year) they take ENGL 1994. (Students choosing this option must consult with the Honors Advisor for information on deadlines.)

Requirements

Students in the Nonfiction Writing Honors Program take two additional courses beyond the ten courses required by the Nonfiction Writing Track -- ENGL 1993 Honors Seminar in Nonfiction Writing (with the Honors Advisor) and ENGL 1994 Senior Honors Thesis in Nonfiction Writing; the Honors track will bring to twelve the total number of required courses. The ENGL 1993 grade option must be S/NC; ENGL 1994 must be taken for a grade. Honors candidates should discuss their proposed course of study with the faculty member they choose to direct their thesis.

Honors candidates must continue to receive more As than Bs in courses taken as part of the concentration. Courses completed with a grade of C will not count toward an Honors concentration. A student who receives a 'C' after admission to Nonfiction Honors and wishes to continue in the program must complete an additional course in a comparable subject area, with a grade higher than C.

The Honors Thesis

The Nonfiction Writing Honors thesis is an extended project, usually of between 50 and 80 pages, written under the supervision of one of the Nonfiction Writing faculty and a second reader (who can be from literature or another department). The specific topic and approach of the thesis are worked out between the student and the first reader, with assistance from the student's second reader. A good way to get an idea of what sorts of projects are possible is to visit the Hay Library, which stores theses from previous years, or to meet with the Honors Advisor. The work typically is in a genre chosen from Nonfiction Writing's spectrum: critical analysis, literary journalism, memoir, lyric essay, or narrative based on travel, science, history, or cultural critique.

Full thesis drafts are due by mid-March; final bound copies of the thesis are due in mid-April. Late theses will not be accepted for honors after the April deadline; students who hand in theses after the deadline but before the end of the term will receive a grade for the thesis course, but they will not be eligible for departmental honors. The completed thesis will be evaluated by its first reader and second reader, each of whom provides written commentary and suggests a grade for ENGL 1994.

Evaluation

The English Department reviews the academic record as well as the thesis evaluations for each senior completing the Nonfiction Writing Honors Program. Following a successful review, the student will be eligible to graduate with Honors in Nonfiction Writing.

Environmental Studies

Many of the most pressing challenges of the 21st Century are environmental ones. We must find ways to feed a growing human population while maintaining the natural life support system provided by the Earth's ecosystems; to make built environments more efficient as urban areas continue to grow dramatically in size; and to meet the challenges posed by rising sea-level and increasing global temperatures. These challenges are complex, multifaceted and can best be solved with expertise from multiple, relevant disciplines. To prepare students to meet these challenges, the Institute at Brown for Environment and Society (IBES) offers two undergraduate degrees: an A.B. in Environmental Studies and a Sc.B. in Environmental Science. The two degrees vary primarily in the number of course requirements; the Sc.B. is a more in-depth treatment of a single field. Both degrees provide interdisciplinary exposure to the natural and social sciences, as well as public policy. Both degrees also develop depth in a primary field by requiring students to select one of five tracks of study. Concentrators might also consider pursuing the Engaged Scholars Program, which allows them to connect theory and practice and gain hands-on experience working with community partners.
Through a rigorous set of core courses, track requirements, and a course or project-based capstone experience, our students are primed to make meaningful contributions to environmental scholarship and outreach at local, national and global scales.

If you have administrative questions regarding theses concentrations or wish to be added to the email directory listing upcoming events, then please contact Jeanne Loewenstein (jeanne_loewenstein@brown.edu), the academic program manager.

**Standard program in Environmental Studies and Environmental Science:**

The Institute at Brown for Environment and Society administers two concentrations, one offering an A.B. degree in Environmental Science (requires 14-15 courses) and the other a Sc.B. degree in Environmental Science (requires 19-20 courses). Below are a set of course offerings arranged into four tracks:

1. Air, Climate & Energy
2. Conservation Science & Policy
3. Environment & Inequality
4. Land, Water & Food Security
5. Sustainability in Development

**Requirements for the A.B. Degree**

**Core Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td>1</td>
</tr>
<tr>
<td>or HIST 0150A</td>
<td>History of Capitalism</td>
<td></td>
</tr>
<tr>
<td>ENVS 0490</td>
<td>Enviro-Science in a Changing World</td>
<td>1</td>
</tr>
<tr>
<td>ENVS 0110</td>
<td>Humans, Nature, and the Environment:</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Addressing Environmental Change in the 21st Century</td>
<td></td>
</tr>
<tr>
<td>BIOL 0210</td>
<td>Diversity of Life</td>
<td>1</td>
</tr>
<tr>
<td>or EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
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</tr>
</tbody>
</table>

**Methods - one course**

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ENVS 1920</td>
</tr>
<tr>
<td>Methods for Interdisciplinary Environmental Research</td>
</tr>
</tbody>
</table>

**Electives - three courses**

These electives provide increased environmental expertise and further enhance a student’s ability to customize a course of study. Acceptable courses include prerequisites for track requirements, any ENVS course, and classes with significant environmental content.

**Capstone - one or two courses**

1-2 This requirement can be met with a two-semester thesis (ENVS 1970 & ENVS 1971), one-semester research project (ENVS 1970 or ENVS 1971), or an approved capstone course.

**Track Specific Requirements**

**Track 1 - Air, Climate, and Energy**

<table>
<thead>
<tr>
<th>Foundational courses (choose two):</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
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<tr>
<td>EEPS 0220</td>
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<tr>
<td>ENGN 0030</td>
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<tr>
<td>ENGN 0490</td>
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<tr>
<td>PHYS 0030</td>
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<tr>
<td>PHYS 0050</td>
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**Climate (choose one):**

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>EEPS 0850</td>
</tr>
<tr>
<td>EEPS 1430</td>
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<tr>
<td>ENVS 1245</td>
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</tbody>
</table>

**Policy (choose one):**

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
</table>

| ENVS 0710    | Powering the Past: Environmental Histories of Energy Use and Social Change |
| ENVS 1415    | Power, Justice, and Climate Change                                           |
| ENVS 1615    | Making Connections: The Environmental Policy Process                         |
| ENVS 1925    | Energy Policy and Politics                                                   |
| POLS 1822I   | Geopolitics of Oil and Energy                                                |

**Energy Technology and Infrastructure (choose one):**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ENGN 0490</td>
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<tr>
<td>ENGN 0720</td>
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<tr>
<td>ENGN 1930U</td>
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<tr>
<td>ENGN 1931P</td>
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<tr>
<td>ENVS 1400</td>
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<tr>
<td>ENVS 1580</td>
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</table>

**Track 2 - Conservation Science and Policy**

**Ecology:**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>BIOL 0420</td>
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</table>

**Conservation:**

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>BIOL 1470</td>
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</table>

**Ecology & Conservation Topics: Select One**

<table>
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<tbody>
<tr>
<td>BIOL 1450</td>
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<tr>
<td>BIOL 1480</td>
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<tr>
<td>BIOL 1515</td>
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</tbody>
</table>

**Policy: Select One**

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ENVS 1415</td>
</tr>
<tr>
<td>ENVS 1555</td>
</tr>
<tr>
<td>ENVS 1574</td>
</tr>
<tr>
<td>ENVS 1615</td>
</tr>
<tr>
<td>ENVS 1755</td>
</tr>
<tr>
<td>ENVS 1916</td>
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<tr>
<td>ENVS 1925</td>
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</table>

**Statistics: Select One**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>APMA 0650</td>
</tr>
<tr>
<td>APMA 1650</td>
</tr>
<tr>
<td>BIOL 0495</td>
</tr>
<tr>
<td>CLPS 0900</td>
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</table>

**Track 3 – Environment and Inequality**

**Track Intro Course:**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>ENVS 0705</td>
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**Race, Class, and Gender Inequality: Select One**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>AFRI 0090</td>
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<tr>
<td>AFRI 0210</td>
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<tr>
<td>AFRI 0830</td>
</tr>
<tr>
<td>ECON 1370</td>
</tr>
<tr>
<td>ETHN 1000</td>
</tr>
<tr>
<td>HIST 0150D</td>
</tr>
<tr>
<td>HIST 0203</td>
</tr>
<tr>
<td>SOC 0230</td>
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</tbody>
</table>
### Track 4 - Land, Water & Food Security

**Climate: Select One**
- EEPS 0850: Weather and Climate
- EEPS 1430: Principles of Planetary Climate
- ENVS 1245: Air Pollution & Chemistry

**Biology: Select One**
- BIOL 0160: Plants, Food, and People
- BIOL 0210: Diversity of Life
- BIOL 0420: Principles of Ecology
- BIOL 0430: The Evolution of Plant Diversity

**Tools: Select One**
- BIOL 0440: Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses

**Environmental History: Select One**
- ANTH 0680: Anthropology of Food
- ENVS 0710: Powering the Past: Environmental Histories of Energy Use and Social Change
- ENVS 1557: Birding Communities
- ENVS 1910: The Anthropocene: The Past and Present of Environmental Change
- ENVS 1915: Histories of Global Wetlands
- ENVS 1916: Animals and Plants in Chinese History
- HIST 0150H: Foods and Drugs in History

**Policy: Select Two**
- HIST 0270B: From Fire Wielders to Empire Builders: Human Impact on the Global Environment before 1492

### Track 5 - Sustainability in Development

**Environment and Development: Select Two**
- ANTH 0110: Anthropology and Global Social Problems: Environment, Development, and Governance
- ECON 1530: Health, Hunger and the Household in Developing Countries
- ENVS 0150: Climate Futures and a Sociology of Just Transitions
- ENVS 1415: Power, Justice, and Climate Change
- ENVS 1555: Urban Agriculture: The Importance of Localized Food Systems
- ENVS 1580: Environmental Stewardship and Resilience in Urban Systems
- ENVS 1755: Globalization and the Environment

**Policy: Select Two**
- ENVS 1350: Environmental Economics and Policy
- ENVS 1574: Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC
- ENVS 1615: Making Connections: The Environmental Policy Process
- ENVS 1925: Energy Policy and Politics
### Requirements for the Sc.B. Degree

**Track 1 - Air, Climate, and Energy**

| Math: Select One | ENVS 0110 | Introductory Calculus, Part I  
| MATH 0090 |  |

**Policy (choose one):**

- ECON 1340 Economics of Global Warming
- ENVS 1350 Environmental Economics and Policy
- ENVS 1415 Power, Justice, and Climate Change
- ENVS 1574 Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC
- ENVS 1615 Making Connections: The Environmental Policy Process
- ENVS 1755 Globalization and the Environment
- ENV 1925 Energy Policy and Politics
- IAPA 1802C Infrastructure
- POLS 1822I Geopolitics of Oil and Energy

**Tools (choose one):**

- APMA 0340 Methods of Applied Mathematics I, II
- APMA 0650 Essential Statistics
- APMA 1650 Statistical Inference I
- ECON 1620 Introduction to Econometrics
- ENVS 1105 Introduction to Environmental GIS
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
- EEPS 1330 Global Environmental Remote Sensing

**Climate and Thermal Change (choose two):**

- EEPS 0230 Geochemistry: Earth and Planetary Materials and Processes
- EEPS 1120 Paleocenography
- EEPS 1370 Environmental Geochemistry
- EEPS 1510 Introduction to Atmospheric Dynamics
- ENGN 0720 Thermodynamics
- ENGN 1720 Design of Thermal Engines
- ENGN 1930M Industrial Design

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| Math: Select One | ENVS 1245 | Air Pollution & Chemistry
| MATH 0090 |  |

**Track 2 - Conservation Science and Policy**

**Math: Select One**

- MATH 0090 Introductory Calculus, Part I  

**Evolution: Select One**

- BIOL 0480 Evolutionary Biology

**Organismal Diversity: Select One**

- BIOL 0410 Invertebrate Zoology
- BIOL 0430 The Evolution of Plant Diversity (BIOL 0460 - Insect Biology)
- BIOL 0440 Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- BIOL 1880 Comparative Biology of the Vertebrates

**Tools: Select One**

- ENVS 1105 Introduction to Environmental GIS
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
- EEPS 1330 Global Environmental Remote Sensing
- SOC 1340 Principles and Methods of Geographic Information Systems

**Focus on: Environmental Inequality**

- ENVS 0490
- ECON 1340 Economics of Global Warming
- ENVS 1350 Environmental Issues in Development Economics
- ECON 1355 Environmental Economics and Policy

**Tools: Select One**

- ECON 1340 Economics of Global Warming
- ENVS 1350 Environmental Economics and Policy
- ECON 1355 Environmental Issues in Development Economics

**Track 3 - Environment and Inequality**

**Tools: Select One**

- ANTH 1940 Ethnographic Research Methods
- ECON 1620 Introduction to Econometrics
- EDUC 1100 Introduction to Qualitative Research Methods
- ENVS 1105 Introduction to Environmental GIS
- EEPS 1320 Introduction to Geographic Information Systems for Environmental Applications
- EEPS 1330 Global Environmental Remote Sensing
- SOC 1100 Introductory Statistics for Social Research
- SOC 1117 Focus Groups for Market and Social Research
- SOC 1340 Principles and Methods of Geographic Information Systems
- SOC 2610 Spatial Thinking in Social Science

**Race, Class and Gender Inequality: Select One**

- ECON 1370 Race and Inequality in the United States
- ETHN 1200I History and Resistance in Representations of Native Peoples
- SOC 1270 Race, Class, and Ethnicity in the Modern World

**SELECT A FOCUS AREA (pick three courses from only one focus area)**

**FOCUS ONE - Environmental Inequality in Globalization and Development: Select Three**

- ANTH 0110 Anthropology and Global Social Problems: Environment, Development, and Governance
- ECON 1355 Environmental Issues in Development Economics
- ECON 1510 Economic Development
- ECON 1530 Health, Hunger and the Household in Developing Countries
- ENVS 1415 Power, Justice, and Climate Change
ENVS 1916  Animals and Plants in Chinese History
HIST 0150D  Refugees: A Twentieth-Century History
IAPA 1805C  Caribbean and Pacific Small States: On the Margins of Development
PHP 1070  The Burden of Disease in Developing Countries
POLS 1440  Security, Governance and Development in Africa
POLS 1730  Politics of Globalization
SOC 0150  Economic Development and Social Change

FOCUS TWO - Environmental Health and Inequality: Select Three
AFRI 1920  Environmental Health and Disease
HIST 1960Q  Medicine and Public Health in Africa
PHP 0320  Introduction to Public Health
PHP 1070  The Burden of Disease in Developing Countries
PHP 1500  Global Health Nutrition
PHP 1530  Case Studies in Public Health: The Role of Governments, Communities and Professions
PHP 1700  Current Topics in Environmental Health
PHP 1710  Climate Change and Human Health
PHP 1920  Social Determinants of Health

FOCUS THREE - Environmental Inequalities in Food, Water, and Energy: Select Three
AMST 1906P  Food in American Society and Culture
ENVS 0710  Powering the Past: Environmental Histories of Energy Use and Social Change
ENVS 1415  Power, Justice, and Climate Change
ENVS 1555  Urban Agriculture: The Importance of Localized Food Systems
ENVS 1580  Environmental Stewardship and Resilience in Urban Systems
ENVS 1915  Histories of Global Wetlands
ENVS 1925  Energy Policy and Politics
ETHN 1750B  Treaty Rights and Food Fights: Eating Local in Indian Country
IAPA 1920  Caribbean and Pacific Small States: On the Margins of Development
PHP 1500  Global Health Nutrition

Track 4 - Land, Water & Food Security
Math: Select One
MATH 0090  Introductory Calculus, Part I
Chemistry: Select One
CHEM 0330  Equilibrium, Rate, and Structure
Earth/Life Systems: Select Three
BIOL 1470  Conservation Biology
BIOL 1480  Terrestrial Biogeochemistry and the Functioning of Ecosystems
EEPS 0240  Earth: Evolution of a Habitable Planet
EEPS 1120  Palaeoceanography
EEPS 1130  Ocean Biogeochemical Cycles
EEPS 1310  Global Water Cycle
EEPS 1370  Environmental Geochemistry
EEPS 1510  Introduction to Atmospheric Dynamics

ENGS 1340  Water Supply and Treatment Systems - Technology and Sustainability

Track 5 - Sustainability in Development
Sociology and Politics: Select One
ENVS 0150  Climate Futures and a Sociology of Just Transitions
ENVS 1755  Globalization and the Environment
POLS 0400  Introduction to International Politics
Critical Perspectives on Development: Select One
ANTH 0110  Anthropology and Global Social Problems: Environment, Development, and Governance
ECON 1370  Race and Inequality in the United States
IAPA 0010  Sophomore Seminar in Development Studies
IAPA 1920  Infrastructure!
POLS 1200  Reimagining Capitalism
SOC 1920  Globalization and Social Conflict

Economic Perspectives: Select Two
ECON 1110  Intermediate Microeconomics
ECON 1340  Economics of Global Warming
ECON 1355  Environmental Issues in Development Economics
ECON 1510  Economic Development
ECON 1530  Health, Hunger and the Household in Developing Countries
ECON 1560  Economic Growth
Climate: Select One
EEPS 0850  Weather and Climate
ENVS 1245  Air Pollution & Chemistry

Total Credits 19-20

1 The track requirement of MATH 0090 can be waived for students with an AP exam of 4 or 5 on Calc AB; or students with an AP exam score of 4 or 5 on Calc BC in place of Math 0090 & 0100

Honors
Students interested in graduating with honors in their concentration must complete a thesis determined to be of the highest quality and must have excelled in their coursework required for the concentration, which is defined here as receiving a grade of 'A' in the majority of courses taken to fulfill the concentration. You can learn more by visiting the honors page (https://www.brown.edu/academics/institute-environment-society/education/undergraduate/honors/) on the IBES website.

Ethnic Studies
Ethnic Studies is an interdisciplinary, comparative concentration that examines the construction of race and ethnicity in social, cultural, historical, political, and economic contexts. Concentrators develop individual programs based on areas of focus in consultation with faculty advisors, drawing from courses in the humanities and social sciences. Typical areas of focus are social issues (such as inequality, education, or health), cultural production and the representation of racial groups, processes of racialization, the historical formation of transnational communities and of diaspora, and the history of particular ethnic or racial groups.

The Ethnic Studies concentration (https://www.brown.edu/academics/american-studies/ethnic-studies/) at Brown emphasizes the histories of diverse racial groups within and across the borders of the United States, including examining issues of diaspora, migration, social movements, and the political economies of social inequality and racial formation. Concentrators strive for intellectual fluency in a range of critical approaches to race and ethnicity across disciplines, and demonstrate this fluency through the composition or creation of a significant piece of original research or creative work.
Brown University established an Ethnic Studies concentration in 1996, originally within the Center for the Study of Race and Ethnicity in America (https://www.brown.edu/academics/race-ethnicity/) (CSREA). In the Fall of 2013, as part of changes to the CSREA and to better support students, Ethnic Studies joined a long established Brown department, American Studies (https://www.brown.edu/academics/american-studies/home/). Many American Studies faculty members (https://www.brown.edu/academics/american-studies/people/) work in the areas of race and ethnicity and have held joint appointments in Ethnic and American Studies while American Studies PhD students (https://www.brown.edu/academics/american-studies/graduate-students/) have done some of the most exciting Ethnic Studies research on campus.

As an academic field, Ethnic Studies is rooted in the protests of the 1960s and 1970s, out which emerged the very first Latino/a Studies, Asian American Studies, African American Studies, and Native American studies programs. Organized around straightforward political goals – the enrichment through diversification of the curriculum and the systematic, multi-disciplinary, and the often comparative study of racial and ethnic inequality – Ethnic Studies has become an important feature of major research universities.

Faculty, both core and affiliated, create and participate in groundbreaking Ethnic Studies scholarship. Areas of faculty research include borderlands history, Latina/o literary studies and visual culture, indigenous movements, migration and African American cultural studies as well as the intersecting fields of gender and sexuality, queer theory and critical race theory. Students can focus their study on specific populations (e.g., Latina/os, Asian Americans) and choose a thematic interest including such current examples as: ‘social issued affecting radicalized groups’ (students have looked at health disparities or educational inequality); ‘the study of cultural production or cultural representations;’ ‘the theory of a particular racial or ethnic group;’ and ‘the study of comparative processes of radicalization.’

**Requirements**

<table>
<thead>
<tr>
<th>ETHN 1000</th>
<th>Introduction to American/Ethnic Studies</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any two courses from the ETHN 1200 'Topics in Ethnic Studies’ or ETHN 1750 ‘Advanced Topics in Ethnic Studies’ sequence, or similar electives in AMST, as approved by the advisor</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ETHN 1200B</td>
<td>Contemporary Indigenous Education in North America</td>
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<tr>
<td>ETHN 1200D</td>
<td>Latinx Literature</td>
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<tr>
<td>ETHN 1750A</td>
<td>Immigrant Social Movements: Bridging Theory and Practice</td>
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</tr>
<tr>
<td>ETHN 1750B</td>
<td>Treaty Rights and Food Fights: Eating Local in Indian Country</td>
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<tr>
<td>ETHN 1750D</td>
<td>Transpacific Asian American Studies</td>
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<tr>
<td>ETHN 1750E</td>
<td>Transpacific Popular Culture</td>
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</tbody>
</table>

Four classes that address the student’s focus area and that prepare them for the capstone experience. At least two of these classes must bear an ETHN designation. Of the other two classes, only one may be a Department Independent Study Project (DISP). If a student pursues that option, the class must be undertaken with core faculty, all of whom are listed on the department website, and it must be offered under an ETHN course number. Please consult the following guidelines for designing a DISP. Please note a Department Independent Study Project Form and a draft syllabus will be due to the Director of Undergraduate Studies no later than two weeks into the semester the DISP takes place.

<table>
<thead>
<tr>
<th>ETHN 1650</th>
<th>Methods and Approaches in Ethnic Studies</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Studies seminar in the AMST 1700 series</td>
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<tr>
<td>AMST 1700D</td>
<td>Race and Remembering</td>
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<tr>
<td>AMST 1700F</td>
<td>American Publics</td>
<td></td>
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<tr>
<td>AMST 1700I</td>
<td>Community Engagement with Health and the Environment</td>
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<tr>
<td>AMST 1700K</td>
<td>Race in the Americas: A Hemispheric Perspective</td>
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</tbody>
</table>

**ETHN 1900** Ethnic Studies Senior Seminar 1

Total Credits 10

Courses taken toward the fulfillment of concentration requirements must be at or above the 1000 level. At the advisor's discretion, a student may count a single course below the 1000 level towards their requirements. This class must be taught by a core faculty member listed on the department's website and may be offered through another department.

**Honor:Admission:**

Admission to the Ethnic Studies Honors Program requires:

1. A 3.5 GPA in concentration courses
2. A 3.0 overall GPA
3. The standard concentration (https://www.brown.edu/academics/american-studies/ethn-studies-requirements-prior-7117/)
4. AMST/ETHN 1800 the Honors Seminar in the sixth semester
5. An Honors Thesis Proposal and an application for the Ethnic Studies Honors Program (see below for link to application)
6. Two independent studies, taken in the 7th and 8th semester, with the Director of your honors thesis
7. A completed project, delivered the third week of April if student is a May graduate (the first Monday of December if the student is a May graduate)
8. A recommendation for honors from both readers

Students must define their honors project in a proposal by early May (in accordance with the due dates established in the honors seminar, AMST/ETHN 1800) or near the end of their sixth semester. The proposal is comprised of a five-page, double-spaced project description along with a bibliography of relevant sources. More details on the proposal can be found here (https://www.brown.edu/academics/american-studies/american-studies-honors-thesis-prospectus/)

This proposal must be submitted for approval to the Director of Undergraduate Studies (DUS) along with the application for the Ethnic Studies Honors Program form on the same date that it is submitted in the honors seminar. The proposal should identify the problem, or question the student will focus on, and suggest approaches and possible hypotheses or outcomes. Students need to work with two professors – a director and a reader. At least one should be Ethnic Studies faculty. The proposal should name a confirmed director (who must sign your application form) and a likely second reader (who will need to confirm their participation at the beginning of your 7th semester). If a student wants to work with two professors, neither of whom is Ethnic Studies faculty, then they should have a third reader who will read the final draft or consult on the final project and approve it for honors in the field. Students deciding not to do an honors thesis after completing the Honors Seminar will receive credit for the course and still be able to count it as a seminar in the concentration.

Concentrators studying abroad during the second semester of the junior year, when the Honors Seminar is offered, may waive the Honors Seminar with permission of the DUS prior to the beginning of the senior year. Such a waiver of the Honors Seminar will be predicated on the submission of a detailed plan for the honors project approved by a faculty director with a confirmed second reader submitted to the DUS in the first two weeks of the senior year.

An updated thesis proposal, confirming a second thesis reader, will be due for all thesis writers within the first two months of the senior year. In their seventh and eighth semesters, students seeking honors will enroll in an independent study class (ETHN 1910) with their director during which they will follow through on the plan devised in the spring of their junior year. Students and thesis directors should plan on at least a monthly meeting to discuss the research, writing and revision of sections of the thesis. In addition to meeting with their director, students should also plan to meet their second reader during this time. Guidelines for thesis directors and readers can be found here (https://www.brown.edu/academics/american-studies/american-studies-honors-thesis-directors-and-readers/).

In their eighth semester, the deadline for a finished full draft of their project is the third Friday in April (for May graduates) or the first Monday in December (for December graduates). Students should turn in a pdf of
a completed (proofread, formatted, fully written) draft to their readers by that day. Of course, students will turn chapters to the director and reader before that, according to their recommendations, but the third Friday of April (or first Monday in December) is the absolute deadline to turn in a pdf of the final draft.

A signed and bound copy of the thesis is due to the department one week after submission of the pdf where it will be available for one year and then sent to the Hay Library.

All official readers must recommend the project for honors, indicated by their signature on your cover sheet and the director’s written report. When written as formal research papers, honors theses are generally between 50-100 pages. When there is a creative or public component, students should work closely with their faculty team to determine the appropriate length of the written accompaniment.

Students will make a public presentation of their work to the Ethnic Studies faculty during the first week of May for May graduates and mid December for December graduates.

**French and Francophone Studies**

The concentration in French and Francophone Studies is committed to the pursuit of an interdisciplinary, linguistically rigorous, and textually informed understanding of French and Francophone literatures and cultures. Concentrators engage actively through their coursework with a wide range of texts and critical perspectives, pertaining to multiple literary genres, media, and contexts. They have opportunities to study different periods of French history as well as Francophone cultures beyond France. By the time they graduate, concentrators will have learned to read with knowledge and nuance and produced a varied body of critical work in French.

The concentration in French and Francophone Studies is committed to the study of the language, literature, and cultural and critical traditions of the French-speaking world. Concentrators engage actively through their coursework with a wide range of texts and critical perspectives, and multiple literary genres and media (the novel; theater; poetry; cinema; critical theory; special topics in contemporary politics and culture). They have opportunities to study different periods of French literature and intellectual history (from the Renaissance to the present) as well as Francophone cultures beyond France (West Africa, the Maghreb and the Caribbean). Courses cover a wide diversity of topics, while placing a shared emphasis on language-specific study, critical writing skills, and the vital place of literature and art for intellectual inquiry.

The concentration program is designed to encourage and support language-specific study. Literary texts and cultural documents are read principally in the original. Likewise, in most courses, French is the language of class discussions, presentations and research/critical papers.

Concentrators in French and Francophone Studies are strongly encouraged to spend one or two semesters (usually in their junior year) in France or in a Francophone country to derive the richest benefits of linguistic and cultural immersion. Information on Brown in France or in a Francophone country can be found on the French Embassy website.

The program is designed to encourage and support language-specific study. Literary texts and cultural documents are read principally in the original. Likewise, in most courses, French is the language of class discussions, presentations and research/critical papers. Concentrators in French and Francophone Studies are strongly encouraged to spend one or two semesters (usually in their junior year) in France or in a Francophone country to derive the richest benefits of linguistic and cultural immersion. Information on Brown in France or in a Francophone country can be found on the French Embassy website.

Students who have an outstanding record in their concentration courses, have completed at least six concentration courses by the first semester of their senior year, and are highly recommended by two professors, are eligible to apply for admission to the Honors program (http://www.brown.edu/academics/french-studies/undergraduate/honors-program/).

**Concentration Requirements**

A minimum of 10 courses is required for the concentration in French and Francophone Studies. Concentrators must observe following guidelines when planning their concentration. It is recommended that course choices for each semester be discussed with the department’s concentration advisor.

**Note:** A maximum of four courses taken during a single semester (and a maximum of five courses from an entire year) in France or a Francophone country may count toward the concentration. Our concentrators are strongly encouraged to spend significant time in France or in a Francophone country to derive the richest benefits of linguistic and cultural immersion. Through the Brown-in-France program administered by OIP and departmental faculty, students can enroll directly in French institutions.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>FREN 0500</td>
<td>Writing and Speaking French II (is accepted for concentration credit)</td>
</tr>
</tbody>
</table>

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>FREN 0720A</td>
<td>De l'Amour courtois au désir postmoderne</td>
</tr>
<tr>
<td>FREN 0720B</td>
<td>The French Novel Today</td>
</tr>
<tr>
<td>FREN 0820A</td>
<td>Identité et différence dans le monde francophone</td>
</tr>
<tr>
<td>FREN 1010A</td>
<td>Littérature et culture: Margins of Modernity</td>
</tr>
</tbody>
</table>

One of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 1510A</td>
<td>Advanced Oral and Written French: Traduction</td>
</tr>
<tr>
<td>FREN 1510F</td>
<td>Advanced Written and Oral French: Regards sur la France actuelle</td>
</tr>
<tr>
<td>FREN 1510C</td>
<td>Advanced Oral and Written French: L’histoire de la famille au 18eme siècle</td>
</tr>
<tr>
<td>FREN 1510J</td>
<td>Advanced Oral and Written French: Littérature et intertextualité: du Moyen-Age à la fin du XVIIème siècle</td>
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</table>

**The senior seminar (Senior Year Spring)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>FREN 1900H</td>
<td>La France en guerre</td>
</tr>
<tr>
<td>FREN 1900K</td>
<td>Extrême droite en France</td>
</tr>
<tr>
<td>FREN 1900L</td>
<td>French-American (Dis)Connections: histoire, société, culture</td>
</tr>
</tbody>
</table>

**Electives**

At least two 1000-level courses offered in the Department of French Studies (excluding FREN 1510 and FREN 1900) are required.

Up to two 1000-level courses taught in English offered by French Studies or other departments at Brown are eligible for concentration credit. (Appropriate courses on French or Francophone topics from other departments must be approved by the concentration advisor. Departments in which electives are typically taken include African Studies, Anthropology, Art History, Comparative Literature, English, History, Linguistics, Modern Culture and Media.)

At least one course must cover a pre-Revolutionary period.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>FREN 1000A</td>
<td>Littérature et intertextualité: du Moyen-Age jusqu’à la fin du XVIIème siècle</td>
</tr>
<tr>
<td>FREN 1000B</td>
<td>Littérature et culture: Chevaliers, sorcières, philosophes, et poètes</td>
</tr>
<tr>
<td>FREN 1030A</td>
<td>L’univers de la Renaissance: XVe et XVIIe siècles</td>
</tr>
<tr>
<td>FREN 1030B</td>
<td>The French Renaissance: The Birth of Modernity?</td>
</tr>
<tr>
<td>FREN 1040A</td>
<td>Civilité et littérature</td>
</tr>
<tr>
<td>FREN 1040B</td>
<td>Pouvoirs de la scène: le théâtre du XVIIe siècle</td>
</tr>
<tr>
<td>FREN 1040C</td>
<td>Le Grand Siècle à l’écran</td>
</tr>
<tr>
<td>FREN 1040D</td>
<td>Molière et son monde</td>
</tr>
<tr>
<td>FREN 1050A</td>
<td>‘Family Values’: Représentations littéraires de la famille au 18ème siècle</td>
</tr>
<tr>
<td>FREN 1050B</td>
<td>Fictions de l’individu</td>
</tr>
<tr>
<td>FREN 1050D</td>
<td>The Age of Voltaire: Culture, Pensée, Société</td>
</tr>
<tr>
<td>FREN 1050E</td>
<td>French Lovers: Séduction et libertinage sous l’Ancien Régime</td>
</tr>
<tr>
<td>FREN 1050F</td>
<td>Espace public; espace privé</td>
</tr>
<tr>
<td>FREN 1050G</td>
<td>Le corps des Lumières</td>
</tr>
</tbody>
</table>
understand the principles grounding such practices as historical research, courses in the disciplines appropriate to students’ focus will help them specifically related to gender or to sexuality. Introductory and methodology will frequently bring questions of gender and sexuality together; however sexual identity, a particular national literature and history. Such topics of visual media, a contrast between different cultural understandings of and race in American politics or activism, the construction of sexual Typical areas of focus include the acculturation of gender, sexuality and supplements it with foundational courses in the relevant disciplines.

Requirements:
The concentration requires 10 courses, 12 for honors concentrators. No more than two courses may count for multiple concentrations.
1. GNSS 0120. Introductory course on gender and sexuality across the disciplines
2. Four–course focus on some thematic, theoretical, or historical aspect of gender and sexuality
3. Two introductory or methodology courses in disciplines pertinent to the focus
4. One course in gender history, women’s history, or history of sexuality
5. One course in feminist theory or theory of sexuality
6. GNSS 1990. A senior seminar which counts as your capstone course. Senior seminar participants are expected to write a research essay. The senior seminar fulfills the second half of Brown’s writing requirement.
7. Prior to Commencement, all graduating senior concentrators are required to give a short presentation of either their senior essay or thesis project.

Honors
Candidates for honors must apply to the program’s director at the beginning of their seventh semester. Honors concentrators fulfill the regular requirements plus completing a two–semester thesis as their capstone project.

For more information, including current cross-listed courses and sample concentration plans, please consult the GNSS concentration webpage (http://www.brown.edu/research/pembroke-center/gender-and-sexuality-studies/undergraduate-concentration-gender-sexuality-studies/) at h (http://www.brown.edu/research/pembroke-center/gender-and-sexuality-studies/undergraduate-concentration-gender-sexuality-studies/) at h (http://www.brown.edu/research/pembroke-center/gender-and-sexuality-studies/undergraduate-concentration-gender-sexuality-studies/)

Geological Sciences
Geological science involves the study of the Earth (and other planetary bodies), including their compositions and histories and the physical chemical and biological processes that shape them. The geosciences are highly interdisciplinary, thus students must take some supporting math and science courses. Geoscience courses emphasize a process-oriented approach, with hands-on experiences in labs and on field trips. There is a strong emphasis on active and collaborative learning, and on practice in communication. Students may choose an AB (total of 13 courses) or an ScB (19 total courses, including one semester of research). There are many opportunities for students to do research work (typically in paid positions) during the academic year or in the summer, in areas such as deformation and properties of geological materials, deciphering the geologic history of some local rocks, or analysis of planetary images.

Standard program for the A.B. degree
This program provides a broad introduction to the geological sciences. Recommended for students seeking a liberal education and a general understanding of Earth processes and Earth history. Especially attractive for double concentrations, such as geology and economics as a career path to law or business, or geology and English as a career path to journalism or technical writing.

Basic supporting science courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure (or advanced placement)</td>
<td>1</td>
</tr>
</tbody>
</table>

Select three of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II (or more advanced)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 10

Or another appropriate course as agreed to by concentration advisor

Honors
Students who have received all ‘A’s’ in their concentration courses, have completed at least six concentration courses by the first semester of their senior year, and are highly recommended by two professors are eligible to apply for admission to the honors program. For more information, consult the requirements on the Department’s website: http://www.brown.edu/academics/french-studies/undergraduate/honors-program (http://www.brown.edu/academics/french-studies/undergraduate/honors-program)

Gender and Sexuality Studies
Gender and Sexuality Studies is an interdisciplinary concentration that examines the construction of gender and sexuality in social, cultural, political, economic, or scientific contexts. Each concentrator focuses on a well-defined topic or question and works closely with a concentration advisor to develop a program that investigates this focus area rigorously and supplements it with foundational courses in the relevant disciplines. Typical areas of focus include the acculturation of gender, sexuality and race in American politics or activism, the construction of sexual and gendered identities in educational institutions or in various forms of visual media, a contrast between different cultural understandings of sexual identity, a particular national literature and history. Such topics will frequently bring questions of gender and sexuality together; however students may also organize their concentrations to emphasize questions specifically related to gender or to sexuality. Introductory and methodology courses in the disciplines appropriate to students’ focus will help them understand the principles grounding such practices as historical research, literary interpretation, and sociological analysis.

<table>
<thead>
<tr>
<th>Course</th>
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<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>FREN 1050H</td>
<td>The Age of Voltaire: Lumières et modernité</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1100F</td>
<td>Contes nouveaux du Moyen Age</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1410I</td>
<td>Sorcière et Renaissance: le sort de la sorcière</td>
<td>1</td>
</tr>
<tr>
<td>FREN 0720F</td>
<td>Paradigms of Difference in the 19th- Century French Novel and Short Story</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1130E</td>
<td>Le Poétique et le quotidien</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1060A</td>
<td>Décadence</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1060B</td>
<td>Gender and the Novel</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1060D</td>
<td>L’Orient littéraire</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1060E</td>
<td>Genre, sexualité, et le roman du XIXe siècle</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1060F</td>
<td>Paris: Capital of the 19th Century</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1070A</td>
<td>Avant-Gardes</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1070B</td>
<td>Emergent literature: Postcolonial Nations and Cultural Identity</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1070C</td>
<td>Figures du roman français au XX siècle</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1070E</td>
<td>Littérature, appartenance et identité</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1310O</td>
<td>Clichés. L’écriture à l’épreuve de la photographie</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1330A</td>
<td>Fairy Tales and Culture</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1330C</td>
<td>French Women Writers</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1330E</td>
<td>Transatlantic Surrealisms</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1410D</td>
<td>L’identité française</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1410R</td>
<td>Images d’une guerre sans nom: The Algerian War in Literature and Film</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1420C</td>
<td>Gender Theory and Politics in France</td>
<td>1</td>
</tr>
<tr>
<td>FREN 1610C</td>
<td>Advanced Written French: Atelier d’écriture</td>
<td>1</td>
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</tbody>
</table>
and careers in the geosciences and related fields. This program is recommended for students interested in graduate study in geosciences, mathematics, or supporting sciences with approval from the departmental concentration advisor.

**Concentration courses**

<table>
<thead>
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<th>Course Code</th>
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</tr>
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<tbody>
<tr>
<td>EEPS 0220</td>
<td>Earth Processes</td>
</tr>
<tr>
<td>EEPS 0230</td>
<td>Geochemistry: Earth and Planetary Materials and Processes</td>
</tr>
<tr>
<td>EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
</tr>
</tbody>
</table>

Select two of the following:

- EEPS 1410 Mineralogy
- EEPS 1420 Petrology
- EEPS 1450 Structural Geology

Select two of the following:

- EEPS 0310 Fossil Record
- EEPS 1110 Estuarine Oceanography
- EEPS 1240 Stratigraphy and Sedimentation
- EEPS 1330 Global Environmental Remote Sensing
- EEPS 1370 Environmental Geochemistry

A field course

Select two additional courses from upper level geological sciences, mathematics, or supporting sciences with approval from the departmental concentration advisor.

**Basic supporting science courses**

Select two courses in mathematics at the level of:

- MATH 0090 Introductory Calculus, Part I
- MATH 0100 Introductory Calculus, Part II

or another more advanced math or statistics course

Select one of the following Series:

- CHEM 0330 Equilibrium, Rate, and Structure (or advanced placement)
- PHYS 0050 Foundations of Mechanics (or more advanced)
- ENGN 0030 Introduction to Engineering (or more advanced, or courses in data analysis and statistics)

**Concentration courses**

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<tr>
<td>EEPS 0310</td>
<td>Fossil Record</td>
</tr>
<tr>
<td>EEPS 1240</td>
<td>Stratigraphy and Sedimentation</td>
</tr>
<tr>
<td>EEPS 1410</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>EEPS 1420</td>
<td>Petrology</td>
</tr>
<tr>
<td>EEPS 1450</td>
<td>Structural Geology</td>
</tr>
</tbody>
</table>

A field course, or approved substitute

Select four courses from upper level geological sciences, mathematics, or supporting sciences with approval from the departmental concentration advisor.

**Standard program for the Sc.B. degree**

This program is recommended for students interested in graduate study and careers in the geosciences and related fields.

**Concentration courses**

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</tr>
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<td>EEPS 1450</td>
<td>Structural Geology</td>
</tr>
</tbody>
</table>

A field course, or approved substitute

Select three Biology courses from the following:

- BIOL 0390 Vertebrate Evolution and Diversity
- BIOL 0410 Invertebrate Zoology
- BIOL 0415 Microbes in the Environment
- BIOL 0420 Principles of Ecology
- BIOL 0430 The Evolution of Plant Diversity
- BIOL 0440 Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- BIOL 0480 Evolutionary Biology
- BIOL 1470 Conservation Biology

**Geology-Biology**

Geology-Biology involves study of the interactions of the Earth and its hydrosphere and atmosphere with the great diversity of life forms, and how they have evolved and influenced one another over the entire history of the Earth. Many courses emphasize climate and biogeochemistry; this concentration is a good one for students interested in quantitative approaches to environmental science. Students take a basic suite of geoscience courses and at least 4 bio courses of their choosing, plus some supporting math and science courses; the AB degree requires a total of 14 courses and the ScB degree requires a total of 19, including one semester of research. There is a strong emphasis on active and collaborative learning, and on practice in communication. There are many opportunities for students to do research work (typically in paid positions) during the academic year or in the summer, in areas such as determining the history of climate change during the recent ice age, investigating the causes of major extinctions, and using paleoenvironmental records to determine the vulnerability of different regions of the globe to droughts and other processes that strongly affect society.

**Standard program for the A.B. degree**

This program provides a broad introduction to the geologic and biologic processes that shape the Earth and our environment. It is recommended for students seeking a liberal education and a general understanding of Earth processes, including the evolution of climate and the environment, global environmental change and Earth history. The program prepares students for careers in environmental science, geology, ecology, oceanography, and global change.

**Basic supporting science courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems (or more advanced)</td>
</tr>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure (or advanced placement)</td>
</tr>
</tbody>
</table>

Select two courses in mathematics and/or physics at the level of:

- MATH 0090 Introductory Calculus, Part I (or more advanced)
- PHYS 0050 Foundations of Mechanics (or more advanced)
- ENGN 0030 Introduction to Engineering (or more advanced, or courses in data analysis and statistics)

**Concentration courses**

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Select three Biology courses from the following:

- BIOL 0390 Vertebrate Evolution and Diversity
- BIOL 0410 Invertebrate Zoology
- BIOL 0415 Microbes in the Environment
- BIOL 0420 Principles of Ecology
- BIOL 0430 The Evolution of Plant Diversity
- BIOL 0440 Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses
- BIOL 0480 Evolutionary Biology
- BIOL 1470 Conservation Biology

**Total Credits**

- AB degree requires a total of 19 courses and the ScB degree requires a total of 19, including one semester of research.
- Advanced placement may be substituted for the first semester of physics.
Three geological sciences courses from the following: 3

EEPS 0580 Foundations of Physical Hydrology
EEPS 1110 Estuarine Oceanography
EEPS 1120 Paleoceanography
EEPS 1130 Ocean Biogeochemical Cycles
EEPS 1150 Limnology: The Study of Lakes
EEPS 1330 Global Environmental Remote Sensing
EEPS 1370 Environmental Geochemistry
EEPS 1380 Environmental Stable Isotopes
EEPS 1510 Introduction to Atmospheric Dynamics

Total Credits 14

**Standard program for the Sc.B. degree**

This program is recommended for students interested in graduate study and careers in the Earth, Environmental, or Biological Sciences. It is relevant for students interested in environmental science, paleoclimate, Earth systems science, biogeochemistry, oceanography, or paleobiology.

**Five basic supporting science courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems (or more advanced)</td>
</tr>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure (or advanced placement)</td>
</tr>
<tr>
<td>PHYS 0050</td>
<td>Foundations of Mechanics (or more advanced)</td>
</tr>
<tr>
<td>or ENGN 0030</td>
<td>Introduction to Engineering</td>
</tr>
</tbody>
</table>

Select two courses in mathematics at the level of: 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
</tr>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II (or more advanced, or advanced courses in data analysis)</td>
</tr>
</tbody>
</table>

**Fourteen (14) concentration courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 0220</td>
<td>Earth Processes</td>
</tr>
<tr>
<td>EEPS 0230</td>
<td>Geochemistry: Earth and Planetary Materials and Processes</td>
</tr>
<tr>
<td>EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
</tr>
<tr>
<td>EEPS 1240</td>
<td>Stratigraphy and Sedimentation</td>
</tr>
</tbody>
</table>

Three biology courses from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 0390</td>
<td>Vertebrate Evolution and Diversity</td>
</tr>
<tr>
<td>BIOL 0410</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIOL 0415</td>
<td>Microbes in the Environment</td>
</tr>
<tr>
<td>BIOL 0420</td>
<td>Principles of Ecology</td>
</tr>
<tr>
<td>BIOL 0430</td>
<td>The Evolution of Plant Diversity</td>
</tr>
<tr>
<td>BIOL 0440</td>
<td>Inquiry in Plant Biology: Analysis of Plant Growth, Reproduction and Adaptive Responses</td>
</tr>
<tr>
<td>BIOL 0480</td>
<td>Evolutionary Biology</td>
</tr>
<tr>
<td>BIOL 1470</td>
<td>Conservation Biology</td>
</tr>
<tr>
<td>BIOL 1480</td>
<td>Terrestrial Biogeochemistry and the Functioning of Ecosystems</td>
</tr>
<tr>
<td>BIOL 1500</td>
<td>Plant Physiological Ecology</td>
</tr>
<tr>
<td>BIOL 1880</td>
<td>Comparative Biology of the Vertebrates</td>
</tr>
</tbody>
</table>

Three geological sciences courses from the following: 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 0580</td>
<td>Foundations of Physical Hydrology</td>
</tr>
<tr>
<td>EEPS 1110</td>
<td>Estuarine Oceanography</td>
</tr>
<tr>
<td>EEPS 1120</td>
<td>Paleoceanography</td>
</tr>
<tr>
<td>EEPS 1130</td>
<td>Ocean Biogeochemical Cycles</td>
</tr>
<tr>
<td>EEPS 1150</td>
<td>Limnology: The Study of Lakes</td>
</tr>
<tr>
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<td>Global Environmental Remote Sensing</td>
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<tr>
<td>EEPS 1370</td>
<td>Environmental Geochemistry</td>
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<tr>
<td>EEPS 1380</td>
<td>Environmental Stable Isotopes</td>
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<tr>
<td>EEPS 1510</td>
<td>Introduction to Atmospheric Dynamics</td>
</tr>
</tbody>
</table>

Three additional courses from upper level geological sciences, mathematics, or supporting sciences with approval from the concentration advisor 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 1970</td>
<td>Individual Study of Geologic Problems</td>
</tr>
</tbody>
</table>

**Total Credits 19**

**Geology-Chemistry**

Geochemistry involves two different emphases. Low-temperature geochemistry involves study of chemical and biochemical processes on and near Earth’s surface, including land, oceans and freshwater bodies, and how the geochemical record reflects climate conditions. High-temperature geochemistry includes study of formation and evolution of the Earth and other planets, magma formation and properties, volcanic activity, and metamorphism. The AB degree requires a total of 14 courses, including 5 geoscience courses and 4 chemistry courses, and a few supporting math and physics courses. The ScB degree requires a total of 20 courses, including 7 geoscience courses and 4 chemistry courses, either with an organic or an inorganic focus, plus some supporting math and physics courses and one research course. Geoscience courses emphasize a process-oriented approach, with hands-on experiences in labs and on field trips. There is a strong emphasis on active and collaborative learning, and on practice in communication. There are many opportunities for students to do research work for pay during the academic year or in the summer, in areas such as experimental studies of magma formation, and analyzing lunar rock samples for water content.

**Standard program for the A.B. degree**

Recommended for students seeking a liberal education and interested in applying physical and chemical principles toward an understanding of Earth history, Earth processes, and environmental and resource issues.

**Basic supporting science courses**

Select two courses in mathematics at the level of: 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I (or more advanced)</td>
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<tr>
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<td>Equilibrium, Rate, and Structure</td>
</tr>
<tr>
<td>PHYS 0050</td>
<td>Foundations of Mechanics (or a more advanced course, or advanced placement.)</td>
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<tr>
<td>or ENGN 0030</td>
<td>Introduction to Engineering</td>
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</table>

**Concentration courses**

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<th>Course</th>
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<tbody>
<tr>
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<tr>
<td>EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
</tr>
</tbody>
</table>

Three additional chemistry courses 3

Select one of the following Series: 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 1410</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>or EEPS 1420</td>
<td>Petrology</td>
</tr>
<tr>
<td>EEPS 1130</td>
<td>Ocean Biogeochemical Cycles</td>
</tr>
<tr>
<td>or EEPS 1370</td>
<td>Environmental Geochemistry</td>
</tr>
</tbody>
</table>

Two additional courses from upper level geological sciences, math, or supporting sciences with approval from the department concentration advisor. 2

**Total Credits 14**
Standard program for the Sc.B. degree

This program is recommended for students interested in graduate study and careers in geochemistry and related fields.

Basic Supporting Science Courses:
Select two courses in mathematics at the level of:
- MATH 0090 Introductory Calculus, Part I (or more advanced)
- MATH 0100 Introductory Calculus, Part II (or more advanced)

Select one of the following series:
- CHEM 0330 Equilibrium, Rate, and Structure
- PHYS 0050 & PHYS 0060 Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics

Select two courses in mathematics at the level of:
- MATH 0100 Introductory Calculus, Part II (or more advanced)
- MATH 0110 Flows in Mathematical Physics

GEES 0110 Principles of Geophysical Systems
GEES 0120 Principles of Geophysical Systems
GEES 0130 Principles of Geophysical Systems

Three additional courses from upper level geological sciences, mathematics, or supporting sciences with approval of the departmental concentration advisor

<table>
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<td>EEPS 1130</td>
<td>Ocean Biogeochemical Cycles</td>
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<tr>
<td>or EEPS 1370</td>
<td>Environmental Geochemistry</td>
</tr>
<tr>
<td>EEPS 1410</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>EEPS 1420</td>
<td>Petrology</td>
</tr>
<tr>
<td>EEPS 1240</td>
<td>Stratigraphy and Sedimentation</td>
</tr>
<tr>
<td>EEPS 1330</td>
<td>Global Environmental Remote Sensing</td>
</tr>
<tr>
<td>EEPS 1450</td>
<td>Structural Geology</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
</tr>
<tr>
<td>CHEM 0500</td>
<td>Inorganic Chemistry</td>
</tr>
<tr>
<td>CHEM 1140</td>
<td>Physical Chemistry: Quantum Chemistry</td>
</tr>
<tr>
<td>CHEM 1150</td>
<td>Physical Chemistry: Thermodynamics and Statistical Mechanics</td>
</tr>
<tr>
<td>EEPS 0220</td>
<td>Earth Processes</td>
</tr>
<tr>
<td>EEPS 0230</td>
<td>Geochemistry: Earth and Planetary Materials and Processes</td>
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<tr>
<td>EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
</tr>
<tr>
<td>EEPS 1130</td>
<td>Ocean Biogeochemical Cycles</td>
</tr>
<tr>
<td>EEPS 1370</td>
<td>Environmental Geochemistry</td>
</tr>
<tr>
<td>EEPS 1410</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>EEPS 1240</td>
<td>Stratigraphy and Sedimentation</td>
</tr>
<tr>
<td>EEPS 1330</td>
<td>Global Environmental Remote Sensing</td>
</tr>
<tr>
<td>EEPS 1380</td>
<td>Environmental Stable Isotopes</td>
</tr>
</tbody>
</table>

Four theme courses (choose either the Solid Earth Geophysics Theme or the Climate Science Theme)

Solid Earth Geophysics Theme
- EEPS 0230 | Geochemistry: Earth and Planetary Materials and Processes |
- EEPS 1610 | Solid Earth Geophysics |

Climate Science Theme
- EEPS 0240 | Earth: Evolution of a Habitable Planet |

Choose one of the following:
- PHYS 0050 | Foundations of Mechanics |
- PHYS 0070 | Analytical Mechanics |
- ENGN 0040 | Dynamics and Vibrations |

Choose one of the following:
- PHYS 0060 | Foundations of Electromagnetism and Modern Physics |
- ENGN 0310 | Mechanics of Solids and Structures |

Total Credits: 20
1 Advanced placement may be substituted for the first semester of physics.

Geology-Physics/Mathematics

Geophysics involves the application of physics and mathematics to the study of processes that operate on and within the Earth and other planets, over short and long timescales. The AB degree requires a total of 14 courses, including 6 geoscience courses, 3 physics or engineering courses, and 3 math and applied math courses. The ScB degree requires a total of 20 courses, including 8 geoscience courses, 4 physics or engineering courses, and 3 math and applied courses; students can choose courses from both solid Earth geophysics and climate science themes. Geoscience courses emphasize an analytical and process-oriented approach, with hands-on experiences in labs and on field trips. Active and collaborative learning is encouraged, as is practice in written and oral communication. There are many opportunities for students to engage in research (typically in paid positions) during the academic year or in the summer, in areas such as analysis of seismic waves in subduction zones, theoretical modeling of convection in the Earth’s mantle, modeling the effects of the warming climate in the oceans and atmosphere, and remote sensing of how climate change affects vegetation.

Standard program for the A.B. degree

Recommended for students seeking a liberal education and interested in applying physical and mathematical principles toward an understanding of the processes affecting planets, Earth, and the environment and how they are modeled. Some course requirements may be flexible based on consultation with concentration advisor.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 0220</td>
<td>Earth Processes</td>
</tr>
<tr>
<td>EEPS 0250</td>
<td>Computational Approaches to Modelling and Quantitative Analysis in Natural Sciences: An Introduction</td>
</tr>
<tr>
<td>EEPS 1510</td>
<td>Introduction to Environmental Geophysics</td>
</tr>
<tr>
<td>EEPS 1520</td>
<td>Continuum Physics of the Solid Earth</td>
</tr>
</tbody>
</table>

Choose one of the following:
- PHYS 0050 | Foundations of Mechanics |
- PHYS 0070 | Analytical Mechanics |
- ENGN 0040 | Dynamics and Vibrations |

Choose one of the following:
- PHYS 0060 | Foundations of Electromagnetism and Modern Physics |
- ENGN 0310 | Mechanics of Solids and Structures |
**Standard program for the Sc.B. degree**

This program is recommended for students interested in graduate study and careers in geophysics, climate science and related fields. Students will be prepared to understand and use models, make measurements, and use theories of the processes studied in these fields. Some course requirements may be flexible based on consultation with concentration advisor.

**Choose one of the following:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 1600</td>
<td>Computational Physics</td>
</tr>
<tr>
<td>ENGN 0510</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>ENGN 0810</td>
<td>Fluid Mechanics</td>
</tr>
<tr>
<td>ENGN 1370</td>
<td>Advanced Engineering Mechanics</td>
</tr>
<tr>
<td>EEPS 1820</td>
<td>Geophysical Fluid Dynamics: Rotating, Stratified Turbulence Edition</td>
</tr>
</tbody>
</table>

**Three courses in Mathematics, including:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>APMA 0330</td>
<td>Methods of Applied Mathematics I, II</td>
</tr>
<tr>
<td>or APMA 0340</td>
<td>Methods of Applied Mathematics I, II</td>
</tr>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure (or advanced placement)</td>
</tr>
</tbody>
</table>

One additional course from upper level geological sciences, mathematics, or supporting sciences with approval from the departmental concentration advisor.  

Total Credits: 14

1 One course cannot be used to satisfy two requirements.
2 ENGN 0810 or EEPS 1820 are recommended for those completing the Climate Science theme.
3 In addition to courses listed elsewhere, in the Geology-Physics/Math concentrations, these courses are of particular relevance: EEPS 0810, EEPS 1320, EEPS 1710, EEPS 1960A.

**Standard program for the A.B. degree**

This program is recommended for students interested in graduate study and careers in geophysics, climate science and related fields. Students will be prepared to understand and use models, make measurements, and use theories of the processes studied in these fields. Some course requirements may be flexible based on consultation with concentration advisor.

**Five theme courses (choose either the Solid Earth Geophysics theme or the Climate Science Theme):**

**Solid Earth Geophysics Theme**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 0230</td>
<td>Geochemistry: Earth and Planetary Materials and Processes</td>
</tr>
<tr>
<td>EEPS 1450</td>
<td>Structural Geology</td>
</tr>
<tr>
<td>EEPS 1620</td>
<td>Continuum Physics of the Solid Earth</td>
</tr>
</tbody>
</table>

And choose two from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 1410</td>
<td>Mineralogy</td>
</tr>
<tr>
<td>EEPS 1420</td>
<td>Petrology</td>
</tr>
<tr>
<td>EEPS 1560</td>
<td>Global Tectonics</td>
</tr>
<tr>
<td>EEPS 1650</td>
<td>Earthquake Seismology</td>
</tr>
</tbody>
</table>

**Climate Science Theme**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 0240</td>
<td>Earth: Evolution of a Habitable Planet</td>
</tr>
</tbody>
</table>

Choose one:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 1510</td>
<td>Introduction to Atmospheric Dynamics</td>
</tr>
<tr>
<td>EEPS 1520</td>
<td>Ocean Circulation and Climate</td>
</tr>
</tbody>
</table>

And choose three from the following:  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEPS 1130</td>
<td>Ocean Biogeochemical Cycles</td>
</tr>
<tr>
<td>EEPS 1310</td>
<td>Global Water Cycle</td>
</tr>
<tr>
<td>EEPS 1330</td>
<td>Global Environmental Remote Sensing</td>
</tr>
<tr>
<td>EEPS 1510</td>
<td>Introduction to Atmospheric Dynamics</td>
</tr>
<tr>
<td>EEPS 1520</td>
<td>Ocean Circulation and Climate</td>
</tr>
<tr>
<td>or a field course</td>
<td></td>
</tr>
<tr>
<td>PHYS 0050</td>
<td>Foundations of Mechanics</td>
</tr>
<tr>
<td>or PHYS 0070</td>
<td>Analytical Mechanics</td>
</tr>
<tr>
<td>or ENGN 0040</td>
<td>Dynamics and Vibrations</td>
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<tr>
<td>PHYS 0060</td>
<td>Foundations of Electromagnetism and Modern Physics</td>
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<tr>
<td>or ENGN 0310</td>
<td>Mechanics of Solids and Structures</td>
</tr>
<tr>
<td>or ENGN 0810</td>
<td>Fluid Mechanics</td>
</tr>
</tbody>
</table>

Select two of the following:  

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<tr>
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<tr>
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**Three courses in mathematics including**

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<tr>
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<td>or APMA 0340</td>
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</tr>
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One additional courses from upper level geological sciences, mathematics, or supporting sciences with approval from the departmental concentration advisor.  

Total Credits: 19

1 One course cannot be used to satisfy two requirements.
2 ENGN 0810 or EEPS 1820 are recommended for those completing the Climate Science theme.
3 In addition to courses listed elsewhere, in the Geology-Physics/Math concentrations, these courses are of particular relevance: EEPS 0810, EEPS 1320, EEPS 1710, EEPS 1960A.

**German Studies**

German Studies exposes students to the language, literature, and culture of the German speaking areas of Central Europe. Concentrators combine intensive study of the German language with interdisciplinary studies by complementing courses from the German Studies core program with courses from other departments that deal with topics from the German cultural tradition. The quest for national identity that dominated German history in the nineteenth and twentieth centuries has been augmented by contemporary Germany's efforts to come to terms with its past and create new ways of dealing with diversity. Our curriculum therefore looks back at the German literary, cultural, and historical tradition, examining figures from Goethe or Christa Wolf to Marx, Freud, Nietzsche, and Heidegger, alongside the "texts" of contemporary German media, including television, film, and music. Most concentrators study abroad for one or two semesters.

*In spring 2017, Professor Jane Sokolosky will serve as concentration advisor, Professor Kristina Mendicino will return as concentration advisor in fall 2017.

**Standard program for the A.B. degree**

Many students elect to complete a double concentration, combining German Studies with one of the above areas, or with fields such as International Relations or Economics, Comparative Literature or History of Art and Architecture.

Knowledge of the German language is not required for declaring a concentration in German Studies. However, since language fluency is the
basis for sophisticated understanding of German culture, students must meet a language requirement by the time they graduate.

### Concentration Requirements

- Nine courses beyond GRMN 0400 or GRMN 0450;
- At least six of the nine courses must be at the 1000-level (or higher);
- Two of the 1000-level courses must involve writing assignments in German, and students must obtain at least a grade of B in these courses;
- At least five of the nine courses must be taken in the Department of German Studies (or four if a student spends a whole year in Germany on Study Abroad);
- Completion of a Senior Seminar (i.e. a course from the German Studies 1900 series) as part of the five courses within the Department of German Studies; and
- If a student studies abroad for one semester, as many as four courses, in the case of two semesters, as many as five courses, from study abroad may count toward the concentration.

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>GRMN 0500F</td>
<td>Twentieth-Century German Culture</td>
</tr>
<tr>
<td>GRMN 0600C</td>
<td>From Faust to Freud: Germany’s Long 19th Century</td>
</tr>
<tr>
<td>GRMN 0750B</td>
<td>Tales of Vampireism and the Uncanny</td>
</tr>
<tr>
<td>GRMN 0750D</td>
<td>The Poetics of Murder: Crime Fiction from Poe to the Present</td>
</tr>
<tr>
<td>GRMN 0750F</td>
<td>Historical Crime Fiction</td>
</tr>
<tr>
<td>GRMN 1200C</td>
<td>Nietzsche - The Good European</td>
</tr>
<tr>
<td>GRMN 1200D</td>
<td>Repetition: Kierkegaard, Nietzsche and Freud</td>
</tr>
<tr>
<td>GRMN 1320A</td>
<td>German Aesthetics from Lessing to Heidegger</td>
</tr>
<tr>
<td>GRMN 1320D</td>
<td>Goethe</td>
</tr>
<tr>
<td>GRMN 1320E</td>
<td>Classical German Literature: Goethe und die Klassik</td>
</tr>
<tr>
<td>GRMN 1320F</td>
<td>Eighteenth-Century German Aesthetics</td>
</tr>
<tr>
<td>GRMN 1320G</td>
<td>Drama and Religion</td>
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<tr>
<td>GRMN 1320I</td>
<td>What is an Image? German Aesthetics and Art from Lessing to Heidegger</td>
</tr>
<tr>
<td>GRMN 1320O</td>
<td>Freudian Inspirations: Psychoanalysis and the Arts</td>
</tr>
<tr>
<td>GRMN 1320S</td>
<td>Reading Friedrich Hölderlin; An Introduction</td>
</tr>
<tr>
<td>GRMN 1330A</td>
<td>The Individual in the Age of Industry</td>
</tr>
<tr>
<td>GRMN 1340A</td>
<td>Crime and Punishment: Introduction to German Mystery Texts and Films</td>
</tr>
<tr>
<td>GRMN 1340B</td>
<td>Guilt Management: Postwar German Culture</td>
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<tr>
<td>GRMN 1340C</td>
<td>Jahrhundertwende 1900</td>
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<tr>
<td>GRMN 1340D</td>
<td>Modern German Prose, 1978-1998</td>
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<tr>
<td>GRMN 1340I</td>
<td>Turn of the Century</td>
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<tr>
<td>GRMN 1340J</td>
<td>The Works of Franz Kafka</td>
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<tr>
<td>GRMN 1340K</td>
<td>Unmittelbar nach 1945: Literatur und Film in Deutschland</td>
</tr>
<tr>
<td>GRMN 1340L</td>
<td>The Modern Period</td>
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<tr>
<td>GRMN 1340M</td>
<td>Kafka’s Writing</td>
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<td>GRMN 1340Q</td>
<td>Vergangenheitsbewältigung: German Literature of Memory</td>
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<td>GRMN 1440A</td>
<td>Dada-Performance and Digital-Interactivity</td>
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<tr>
<td>GRMN 1440C</td>
<td>Poetry and the Sublime</td>
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<td>GRMN 1440D</td>
<td>Modernity and Its Discontents: The German Novella</td>
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<tr>
<td>GRMN 1440E</td>
<td>Märchen</td>
</tr>
<tr>
<td>GRMN 1440F</td>
<td>Lyric Poetry From the Middle Ages to the Present</td>
</tr>
</tbody>
</table>
Program Requirements

REQUIRED BACKGROUND:

Four (4) courses including:

MATH 0090  Introductory Calculus, Part I (or equivalent placement)  1

OR

MATH 0050 & MATH 0060  Analytic Geometry and Calculus  1

and Analytic Geometry and Calculus

OR

MATH 0100  Introductory Calculus, Part II

or MATH 0170  Advanced Placement Calculus

CHEM 0330  Equilibrium, Rate, and Structure  1

BIOL 0200  The Foundation of Living Systems  1

Statistics course chosen with advisor's help.

CORE PROGRAM:

In addition to the stated background in Chemistry, Math, Biology and Statistics, five (5) Biology plus four (4) coherently-grouped Theme courses, plus a Senior-Year Capstone course or project. (See description of Capstone at link below this table).

BIOLoy:

Five (5) courses, including:

Genetics, which can be fulfilled in the following ways:

-OR-

BIOL 0470  Genetics

BIOL 0480  Evolutionary Biology

& BIOL 0500  and Cell and Molecular Biology

-OR-

BIOL 0480  Evolutionary Biology

& BIOL 0510  and Introductory Microbiology

-OR-

BIOL 0480  Evolutionary Biology

& BIOL 0280  and Biochemistry

Select one course in structure/function/development such as:

BIOL 0400  Biological Design: Structural Architecture of Organisms

BIOL 0800  Principles of Physiology

BIOL 1310  Developmental Biology

BIOL 1800  Animal Locomotion

BIOL 1880  Comparative Biology of the Vertebrates

NEUR 0010  The Brain: An Introduction to Neuroscience

One course in organismal/population biology such as:

BIOL 0380  The Ecology and Evolution of Infectious Disease

BIOL 0410  Invertebrate Zoology

BIOL 0420  Principles of Ecology

BIOL 0480  Evolutionary Biology

BIOL 1470  Conservation Biology

BIOL 1880  Comparative Biology of the Vertebrates

ENVS 0490  Environmental Science in a Changing World

Or a course from the NEUR 1940 series
Two Biology or Neuroscience courses. At least one must be at the advanced level.

THEME: With the advisor’s assistance, a theme is chosen and a cohesive set of courses are selected from outside of Biology and Neuroscience. See Notes below:

SENIOR CAPSTONE ACTIVITY: Must be conducted during the senior year, fulfilled by one of the following, and related to the students learning goals in the concentration:
1) Advisor approved senior seminar or advanced course related to the theme
2) One semester of independent research/independent study (BIOL 1950 or BIOL 1960); in the case of a senior honors thesis, both BIOL 1950 and BIOL 1960 can be used as the capstone.
3) An appropriate internship with a scholarly context can be used if coupled with a semester of independent study mentored by a Brown faculty member.

Total Credits = 14

THEME:
- Approved courses must be above the introductory level and at least one must be 1000-level or above.
- No more than TWO courses from a given department may be included in the theme portion.
- Students will then select from FOUR theme options: 1) Health Behavior, 2) Environmental Health, 3) Global/International Health, 4) Social Context of Health and Disease.


Hispanic Literatures and Culture

Spanish is the second most widely spoken language in the world and the second language of the United States. In our society, knowing Spanish is not just an asset; it is increasingly a necessity. The Spanish language program offers a sequence of courses ranging from basic to advanced. Students at all levels develop proficiency in speaking, listening, reading, and writing while also studying the cultures and societies of the contemporary Spanish-speaking world. The Hispanic Literatures and Culture concentration enables students to develop advanced Spanish skills while acquiring a solid background in the complex history, literature, cultures, and intellectual traditions of Spain, Latin America, and the Latinx-U.S. The department offers a variety of courses on topics related to literary history and theory; multicultural contact; linguistics and the history of the language; visual culture, film, and performance studies. Interdisciplinarity is a hallmark of the department, and students in this concentration are encouraged to broaden their perspectives by taking relevant courses in other departments. Most choose to strengthen their academic preparation by participating in a study abroad program in Spain or Latin America and by engaging with Latin American and Latinx communities in the United States.

The concentration requires a minimum of ten courses. A required course, HISP 0650 Advanced Spanish through Literature & Film, provides fundamental tools for critical analysis while continuing to emphasize grammar and writing development. 700-level courses provide fundamental tools for critical analysis and opportunities for developing advanced skills in the Spanish language. In courses at the 1000 level, students explore particular authors, genres, periods, or special topics and continue to hone their skills in literary and cultural analysis.

HISP 0650 Advanced Spanish through Literature & Film

Remaining Courses
Concentrators must complete nine additional courses beyond HISP 0650, or a total of 10 courses if the 0650 requirement has been waived. At least five of those courses must be taken in Hispanic Studies at Brown. Of those, a minimum of three must be 1000-level courses. Concentrators must take at least one Hispanic Studies course with the WRIT designation. *

Students may apply up to four related courses toward the concentration in Hispanic Literatures and Cultures. These courses may come from Study Abroad, transfer credit, and other departments and programs at Brown (e.g., Latin America and Caribbean Studies, Comparative Literature, History, Ethnic Studies, Anthropology), as long as they deal with themes related to the literatures, histories, and/or cultures of Spain, Latin America, or the Latinx USA. Any courses outside the Department of Hispanic Studies must be previously approved by the Concentration Advisor on a case by case basis.

Total Credits = 10

E-Portfolio: As their capstone work, all Hispanic Studies concentrators must complete an E-Portfolio in ASK in their last year of studies. The E-Portfolio is composed of samples of written work and other projects done as part of the concentration, as well as reflections on concentration-related experiences (study abroad, community work, internships, etc.).

1 Students who took HISP 0730, HISP 0740, or HISP 0760 prior to fall 2020 may use that course in lieu of HISP 0650. This requirement will be waived for students with a score of 5 on the AP Spanish Literature and Culture exam.

2 Please note that a maximum of two courses for the concentration can be taken in English.

Honors Thesis or Project

Students with an excellent record in their Hispanic Studies courses will be eligible to write an Honors Thesis or write and produce an Honors Project. Students pursuing honors must have a record of all A’s or a final grade of S with distinction in courses they have as S/NC. Typically, the Honors Thesis is a major research paper of approximately 40 to 80 pages in Spanish, depending on the topic and treatment necessary. Alternatively, a student may, with prior permission of the Hispanic Studies Concentration Advisor, present a film, gallery exhibition, or other appropriate project, together with a paper that clearly demonstrates the academic foundations and relevance of the project. For additional details regarding Honors Thesis in Hispanic Studies, please refer to our website or consult with the Concentration Advisor.

Concentration Advisor:
Felipe Martínez-Pinzón

Hispanic Literatures and Culture

History

History is the study of how societies and cultures across the world change over time. History concentrators learn to write and think critically, and to understand issues from a variety of perspectives. The department offers a wide variety of courses concerned with changes in human experience through time, ranging from classical Greek and Roman civilizations to the histories of Africa, the Middle East, the Americas, and Asia. While some courses explore special topics, others concentrate on the history of a particular country (e.g., China or Brazil) or period of time (e.g., Antiquity or the 20th century). By taking advantage of our diverse course offerings, students can engage in and develop broad perspectives on the past and the present.

Prospective concentrators should visit the History site (https://www.brown.edu/academics/history/undergraduate/history-concentration/) and visit the office hours of their prospective concentrator advisor (https://www.brown.edu/academics/history/undergraduate/history-


**Concentration Requirements**

**Basic requirement:** A minimum of 10 courses, at least 8 of which must be courses taught by a Brown University History Department faculty member (https://www.brown.edu/academics/history/faculty/) (including their cross-listed courses) and/or courses offered by the Brown History Department (such as those taught by Visiting or Adjunct Professors). Transfer students or study-abroad students who have spent a year or more at another institution must have at least 7 of 10 history courses taught by Brown History faculty or otherwise offered through the Brown History Department.

**Summary**

- Courses in the ‘Premodern’ era (P): 2
- 2 Courses in 3 different geographic regions: 6
- Field of focus: 4
- Capstone Seminar: 1
- Any combination of courses that fulfill the four requirements above for a total number of 10 courses*: 4
- Honors (optional) 3 additional courses related to writing a thesis (one of which, HIST 1992, can count towards your 10 concentration requirements)
- Courses below 1000: Students may count no more than four courses numbered below 1000 toward the concentration requirements. Students considering a concentration in History are encouraged to take First Year and Sophomore seminars, as well as courses in the HIST 0150 and 0200 series, for an introduction to historical reasoning, discussion, and writing.

**Field of focus:** In History, concentrators choose or create their own "track," rather than having to select an existing track. The field of focus must include a minimum of four courses, and it may be: geographical (such as Latin America); geographical and chronological (such as Modern North America); or transnational (such as ancient world); or thematic (such as urban history). Students who choose North America or Europe must also choose a chronological focus (i.e. Early Modern Europe. Fields in Latin America, Africa, East Asia, or Middle East/South Asia do not require a chronological definition. All students should consult a concentration advisor early in the process about their potential field of focus. All fields are subject to approval by the concentration advisor.

Thematic fields of focus include but are not restricted to:

- Comparative Colonialism
- Gender and Sexuality
- Law and Society
- Race and Ethnicity
- Science, Technology, Environment and Medicine (STEAM)
- Urban History

**Examples of transnational foci include:***

- The Ancient World
- The Early Modern Atlantic World
- Africa and the Diaspora
- The Mediterranean World from Antiquity to the Middle Ages
- The Pacific World

**Geographic Distribution:** Concentrators must take at least two courses in three of the following geographic areas:

- Africa
- East Asia
- Europe
- Global
- Latin America and the Caribbean
- Middle East and South Asia
- North America

“Global” courses are defined as those that deal with at least three different regions of the world.

For details on which courses count toward which geographical distribution requirement click here (https://docs.google.com/spreadsheets/d/1NTS7zAqXDCivZxSTdsdcSeMD5v28ke6550tnBrnE/edit?#gid=2138711521).

**Chronological Distribution:** All concentrators must complete at least two courses designated as “P” (for pre-modern).

For a listing of which courses count as ‘P’ courses click here

**Capstone Seminar:** All concentrators must complete at least one capstone seminar (HIST 1960s and HIST 1970s series and select HIST 1980s courses). These seminars are designed to serve as an intellectual culmination of the concentration. They provide students with an opportunity to delve deeply into a historical problem and to write a major research and/or analytical paper which serves as a capstone experience. Ideally, they will be taken in the field of focus and during the student’s junior or senior year. Students considering writing a senior honors thesis are advised to take an advanced seminar in their junior year.

**Transferring Courses:** The History Department encourages students to take history courses at other institutions, either in the United States or abroad, as well as history-oriented courses in other departments and programs at Brown. Students may apply two courses taken in other departments/programs at Brown to the ten-course minimum for the History concentration. Students who spend one semester at another institution may apply to their concentration a maximum of two courses from other departments or institutions, and those who spend more than one semester at another institution may apply to their concentration a third course transferred from another institution.

Students wishing to apply such courses must present to their concentration advisor justification that those courses complement some aspect of their concentration. Courses from other Brown departments may not be applied toward the chronological distribution requirement. History courses taught by trained historians from other institutions (e.g., from study abroad or a previous institution) may be applied toward the chronological distribution requirement so long as at least 2/3 of the course content examine the ‘premodern’ or ‘early modern’ periods. It is normally expected that students will have declared their intention to concentrate in History and have their concentration programs approved before undertaking study elsewhere. Students taking courses in Brown-run programs abroad automatically receive University transfer credit, but concentration credit is granted only with the approval of a concentration advisor. Students taking courses in other foreign-study programs or at other universities in the United States must apply to the Transfer Credit Advisor and then get approval from a concentration advisor.

**Regular Consultation:** Students are strongly urged to consult regularly with their concentration advisor or a department advisor about their program. During the seventh semester, all students must meet with their concentration advisor for review and approval of their program.

**COURSES BELOW 1000**

**LECTURE COURSES**

**150’s: Thematic Courses that Cut Across Time and Place**

- **HIST 0150A** History of Capitalism
- **HIST 0150B** The Philosophers’ Stone: Alchemy From Antiquity to Harry Potter
- **HIST 0150C** Locked Up: A Global History of Prison and Captivity
- **HIST 0150D** Refugees: A Twentieth-Century History
- **HIST 0150F** Pirates
- **HIST 0150G** History of Law: Great Trials
- **HIST 0150H** Foods and Drugs in History

**Gateway Lecture Courses**

- **HIST 0202** African Experiences of Empire
- **HIST 0203** Modern Africa: From Empire to Nation-State
- **HIST 0212** Histories of East Asia: China
- **HIST 0214** Histories of East Asia: Japan
- **HIST 0215** Modern Korea: Contending with Modernity
- **HIST 0218** The Making of Modern East Asia
- **HIST 0228A** War and Peace in Modern Europe
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>HIST 0232</td>
<td>Clash of Empires in Latin America</td>
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<tr>
<td>HIST 0233</td>
<td>Colonial Latin America</td>
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<tr>
<td>HIST 0234</td>
<td>Modern Latin America</td>
</tr>
<tr>
<td>HIST 0243</td>
<td>Modern Middle East Roots: 1492 to the Present</td>
</tr>
<tr>
<td>HIST 0244</td>
<td>Understanding the Middle East: 1800s to the Present</td>
</tr>
<tr>
<td>HIST 0247</td>
<td>Civilization, Empire, Nation: Competing Histories of the Middle East</td>
</tr>
<tr>
<td>HIST 0248</td>
<td>'Neither of the East nor West': The Ottoman Empire</td>
</tr>
<tr>
<td>HIST 0259</td>
<td>Labor, Land and Culture: A History of Immigration in the U.S.</td>
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<tr>
<td>HIST 0273A</td>
<td>The First Globalization: The Portuguese in Africa, Asia, and the Americas</td>
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<tr>
<td>HIST 0250</td>
<td>American Exceptionalism: The History of an Idea</td>
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<td>HIST 0252</td>
<td>The American Civil War in Global Perspective: History, Law, and Popular Culture</td>
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<tr>
<td>HIST 0253</td>
<td>Religion, Politics, and Culture in America, 1865 - Present</td>
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<td>HIST 0257</td>
<td>Modern American History: New and Different Perspectives</td>
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<td>HIST 0270A</td>
<td>From Fire Wielders to Empire Builders: Human Impact on the Global Environment before 1492</td>
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<td>HIST 0270B</td>
<td>From the Columbian Exchange to Climate Change: Modern Global Environmental History</td>
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<tr>
<td>HIST 0276</td>
<td>A Global History of the Atomic Age</td>
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<td>HIST 0276B</td>
<td>Science and Capitalism</td>
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<td>HIST 0285A</td>
<td>Modern Genocide and Other Crimes against Humanity</td>
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<tr>
<td>HIST 0286A</td>
<td>History of Medicine I: Medical Traditions in the Old World Before 1700</td>
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<tr>
<td>HIST 0286B</td>
<td>History of Medicine II: The Development of Scientific Medicine in Europe and the World</td>
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**SEMINAR COURSES**

**First-Year Seminars**

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<tr>
<td>HIST 0510A</td>
<td>Shanghai in Myth and History</td>
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<tr>
<td>HIST 0520A</td>
<td>Athens, Jerusalem, and Baghdad: Three Civilizations, One Tradition</td>
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<tr>
<td>HIST 0521A</td>
<td>Christianity in Conflict in the Medieval Mediterranean</td>
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<tr>
<td>HIST 0521M</td>
<td>The Holy Grail and the Historian's Quest for the Truth</td>
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<tr>
<td>HIST 0522G</td>
<td>An Empire and Republic: The Dutch Golden Age</td>
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<tr>
<td>HIST 0522N</td>
<td>Reason, Revolution and Reaction in Europe</td>
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<tr>
<td>HIST 0522O</td>
<td>The Enlightenment</td>
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<tr>
<td>HIST 0523A</td>
<td>The Holocaust in Historical Perspective</td>
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<td>HIST 0523B</td>
<td>State Surveillance in History</td>
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<td>HIST 0523M</td>
<td>History of Fascism</td>
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<td>HIST 0523P</td>
<td>The First World War</td>
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<tr>
<td>HIST 0535A</td>
<td>Atlantic Pirates</td>
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<td>HIST 0535B</td>
<td>Conquests</td>
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<td>HIST 0537A</td>
<td>Popular Culture in Latin America and the Caribbean</td>
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<tr>
<td>HIST 0537B</td>
<td>Tropical Delights: Imagining Brazil in History and Culture</td>
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<tr>
<td>HIST 0550A</td>
<td>Object Histories: The Material Culture of Early America</td>
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<tr>
<td>HIST 0551A</td>
<td>Abraham Lincoln: Historical and Cultural Perspectives</td>
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<td>HIST 0555B</td>
<td>Robber Barons</td>
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<td>HIST 0556A</td>
<td>Sport in American History</td>
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<td>HIST 0556B</td>
<td>Inequality and American Capitalism in the Twentieth Century</td>
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<td>HIST 0557A</td>
<td>Slavery and Historical Memory in the United States</td>
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<td>HIST 0557B</td>
<td>Slavery, Race, and Racism</td>
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<td>HIST 0557C</td>
<td>Narratives of Slavery</td>
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<tr>
<td>HIST 0559A</td>
<td>Culture and U.S. Empire</td>
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<td>HIST 0559B</td>
<td>Asian Americans and Third World Solidarity</td>
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<tr>
<td>HIST 0574A</td>
<td>The Silk Road, Past and Present</td>
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<td>HIST 0576A</td>
<td>The Arctic: Global History from the Dog Sled to the Oil Rig</td>
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<td>HIST 0577A</td>
<td>The Chinese Diaspora: A History of Globalization</td>
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<td>HIST 0580M</td>
<td>The Age of Revolutions, 1760-1824</td>
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<td>HIST 0580O</td>
<td>Making Change: Nonviolence in Action</td>
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<td>HIST 0582A</td>
<td>Animal Histories</td>
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<td>HIST 0582B</td>
<td>Science and Society in Darwin's England</td>
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**Sophomore Seminars**

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<tr>
<td>HIST 0621B</td>
<td>The Search for King Arthur</td>
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<tr>
<td>HIST 0637B</td>
<td>Fratious Friendships: The United States and Latin America in the Twentieth Century</td>
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<tr>
<td>HIST 0654A</td>
<td>Welfare States and a History of Modern Life</td>
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<tr>
<td>HIST 0654B</td>
<td>American Patriotism in Black and White</td>
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<td>HIST 0655A</td>
<td>Culture Wars in American Schools</td>
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<tr>
<td>HIST 0658D</td>
<td>Walden + Woodstock: The American Lives of Ralph Waldo Emerson and Bob Dylan</td>
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<tr>
<td>HIST 0675A</td>
<td>The Chinese Diaspora: A History of Globalization</td>
</tr>
<tr>
<td>HIST 0685A</td>
<td>The Social Lives of Dead Bodies in China and Beyond</td>
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**COURSES WITH NUMBERS 1000-1999**

**LECTURE COURSES**

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<tr>
<td>HIST 1030</td>
<td>Entangled South Africa</td>
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<td>HIST 1060</td>
<td>Colonial Africa</td>
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<td>HIST 1070</td>
<td>'Modern' Africa</td>
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<td>HIST 1080</td>
<td>Humanitarianism and Conflict in Africa</td>
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<td>HIST 1101</td>
<td>Chinese Political Thought from Confucius to Xi Jinping</td>
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<td>HIST 1110</td>
<td>Imperial China/China: Culture and Legacy</td>
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<td>HIST 1118</td>
<td>China's Late Empires</td>
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<td>HIST 1120</td>
<td>At China's Edges</td>
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<td>HIST 1121</td>
<td>The Modern Chinese Nation: An Idea and Its Limits</td>
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<tr>
<td>HIST 1122</td>
<td>China Pop: The Social History of Chinese Popular Culture</td>
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<tr>
<td>HIST 1141</td>
<td>Japan in the Age of the Samurai</td>
</tr>
<tr>
<td>HIST 1149</td>
<td>Imperial Japan</td>
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<td>HIST 1150</td>
<td>Modern Japan</td>
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<tr>
<td>HIST 1155</td>
<td>Japan's Pacific War: 1937-1945</td>
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<td>HIST 1156</td>
<td>Postwar Japan</td>
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<td>HIST 1200B</td>
<td>The Fall of Empires and Rise of Kings: Greek History to 478 to 323 BCE</td>
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<td>HIST 1200C</td>
<td>History of Greece: From Alexander the Great to the Roman Conquest</td>
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<tr>
<td>HIST 1201A</td>
<td>Roman History I</td>
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<td>HIST 1201B</td>
<td>Roman History II: The Empire</td>
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<tr>
<td>HIST 1202</td>
<td>Formation of the Classical Heritage: Greeks, Romans, Jews, Christians, and Muslims</td>
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<tr>
<td>HIST 1205</td>
<td>The Long Fall of the Roman Empire</td>
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<tr>
<td>HIST 1210A</td>
<td>The Viking Age</td>
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<tr>
<td>HIST 1211</td>
<td>Crusaders and Cathedrals, Deviants and Dominance: Europe in the High Middle Ages</td>
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<tr>
<td>HIST 1216</td>
<td>The Paradox of Early Modern Europe</td>
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<tr>
<td>HIST 1230A</td>
<td>Modern European Intellectual and Cultural History: Revolution and Romanticism, 1760-1860</td>
</tr>
<tr>
<td>HIST 1230B</td>
<td>Modern European Intellectual and Cultural History: The Fin de Siecle, 1880-1914</td>
</tr>
<tr>
<td>HIST 1230C</td>
<td>The Search for Renewal in 20th century Europe</td>
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<tr>
<td>HIST 1240A</td>
<td>Politics of Violence in 20C Europe</td>
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<tr>
<td>HIST 1260D</td>
<td>Living Together: Muslims, Christians, and Jews in Medieval Iberia</td>
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<td>HIST 1261E</td>
<td>After Empire: Modern Spain in the 20th Century</td>
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<td>Truth on Trial: Justice in Italy, 1400-1800</td>
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<td>Cultural History of the Netherlands in a Golden Age and a Global Age</td>
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<td>HIST 1266C</td>
<td>English History, 1529-1660</td>
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<td>British History, 1660-1800</td>
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<td>HIST 1268A</td>
<td>The Rise of the Russian Empire</td>
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<td>Russia in the Era of Reforms, Revolutions, and World Wars</td>
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<td>The Collapse of Socialism and the Rise of New Russia</td>
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<td>Death from Medieval Relics to Forensic Science</td>
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<td>HIST 1310</td>
<td>History of Brazil</td>
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<td>HIST 1312</td>
<td>Brazil: From Abolition to Emerging Global Power</td>
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<td>Brazilian Biographies</td>
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<td>HIST 1320</td>
<td>Rebel Island: Cuba, 1492-Present</td>
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<td>HIST 1331</td>
<td>The Rise and Fall of the Aztecs: Mexico, 1300-1600</td>
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<td>Reform and Rebellion: Mexico, 1700-1867</td>
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<td>HIST 1370</td>
<td>The United States and Brazil: Tangled Relations</td>
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<td>HIST 1381</td>
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<td>Truth on Trial: Justice in Italy, 1400-1800</td>
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<td>The Ottomans: Faith, Law, Empire</td>
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<td>The Making of the Ottoman World, 15th - 20th Centuries</td>
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<td>HIST 1455</td>
<td>The Making of the Modern Middle East</td>
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<td>HIST 1456</td>
<td>Bankrupt: An Economic and Financial History of the Middle East in the 19th and 20th Centuries</td>
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<td>Modern Turkey: Empire, Nation, Republic</td>
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<td>Legal History in the Middle East</td>
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<td>HIST 1503</td>
<td>Antebellum America and the Road to Civil War</td>
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<td>HIST 1505</td>
<td>Making America Modern</td>
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<td>HIST 1507</td>
<td>American Politics and Culture Since 1945</td>
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<td>HIST 1511</td>
<td>Sinners, Saints, and Heretics: Religion in Early America</td>
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<td>HIST 1512</td>
<td>First Nations: The People and Cultures of Native North America to 1800</td>
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<td>HIST 1513</td>
<td>U.S. Cultural History from Revolution to Reconstruction</td>
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<td>HIST 1514</td>
<td>Capitalism, Slavery and the Economy of Early America</td>
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<td>HIST 1515</td>
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<td>HIST 1530</td>
<td>The Intimate State: The Politics of Gender, Sex, and Family in the U.S., 1873-Present</td>
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<td>HIST 1531</td>
<td>Political Movements in Twentieth-Century America</td>
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<td>Black Freedom Struggle Since 1945</td>
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<td>HIST 1550</td>
<td>American Urban History, 1800-1870</td>
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<td>HIST 1553</td>
<td>Empires in America to 1890</td>
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<td>HIST 1554</td>
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<td>HIST 1570</td>
<td>American Legal and Constitutional History, Domestic and International</td>
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<td>HIST 1571</td>
<td>The Intellectual History of Black Women</td>
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<td>HIST 1620</td>
<td>Resisting Empire: Gandhi and the Making of Modern South Asia</td>
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<td>HIST 1640</td>
<td>Inequality + Change: South Asia after 1947</td>
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<td>HIST 1730</td>
<td>'Cannibals', 'Barbarians' and 'Noble Savages': Travel and Ethnography in the Early Modern World</td>
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<td>HIST 1735</td>
<td>Slavery in the Early Modern World</td>
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<td>HIST 1736</td>
<td>A Global History of the Reformation</td>
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<td>HIST 1820A</td>
<td>Environmental History</td>
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<td>HIST 1820B</td>
<td>Environmental History of East Asia</td>
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<td>HIST 1820G</td>
<td>Nature on Display</td>
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<tr>
<td>HIST 1825F</td>
<td>Nature, Knowledge, Power in Renaissance Europe</td>
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<td>HIST 1825H</td>
<td>Science, Medicine and Technology in the 17th Century</td>
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<td>HIST 1825L</td>
<td>The Roots of Modern Science</td>
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<td>HIST 1825M</td>
<td>Science at the Crossroads</td>
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<td>HIST 1825S</td>
<td>Science and Capitalism</td>
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<tr>
<td>HIST 1830M</td>
<td>From Medieval Bedlam to Prozac Nation: Intimate Histories of Psychiatry and Self</td>
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<tr>
<td>HIST 1835A</td>
<td>Unearthing the Body: History, Archaeology, and Biology at the End of Antiquity</td>
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**SEMINAR COURSES**

**Non-Capstone Seminars**

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<tr>
<td>HIST 1947Q</td>
<td>History of Jews in Brazil</td>
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<tr>
<td>HIST 1952A</td>
<td>World of Walden Pond: Transcendentalism as a Social and Intellectual Movement</td>
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<tr>
<td>HIST 1956A</td>
<td>Thinking Historically: A History of History Writing</td>
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<td>HIST 1956B</td>
<td>Rites of Power in Modern China</td>
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<tr>
<td>HIST 1956D</td>
<td>Jewish Humor, Commercial Entertainment, and Modern Identity in 20th-Century America and Central Europe</td>
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<tr>
<td>HIST 1958A</td>
<td>Archives of Desire: Non-Normative Genders and Sexualities in the Hispanophone World</td>
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### SEMINAR COURSES

#### Capstone Seminars

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<tr>
<td>HIST 1960G</td>
<td>Southern African Frontiers, c. 1400-1860</td>
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<tr>
<td>HIST 1960Q</td>
<td>Medicine and Public Health in Africa</td>
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<tr>
<td>HIST 1960R</td>
<td>South Africa Since 1990</td>
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<td>HIST 1960S</td>
<td>North African History: 1800 to Present</td>
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<tr>
<td>HIST 1961B</td>
<td>Cities and Urban Culture in China</td>
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<tr>
<td>HIST 1961C</td>
<td>Knowledge and Power: China's Examination Hall</td>
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<tr>
<td>HIST 1962B</td>
<td>Life During Wartime: Theory and Sources from the Twentieth Century</td>
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<tr>
<td>HIST 1962C</td>
<td>State, Religion and the Public Good in Modern China</td>
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<td>HIST 1962D</td>
<td>Japan in the World, from the Age of Empires to 3.11</td>
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<td>HIST 1962E</td>
<td>Print and Power in Modern Southeast Asia</td>
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<td>HIST 1963L</td>
<td>Barbarians, Byzantines, and Berbers: Early Medieval North Africa, AD 300-1050</td>
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<tr>
<td>HIST 1963M</td>
<td>Charlemagne: Conquest, Empire, and the Making of the Middle Ages</td>
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<td>HIST 1963Q</td>
<td>Sex, Power, and God: A Medieval Perspective</td>
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<td>HIST 1964A</td>
<td>Age of Impostors: Fraud, Identification, and the Self in Early Modern Europe</td>
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<td>HIST 1964B</td>
<td>The Enchanted World: Magic, Angels, and Demons in Early Modern Europe</td>
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<td>HIST 1964D</td>
<td>Women in Early Modern England</td>
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<td>HIST 1964E</td>
<td>The English Revolution</td>
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<td>HIST 1964F</td>
<td>Early Modern Ireland</td>
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<td>HIST 1964G</td>
<td>Spin, Terror and Revolution: England, Scotland and Ireland, 1660-1720</td>
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<td>HIST 1964K</td>
<td>Descartes’ World</td>
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<td>HIST 1964L</td>
<td>Slavery in the Early Modern World</td>
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<td>HIST 1965B</td>
<td>Fin-de-Siècle Paris and Vienna</td>
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<td>HIST 1965C</td>
<td>Stalinism</td>
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<td>HIST 1965D</td>
<td>The USSR and the Cold War</td>
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<td>HIST 1965E</td>
<td>Politics of the Intellectual in 20C Europe</td>
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<td>HIST 1965H</td>
<td>Europe and the Invention of Race</td>
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<td>HIST 1965M</td>
<td>Double Fault! Race and Gender in Modern Sports History</td>
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<td>HIST 1965L</td>
<td>Appetite for Greatness: Cuisine, Power, and the French</td>
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<td>HIST 1965R</td>
<td>The Crisis of Liberalism in Modern History</td>
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<td>HIST 1967C</td>
<td>Making Revolutionary Cuba, 1959-Present</td>
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<td>HIST 1967E</td>
<td>In the Shadow of Revolution: Mexico Since 1940</td>
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<td>HIST 1967F</td>
<td>The Maya in the Modern World</td>
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<td>HIST 1967Q</td>
<td>Gender and Sexuality in the Modern History of Latin America</td>
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<td>HIST 1967R</td>
<td>History of Rio de Janeiro</td>
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<td>History of the Andes from the Incas to Evo Morales</td>
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<td>HIST 1968A</td>
<td>Approaches to the Middle East</td>
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<td>HIST 1968V</td>
<td>America and the Middle East: Histories of Connection and Exchange</td>
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<td>HIST 1969A</td>
<td>Israel-Palestine: Lands and Peoples I</td>
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<td>Israel-Palestine: Lands and Peoples II</td>
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<td>HIST 1969C</td>
<td>Debates in Middle Eastern History</td>
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<td>HIST 1969D</td>
<td>Palestine versus the Palestinians</td>
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<td>HIST 1969F</td>
<td>Nothing Pleases Me: Understanding Modern Middle Eastern History Through Literature</td>
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<td>HIST 1970B</td>
<td>Enslaved! Indians and Africans in an Unfree Atlantic World</td>
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<td>HIST 1970D</td>
<td>Problem of Class in Early America</td>
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<td>HIST 1970F</td>
<td>Early American Money</td>
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<td>HIST 1970G</td>
<td>Captive Voices: Atlantic Slavery in the Digital Age</td>
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<td>HIST 1971D</td>
<td>From Emancipation to Obama</td>
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<td>HIST 1972A</td>
<td>American Legal History, 1760-1920</td>
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<td>HIST 1972E</td>
<td>Theory and Practice of Local History</td>
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<td>HIST 1972F</td>
<td>Consent: Race, Sex, and the Law</td>
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<td>HIST 1972G</td>
<td>Lesbian Memoir</td>
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<td>U.S. Human Rights in a Global Age</td>
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<td>HIST 1974A</td>
<td>The Silk Roads, Past and Present</td>
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<td>HIST 1974B</td>
<td>War and Peace: A Global History</td>
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<td>HIST 1974G</td>
<td>Nonviolence in History and Practice</td>
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<td>HIST 1974J</td>
<td>Decolonizing Minds: A People’s History of the World</td>
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<td>HIST 1974K</td>
<td>Maps and Empires</td>
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<td>HIST 0656A</td>
<td>History of Intercollegiate Athletics</td>
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<td>HIST 1974L</td>
<td>A Global Idea: Civilization(s)</td>
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<td>HIST 1974M</td>
<td>Early Modern Globalization</td>
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<td>HIST 1974P</td>
<td>Modernity’s Crisis: Jewish History from the French Revolution to the Election of Donald Trump</td>
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<td>HIST 1974S</td>
<td>The Nuclear Age</td>
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<td>HIST 1974Y</td>
<td>Moral Panic and Politics of Fear</td>
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<td>HIST 1976A</td>
<td>Native Histories in Latin America and North America</td>
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<td>HIST 1976B</td>
<td>The History of Extinction</td>
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<td>HIST 1976C</td>
<td>Animal, Vegetable, Mineral: Environmental Histories of Non-Human Actors</td>
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<td>HIST 1976D</td>
<td>Powering the Past: The History of Energy</td>
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<td>HIST 1976E</td>
<td>The Anthropocene: Climate Change as Social History</td>
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<td>HIST 1976G</td>
<td>Animal Histories</td>
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<td>HIST 1976H</td>
<td>Environmental History of Latin America 1492-Present</td>
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<td>HIST 1976I</td>
<td>Imperialism and Environmental Change</td>
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<td>HIST 1976N</td>
<td>Topics in the History of Economic Thought</td>
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<td>HIST 1976R</td>
<td>Histories of the Future</td>
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<td>HIST 1977B</td>
<td>Feathery Things: An Avian Introduction to Animal Studies</td>
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<tr>
<td>HIST 1977I</td>
<td>Gender, Race, and Medicine in the Americas</td>
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</table>
### History of Art and Architecture Requirements

To complete the concentration, you will be expected to take a minimum of ten courses (11 for honors). Our goal in setting out these requirements is to welcome students into a lively and diverse department that also shares a cohesive and strong commitment to the field. We as a faculty want students to cultivate their special interests and also to venture into areas that may not be so familiar but that will open new and exciting possibilities for them. Ten courses are only the minimum requirement. Beyond that students are encouraged to take courses at RISD, participate in study abroad programs, and take courses in other Brown departments. As we are a truly interdisciplinary department, you will also find that our faculty collaborates with members of other departments to teach courses that bring together the strengths of different disciplines. We encourage both experimentation and concentration. Because foreign language skills are essential for pursuing art historical studies in a professional environment or in graduate school, HIAA requires knowledge equivalent to passing a 500-level language course at Brown.

Our general survey in history of art and architecture (HIAA 0010) is an excellent foundation for the concentration. It is not a prerequisite for taking other lecture courses but you can count it as one of the 4 non-core courses required for the concentration (see below for core and non-core courses).

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<td>War and Medicine since the Renaissance</td>
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<tr>
<td>HIST 1990</td>
<td>Undergraduate Reading Courses</td>
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<td>HIST 1992</td>
<td>History Honors Workshop for Prospective Thesis Writers</td>
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<tr>
<td>HIST 1993</td>
<td>History Honors Workshop for Thesis Writers, Part I</td>
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<tr>
<td>HIST 1994</td>
<td>History Honors Workshop for Thesis Writers, Part II</td>
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### Honors (OPTIONAL):

History concentrators in the 5th or 6th semester may apply for honors. To be admitted, students must have achieved two-thirds “quality grades” in History department courses. A “quality grade” is defined as a grade of “A” or a grade of “S” accompanied by a course performance report indicating a performance at the “A” standard.

Students who wish to enroll in honors are recommended to take HIST 1992. “History Honors Workshop for Prospective Students.” HIST 1992 can count as one of the 10 courses required for graduation in history. HIST 1992 students who prepare a prospectus that receives a grade of A- or above will be admitted to the honors program. Students in their 7th semester who have not taken HIST 1992 (including but not limited to those who are away from Brown during that semester) may apply to the program by submitting a prospectus no later than the first day of that semester. All honors students must complete one semester of HIST 1993 “History Honors Workshop for Thesis Writers, Part I” and one semester of HIST 1994 “History Workshop for Thesis Writers, Part II.” HIST 1993 and HIST 1994 do not count towards the 10 courses required for graduation in history; they are an additional two courses to the minimum of 10 required history courses. Students who contemplate enrolling in the honors program in History should consult the honors section of the department website. They are also encouraged to meet with the Director of Undergraduate Studies, who serves as the honors advisor.

### History of Art and Architecture

The concentration in History of Art and Architecture introduces students to the history of art, architecture, and visual culture. Students in HIAA explore Western and non-Western areas ranging over a wide period of time (Ancient, Medieval, Islamic, East Asian, Latin American, Early Modern, Modern/ Contemporary). Concentrators often focus on a particular period (e.g. ancient, modern architecture), a particular branch of the field (e.g. urbanism), or a methodology (e.g. semiotics, critical interpretation, archaeology), but students may choose to create their own program of study. Concentrators will receive essential training in perceptual, historical, and critical analysis.

### Four core general lecture courses, numbered HIAA 0020 - HIAA 0940.

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<td>A Global History of Art and Architecture</td>
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<tr>
<td>HIAA 0011</td>
<td>Introduction to the History of Architecture and Urbanism</td>
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<tr>
<td>HIAA 0013</td>
<td>Introduction to Indian Art</td>
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<td>HIAA 0022</td>
<td>The Art of Enlightenment</td>
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<td>HIAA 0031</td>
<td>Pre-Islamic Empires of Iran</td>
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<td>HIAA 0040</td>
<td>Introduction to Medieval Art and Architecture</td>
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<td>HIAA 0041</td>
<td>The Architectures of Islam</td>
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<td>HIAA 0042</td>
<td>Islamic Art and Architecture</td>
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<td>HIAA 0061</td>
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<td>HIAA 0062</td>
<td>Dutch and Flemish Art: Visual Culture of the Netherlands in the Seventeenth Century</td>
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<td>HIAA 0070</td>
<td>Introduction to American Art: The 19th Century</td>
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<td>HIAA 0075</td>
<td>Introduction to the History of Art: Modern Photography</td>
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<td>HIAA 0077</td>
<td>Revolutions, Illusions, Impressions: A History of Nineteenth-Century Art</td>
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<td>Architecture of the House Through Space and Time</td>
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<td>HIAA 0082</td>
<td>Art and Technology from Futurism to Hacktivism</td>
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<td>HIAA 0089</td>
<td>Contemporary Photography</td>
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<td>HIAA 0321</td>
<td>Toward a Global Late Antiquity: 200-800 CE</td>
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<td>HIAA 0340</td>
<td>Roman Art and Architecture: From Caesar to Hadrian</td>
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<td>HIAA 0400</td>
<td>Early Christian, Jewish, and Byzantine Art and Architecture</td>
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<td>HIAA 0440</td>
<td>Gothic Art and Architecture</td>
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<tr>
<td>HIAA 0460</td>
<td>Muslims, Jews and Christians in Medieval Iberia</td>
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<td>HIAA 0550</td>
<td>Gold, Wool and Stone: Painters and Bankers in Renaissance Tuscany</td>
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<td>HIAA 0560</td>
<td>Constructing the Eternal City: Popes and Pilgrims in Early Modern Rome</td>
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<td>HIAA 0570</td>
<td>The Renaissance Embodied</td>
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<td>HIAA 0580</td>
<td>Word, Image and Power in Renaissance Italy</td>
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<td>HIAA 0600</td>
<td>From Van Eyck to Bruegel</td>
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<td>HIAA 0630</td>
<td>Cultural History of the Netherlands in a Golden Age and a Global Age</td>
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<td>Giotto to Watteau: Introduction to the Art of Europe from Renaissance to French Revolution</td>
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<td>HIAA 0710</td>
<td>The Other History of Modern Architecture</td>
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<td>HIAA 0770</td>
<td>Architecture and Urbanism of Africa</td>
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<td>HIAA 0771</td>
<td>African American and Caribbean Architectures: Domestic Space</td>
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<td>Art After ’68</td>
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<td>HIAA 0810</td>
<td>20th Century Sculpture</td>
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<tr>
<td>HIAA 0830</td>
<td>Revolutionary Forms: 100 Years of Art and Politics in Latin America</td>
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<tr>
<td>HIAA 0840</td>
<td>History of Rhode Island Architecture</td>
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<tr>
<td>HIAA 0850</td>
<td>Modern Architecture</td>
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<tr>
<td>HIAA 0860</td>
<td>Contemporary Architecture</td>
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<tr>
<td>HIAA 0861</td>
<td>City and Cinema</td>
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<tr>
<td>HIAA 0870</td>
<td>20th Century British Art: Edwardian to Contemporary</td>
</tr>
</tbody>
</table>

Two core seminar courses, numbered between HIAA 1020 and 1930 are encouraged to take a studio class as part of this requirement.

HIAA 1020 Topics in East Asian Art
HIAA 1090 Writing About the Arts
HIAA 1101A Illustrating Knowledge
HIAA 1101B Seeing and Writing on Contemporary Arts
HIAA 1120B History of Urbanism, 1300-1700
HIAA 1120C History of Western European Urbanism 1200-1600
HIAA 1105 Otherworldly and Other Worlds: Representing the Unseen in Early Modern Europe
HIAA 1170B Twentieth-Century American Painting
HIAA 1181 Prefabrication and Architecture
HIAA 1182 Spaces and Institutions of Modernity
HIAA 1200A Ancient Art in the RISD Collection
HIAA 1200D Pompeii
HIAA 1201 Brushwork: Chinese Painting in Time
HIAA 1300 Topics in Classical Art and Architecture
HIAA 1301 The Palaces of Ancient Rome
HIAA 1302 Women and Families in the Ancient Mediterranean
HIAA 1303 Pompeii: Art, Architecture, and Archaeology in the Lost City
HIAA 1304 Spectacle! Games, Gladiators, Performance, and Ceremony in the Roman World
HIAA 1310 Topics in Hellenistic Art
HIAA 1400F Research Seminar Gothic Art
HIAA 1410A Topics in Islamic Art: Islamic Art and Architecture on the Indian Subcontinent
HIAA 1410B Painting in Mughal India 1550-1650
HIAA 1430A The Visual Culture of Medieval Women
HIAA 1440D The Gothic Cathedral
HIAA 1440F Architectural Reuse: The Appropriation of the Past
HIAA 1440B Architecture of Solitude: The Medieval Monastery
HIAA 1460 Topics in Medieval Archaeology
HIAA 1550B Topics in the Early History of Printmaking: Festival and Carnival
HIAA 1550A Prints and Everyday Life in Early Modern Europe
HIAA 1560A Italy and the Mediterranean
HIAA 1560B Mannerism
HIAA 1560C Renaissance Venice and the Veneto
HIAA 1560D Siena from Simone Martini to Beccafumi
HIAA 1560E The Arts of Renaissance Courts
HIAA 1560F Topics in Italian Visual Culture: The Visible City, 1400-1800
HIAA 1600A Bosch and Bruegel: Art Turns the World Upside Down
HIAA 1600B Caravaggio
HIAA 1600C Italian Baroque Painting and Sculpture
HIAA 1600D The Art of Peter Paul Rubens
HIAA 1600E The World Turned Upside Down
HIAA 1600F Antwerp: Art and Urban History
HIAA 1600G Art + Religion in Early Modern Europe
HIAA 1600H Comedy in Netherlandish Art From Hieronymus Bosch to Jan Steen
HIAA 1600I Collections and Visual Knowledge in Early Modern Europe: 1400-1800
HIAA 1600J Rembrandt
HIAA 1650A About Face: English Portraiture: 1600-1800
HIAA 1650B Visualizing Revolutionary Bodies 1785-1815
HIAA 1650C Visual Culture and the Production of Identity in the Atlantic World, 1700-1815
HIAA 1650D Souvenirs: Remembering the Pleasures and Perils of the Grand Tour
HIAA 1711 Black and White: Imagining Africans and African Americans in Visual Culture
HIAA 1770 Architecture and Visual Culture of Empire
HIAA 1811 Possible Futures: Art and the Social Network before the Internet (1950-1979)
HIAA 1850A Frank Lloyd Wright
HIAA 1850D Film Architecture
HIAA 1850E Architecture, Light and Urban Screens
HIAA 1850G Contemporary American Urbanism: City Design and Planning, 1945-2000
HIAA 1850H Berlin: Architecture, Politics and Memory
HIAA 1870 Cannibalism, Inversion, and Hybridity: Creative Disobedience in the Americas
HIAA 1890E SoCal: Art in Los Angeles, 1945-Present
HIAA 1890G Contemporary Art of Africa and the Diaspora
HIAA 1910A Providence Architecture
HIAA 1910B Project Seminar: The Architecture of Bridges
HIAA 1910D Water and Architecture
HIAA 1910E Project Seminar for Architectural Studies Concentrators
HIAA 1910F City Senses: Urbanism Beyond Visual Spectacle
HIAA 1920 Individual Study Project in the History of Art and Architecture
HIAA 1930 The History and Methods of Art Historical Interpretation
HIAA 1990 Honors Thesis

Four elective courses. These can include courses taught in the department, cross-listed courses from other departments, or courses in other departments approved by the concentration advisor. HIAA 0010 may count as one of these courses but cannot count as one of the four core lecture courses. Students are encouraged to take a studio class as part of this requirement.

Total Credits 20
Architectural Studies Track

The Optional Architectural Studies track within the History of Art and Architecture concentration blends a variety of disciplines toward the study of buildings and the built environment. The concentration prepares students for the continued study of architecture and the history of architecture in graduate school as well as careers in related areas such as urban studies.

Because the architectural studies program was especially designed for students wishing to gain greater experience in the practical skills necessary for a career in architecture or a related field, concentrators are required to take a course in design from the Visual Arts Department, the Rhode Island School of Design or an introduction to architectural design, necessary for a career in architecture or a related field, concentrators are required to take a course in design from the Visual Arts Department, the Rhode Island School of Design or an introduction to architectural design, theatre set design at Brown University.

Four lecture courses. These courses will be numbered between HIAA 0200 and HIAA 0940 and will be marked with an 'A' in the course description. The courses must be distributed over three of seven areas in architectural history: Ancient; Medieval; Islamic; East Asian; Latin American; Early Modern (ca. 1400-1800); Modern/Contemporary.

HIAA 0040 Introduction to Medieval Art and Architecture
HIAA 0042 Islamic Art and Architecture
HIAA 0031 Pre-Islamic Empires of Iran
HIAA 0041 The Architectures of Islam
HIAA 0061 Baroque
HIAA 0062 Dutch and Flemish Art: Visual Culture of the Netherlands in the Seventeenth Century
HIAA 0070 Introduction to American Art: The Seventeenth Century
HIAA 0075 Introduction to the History of Art: Modern Photography
HIAA 0081 Architecture of the House Through Space and Time
HIAA 0089 Contemporary Photography
HIAA 0321 Toward a Global Late Antiquity: 200-800 CE
HIAA 0340 Roman Art and Architecture: From Julius Caesar to Hadrian
HIAA 0400 Early Christian, Jewish, and Byzantine Art and Architecture
HIAA 0440 Gothic Art and Architecture
HIAA 0460 Muslims, Jews and Christians in Medieval Iberia
HIAA 0550 Gold, Wool and Stone: Painters and Bankers in Renaissance Tuscany
HIAA 0560 Constructing the Eternal City: Popes and Pilgrims in Early Modern Rome
HIAA 0570 The Renaissance Embodied
HIAA 0580 Word, Image and Power in Renaissance Italy
HIAA 0600 From Van Eyck to Bruegel
HIAA 0630 Cultural History of the Netherlands in a Golden Age and a Global Age
HIAA 0710 The Other History of Modern Architecture
HIAA 0770 Architecture and Urbanism of Africa
HIAA 0771 African American and Caribbean Architectures: Domestic Space
HIAA 0801 Art After ‘68
HIAA 0810 20th Century Sculpture
HIAA 0830 Revolutionary Forms: 100 Years of Art and Politics in Latin America
HIAA 0840 History of Rhode Island Architecture
HIAA 0850 Modern Architecture
HIAA 0860 Contemporary Architecture
HIAA 0861 City and Cinema
HIAA 0870 20th Century British Art: Edwardian to Contemporary

One seminar or independent study in architectural history, numbered between HIAA 1100 and HIAA 1890, and marked with an 'A' in the course description.

HIAA 1101A Illustrating Knowledge
HIAA 1101B Seeing and Writing on Contemporary Arts
HIAA 1120B History of Urbanism, 1300-1700
HIAA 1120C History of Western European Urbanism 1200-1600
HIAA 1150C El Greco and Velazquez
HIAA 1150D El Greco and the Golden Age of Spanish Painting
HIAA 1170B Twentieth-Century American Painting
HIAA 1181 Prefabrication and Architecture
HIAA 1200A Ancient Art in the RISD Collection
HIAA 1200D Pompeii
HIAA 1201B Brushwork: Chinese Painting in Time
HIAA 1300 Topics in Classical Art and Architecture
HIAA 1301 The Palaces of Ancient Rome
HIAA 1302 Women and Families in the Ancient Mediterranean
HIAA 1303 Pompeii: Art, Architecture, and Archaeology in the Lost City
HIAA 1310 Topics in Hellenistic Art
HIAA 1360X The Aesthetics of Color: History, Theory, Critique (GNSS 1960X)
HIAA 1400F Research Seminar Gothic Art
HIAA 1410A Topics in Islamic Art: Islamic Art and Architecture on the Indian Subcontinent
HIAA 1430A The Visual Culture of Medieval Women
HIAA 1440B Architecture of Solitude: The Medieval Monastery
HIAA 1440D The Gothic Cathedral
HIAA 1460 Topics in Medieval Archaeology
HIAA 1550A Prints and Everyday Life in Early Modern Europe
HIAA 1550B Topics in the Early History of Printmaking: Festival and Carnival
HIAA 1560A Italy and the Mediterranean
HIAA 1560B Mannerism
HIAA 1560C Renaissance Venice and the Veneto
HIAA 1560D Siena from Simone Martini to Beccafumi
HIAA 1560E The Arts of Renaissance Courts
HIAA 1560F Topics in Italian Visual Culture: The Visible City, 1400-1800
HIAA 1600C Italian Baroque Painting and Sculpture
HIAA 1600D The Art of Peter Paul Rubens
HIAA 1600A Bosch and Bruegel: Art Turns the World Upside Down
HIAA 1600B Caravaggio
developed a strong interest. You can participate in a graduate seminar to many possibilities. You can perfect a seminar paper in which you have will need the support of a faculty sponsor. Capstone Projects embrace Architectural Studies. To propose and work on a Capstone Project you have gained by concentrating in the History of Art and Architecture or high level of achievement the knowledge and understanding you is intended to challenge you with an opportunity to synthesize at a

to propose and undertake a Capstone Project. The Capstone Project study they propose. All second semester seniors will be required to write

A project seminar from the HIAA 1910 series. This must be taken in the junior or senior year.

HIAA 1910A Providence Architecture

One studio art course in design

Three elective courses. These can include other courses taught in the History of Art and Architecture department and cross-listed courses in other departments that are pertinent to architectural studies. They may also include a select number of non-cross-listed courses approved by the concentration advisor.

Total Credits

1. The two seminars cannot be replaced with independent study, honors thesis, or classes taken in other departments or universities.

2. In years where no project seminar is offered, any seminar that qualifies for architectural studies can become the starting point for a senior project.

3. The studio course may be taken at Brown, RISD, Harvard Career Discovery and similar six week + summer programs.

4. The non-cross-listed courses include but are not limited to MATH 0090, MATH 0100, PHYS 0030, PHYS 0040, ENGN 0030, Urban Studies and Engineering courses, and scenic design and technical production courses offered by the department of Theatre Arts and Performance Studies.

5. A maximum of two credits may be awarded for courses taken at other universities or for courses that count toward a second concentration. No concentration credit is awarded for high school AP/A-level courses or for language courses.

The below pertains to ALL concentrators in the department:

Self Assessment

All concentrators are required to write an essay when they file for the concentration that lays out what they expect to gain from the course of study they propose. All second semester seniors will be required to write a final essay that takes measure of what they have learned from the concentration, including their capstone and other experiences relating to their study of the history of art and architecture. For students doing a capstone, their capstone director will read this essay. A department subcommittee will read essays written by students not electing to do a capstone. The self-assessment should be turned in with a revised list of courses actually taken and the final paperwork for concentration approval.

Capstone Project

At the beginning of your senior year you will be actively encouraged to propose and undertake a Capstone Project. The Capstone Project is intended to challenge you with an opportunity to synthesize at a high level of achievement the knowledge and understanding you have gained by concentrating in the History of Art and Architecture or Architectural Studies. To propose and work on a Capstone Project you will need the support of a faculty sponsor. Capstone Projects embrace many possibilities. You can perfect a seminar paper in which you have developed a strong interest. You can participate in a graduate seminar to which the instructor has admitted you. You can serve as an undergraduate TA. You can work as an intern in museums and auction houses such as Christie's. You might work on an archaeological excavation. You can participate in the Honors Program. Beyond these opportunities, the Department is open to other approaches. You should work with a faculty sponsor and with the Undergraduate Concentration Advisor to decide what will work best for you.

Honors

The Honors program in History of Art & Architecture and Architectural Studies will be administered as follows: accepted students will sign up for HIAA 1990 in the Fall and in the Spring. In the Fall, students will meet regularly with the whole Honors group and HIAA faculty to discuss methodology and general research and writing questions. In the Spring, students will continue to meet to present their research in progress to each other for comment and feedback. They will also be meeting regularly with their advisors and second readers throughout the year. Finished drafts of the thesis (which will generally be no more than 30-35 pages in length (exceptions to be determined in consultation with the instructor), not counting bibliography and visual materials) will be due to the advisor and second reader on April 1 of the Spring semester. Comments will be returned to the students for final corrections at that point. There will be a public presentation of the Honors work at the end of the Spring semester.

Students wishing to write an honors thesis should have an ‘A’ average in the concentration. It is advisable for them to have taken at least one seminar in the department and written a research paper before choosing to undertake a thesis. While acceptance into the Honors program depends on the persuasiveness of the thesis topic as well as the number of students applying, students may refine their proposals by speaking in advance with potential advisors. No honors student may take more than four courses either semester of their senior year—with the honors seminar being considered one of the four courses. Students interested in honors who are expecting to graduate in the middle of the year should contact the concentration advisor no later than the beginning of their junior year.

Honors Application Process

During the second semester of the junior year all concentrators will be invited to apply for admission to the Honors Program in History of Art and Architecture and Architectural Studies.

Admission to the Honors Program

1. To be admitted to the Honors Program you should have produced consistently excellent work and maintained a high level of achievement in all your concentration course. You should have earned an A grade in most of your concentration courses.

2. The key project for honors is to write an honors thesis. When you apply for admission you will be asked to submit a proposal of no more than two double-spaced pages that states the topic (research base and argument) of the research to be undertaken as clearly as possible, and add a one-page bibliography of the most relevant books and major articles to be consulted for the project. This three page application should be submitted, along with a résumé and a printout of the student’s most recent available transcript and submitted to the Department with a short cover letter stating who you feel the most appropriate advisor and second readers are for the thesis and why, and what your preparation is for this project. Clarity and brevity are considered persuasive virtues in this process. Applicants will be notified about the success of their applications at the end of the semester.

3. For admission to the Honor Program you must include with your proposal a letter of support from a faculty member of the History of Art and Architecture Department who has agreed to serve as your thesis advisor. You should discuss the thesis topic with your advisor before you submit your proposal. During the process of researching and writing you will meet regularly with your advisor to discuss your work.

Writing the Honors Thesis

1. If you are accepted into the Honors Program you will register for HIAA 1990 during the two semesters when you are working on a thesis. This is a seminar led by the Department Undergraduate Concentration Advisor in which all honors students meet once a month to present the current progress of their work. It is a valuable opportunity to share ideas and receive feedback from your fellow

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</table>

A project seminar from the HIAA 1910 series. This must be taken in the junior or senior year.

HIAA 1910A Providence Architecture

One studio art course in design

Three elective courses. These can include other courses taught in the History of Art and Architecture department and cross-listed courses in other departments that are pertinent to architectural studies. They may also include a select number of non-cross-listed courses approved by the concentration advisor.

Total Credits

1 The two seminars cannot be replaced with independent study, honors thesis, or classes taken in other departments or universities.

2 In years where no project seminar is offered, any seminar that qualifies for architectural studies can become the starting point for a senior project.

3 The studio course may be taken at Brown, RISD, Harvard Career Discovery and similar six week + summer programs.

4 The non-cross-listed courses include but are not limited to MATH 0090, MATH 0100, PHYS 0030, PHYS 0040, ENGN 0030, Urban Studies and Engineering courses, and scenic design and technical production courses offered by the department of Theatre Arts and Performance Studies.

5 A maximum of two credits may be awarded for courses taken at other universities or for courses that count toward a second concentration. No concentration credit is awarded for high school AP/A-level courses or for language courses.

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</table>
honors students and faculty alike. The honors seminar also offers a practical framework around which you can organize the progress of your work.

2. You will meet regularly with your thesis advisor and with a second reader to develop your ideas and writing.

3. Finished drafts of the thesis, which will generally be no more than 30-35 pages in length (exceptions to be determined in consultation with the instructor), not counting bibliography and visual materials, will be due to the advisor and second reader by April 1 of the Spring semester or by November 1 of the Fall semester if you plan on graduating in December. Comments will be returned to the students for final corrections at that point. There will be a public presentation of the Honors work at the end of the Spring semester.

Independent Concentration

The Independent Concentration program is for exceptionally dedicated students who are willing to spend extra time and effort creating an interdisciplinary concentration, representing a coherent field of study that Brown does not offer and that cannot be studied cohesively within a standard concentration. Such fields may include emerging fields in the academy, such as 'Educational Neuroscience,' or broader interdisciplinary areas, such as 'Migration Studies.' The proposal process consists of:

1. Meeting with the Curricular Resource Center's IC Peer Coordinators (https://www.brown.edu/academics/college/advising/curricular-resource-center/brown.edu/go/ic/); (2) Completing a draft IC Application (https://www.brown.edu/academics/college/advising/curricular-resource-center/ independent-concentrations/ic-proposal-submission/ic-proposal/) and soliciting feedback from the Peer Coordinators; (3) Identifying an approved Faculty Sponsor (an advisor) and obtaining a letter of support; and (4) Submitting the application and letter of support by one of the six deadlines during the academic year. (Optional: Students interested in pursuing honors should read the IC Honors Thesis Guidelines (https://www.brown.edu/academics/college/advising/curricular-resource-center/ independent-concentrations/independent-concentrations/resources-current-iccers/)).

Independent concentration proposals are reviewed and approved by the College Curriculum Council.

International and Public Affairs

The concentration in International and Public Affairs equips students with the knowledge and skills necessary to be engaged global citizens. This concentration offers three tracks: Development, Policy & Governance, and Security. All students take a common core of five classes, beginning with a choice of thematic gateway lecture courses (ideally taken during freshman or sophomore year), and then building through a required junior seminar and a required senior seminar (eligible students may choose to write an honor's thesis to satisfy the senior seminar requirement). All students choose one of three tracks of substantive specialization: Development, in which students explore issues of human development in local and global contexts, and across both the developing world and advanced industrial settings; Security, which allows students to explore issues of security in both local and global contexts; and Policy and Governance, in which students explore the design, implementation, and evaluation of public policies to resolve societal challenges, as well as the governing structures that yield those policies. The concentration is committed to engaging students in the classroom, enabling research opportunities with faculty and in the field, and supporting experiential learning opportunities. Advisors' office hours and an online appointment scheduler are available here (https://watson.brown.edu/iapa/advising/).

Development Track Concentration Requirements

<table>
<thead>
<tr>
<th>Gateway course (choose 1)</th>
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<tbody>
<tr>
<td>IAPA 0100 Global Health, Humanitarianism, and Inequality</td>
<td>1</td>
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<tr>
<td>POLS 1020 Politics of the Illicit Global Economy</td>
<td>1</td>
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<tr>
<td>Junior Seminar (choose 1)</td>
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<tr>
<td>IAPA 1401 Economic Development in Latin America</td>
<td>1</td>
</tr>
<tr>
<td>IAPA 1802C Infrastructure!</td>
<td>1</td>
</tr>
<tr>
<td>IAPA 1813A Revolutions that Changed the World</td>
<td>1</td>
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<tr>
<td>IAPA 1700F Engaged Research Engaged Publics</td>
<td>1</td>
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<tr>
<td>Senior Seminar (choose 1 from either a Senior Thesis Seminar or a Senior Capstone Seminar)</td>
<td>1</td>
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</tbody>
</table>

Thesis Seminars:

| IAPA 1816A Senior Honors Seminar | 1 |
| IAPA 1808C Thesis Writing in Development Studies | 1 |
| IAPA 1850 Senior Honors Seminar | 1 |

Capstone Seminars:

| IAPA 1802A Bilateral and Multilateral Policy and Diplomacy | 1 |
| IAPA 1806A Diplomacy, Economics & Influence | 1 |
| MPA 2772 Disaster, Displacement and Response: A Practitioner, People-Focused Lens on Urban Policy & Practice | 1 |
| IAPA 1814A Roots of Crisis in Central America | 1 |

Methods courses: Choose 2 (one must be qualitative and one quantitative)

| Qualitative: |
| IAPA 1500 Methods in Development Research | 2 |

Quantitative:

| ECON 1620 Introduction to Econometrics | 2 |
| or SOC 1100 Introductory Statistics for Social Research | 2 |
| or EDUC 1110 Introductory Statistics for Education Research and Policy Analysis | 2 |

Language Study Option: One of the two methods requirements, either the qualitative or quantitative course, can be substituted by four semesters of the study of a language other than English

| IAPA 0200 Foundations of Development | 1 |
| 5 Electives (for example): | 5 |
| Development and the Global Economy |
| ECON 0510 Development and the International Economy | 1 |
| ECON 1540 International Trade | 1 |
| ECON 1550 International Finance | 1 |
| HIST 0202 African Experiences of Empire | 1 |
| HIST 1050 Africa and the Transatlantic Slave Trade | 1 |
| HIST 1620 Resisting Empire: Gandhi and the Making of Modern South Asia | 1 |
| IAPA 1806A Diplomacy, Economics & Influence | 1 |
| POLS 1420 Money and Power in the International Political Economy | 1 |
| SOC 1620 Globalization and Social Conflict | 1 |

Development and Inequality

| ANTH 1301 Anthropology of Homelessness | 1 |
| ECON 1370 Race and Inequality in the United States | 1 |
| ECON 1375 Inequality of Opportunity in the US | 1 |
| EDUC 0620 Cradle of Inequality: The Role of Families, Schools, and Neighborhoods | 1 |
| POLS 1150 Prosperity: The Ethics and Economics of Wealth Creation | 1 |
| SOC 1871S Legacies of Inequality: The U.S. and Beyond | 1 |

Development and Health

<p>| AFRI 0550 African American Health Activism from Emancipation to AIDS | 1 |
| ANTH 1020 AIDS in Global Perspective | 1 |
| ANTH 1310 International Health: Anthropological Perspectives | 1 |</p>
<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ECON 1530</td>
<td>Health, Hunger and the Household in Developing Countries</td>
</tr>
<tr>
<td>HIST 1960Q</td>
<td>Medicine and Public Health in Africa</td>
</tr>
<tr>
<td>PHP 1070</td>
<td>The Burden of Disease in Developing Countries</td>
</tr>
<tr>
<td>PHP 1100</td>
<td>Comparative Health Care Systems</td>
</tr>
<tr>
<td>PHP 1680I</td>
<td>Pathology to Power: Disability, Health and Community</td>
</tr>
<tr>
<td>PHP 1680U</td>
<td>Intersectionality and Health Inequities</td>
</tr>
</tbody>
</table>

**Development in National and Regional Contexts**

**IAPA 1805C**  
Caribbean and Pacific Small States: On the Margins of Development

**ECON 1570**  
The Economics of Latin Americans

**HIST 1310**  
History of Brazil

**HIST 1455**  
The Making of the Modern Middle East

**HIST 1967E**  
In the Shadow of Revolution: Mexico Since 1940

**POL 1280**  
Politics, Economy and Society in India

**POL 1290**  
The Rise of China

**Development and the Environment**

**AMST 0190M**  
Ecological (De)colonization: North American Environmental History, Justice, and Sovereignty

**ECON 1355**  
Environmental Issues in Development Economics

**ENVS 0705**  
Equity and the Environment: Movements, Scholarship, Solutions

**ENVS 1555**  
Urban Agriculture: The Importance of Localized Food Systems

**ENVS 1574**  
Engaged Climate Policy in the U.S.: Rhode Island and Washington, DC

**ENVS 1580**  
Environmental Stewardship and Resilience in Urban Systems

**HIST 0270B**  
From the Columbian Exchange to Climate Change: Modern Global Environmental History

**Development, Race, and Gender**

**AFRI 0210**  
Afro Latin Americans and Blackness in the Americas

**AFRI 0670**  
Global Black Radicalism

**AFRI 1210**  
Afro-Brazilians and the Brazilian Polity

**ANTH 1624**  
Indians, Colonists, and Africans in New England

**EAST 1950B**  
Chinese Women, Gender and Feminism from Historical and Transnational Perspectives

**ETHN 1750L**  
Latina Feminisms

**POL 1530**  
Gender, Slavery, and Freedom

**SOC 1270**  
Race, Class, and Ethnicity in the Modern World

**Total Credits**  
11

**Security Track Concentration Requirements**

**Gateway course (choose 1)**

**IAPA 0100**  
Global Health, Humanitarianism, and Inequality

**POL 1020**  
Politics of the Illicit Global Economy

**Junior Seminar (choose 1)**

**IAPA 1802C**  
Infrastructure!

**IAPA 1401**  
Economic Development in Latin America

**IAPA 1813A**  
Revolutions that Changed the World

**IAPA 1700F**  
Engaged Research Engaged Publics

**Senior Seminar (choose 1 from either a Senior Thesis Seminar or a Senior Capstone Seminar)**

**Thesis Seminars:**

**IAPA 1816A**  
Senior Honors Seminar

**IAPA 1808C**  
Thesis Writing in Development Studies

**IAPA 1809C**  
Senior Thesis Preparation

**Capstone Seminars:**

**IAPA 1802A**  
Bilateral and Multilateral Policy and Diplomacy

**IAPA 1806A**  
Diplomacy, Economics & Influence

**IAPA 1814A**  
Roots of Crisis in Central America

**Methods courses: Choose 2 (one must be qualitative and one quantitative)**

**Qualitative:**

**IAPA 1500**  
Methods in Development Research

**Quantitative:**

**ECON 1820**  
Introduction to Econometrics

**or SOC 1100**  
Introductory Statistics for Social Research

**or EDUC 1110**  
Introductory Statistics for Education Research and Policy Analysis

**Language Study Option:** One of the two methods requirements - either the qualitative or quantitative course, can be substituted by four semesters of the study of a language other than English

**IAPA 1200**  
Foundations of Security

**Five Electives** (for example):

**Geopolitics and Conflict**

**CSCI 1800**  
Cybersecurity and International Relations

**HIST 0276**  
A Global History of the Atomic Age

**HIST 1155**  
Japan’s Pacific War: 1937-1945

**HIST 1240A**  
Palestine versus the Palestinians

**HIST 1240B**  
Israel-Palestine: Lands and Peoples

**LACA 1503P**  
Consuming the Cold War in the Caribbean

**POL 0400**  
Introduction to International Politics

**POL 1550**  
War and Politics

**POL 1822A**  
Nuclear Weapons and International Politics

**POL 1822I**  
Geopolitics of Oil and Energy

**Intrastate and Intrasocietal Conflict**

**AMST 1905O**  
Reading and Righting Histories of Violence

**HISP 1020A**  
Spanish Civil War in Literature and the Visual Arts

**ENGL 1511A**  
American Literature and the Civil War

**HIST 0252**  
The American Civil War in Global Perspective: History, Law, and Popular Culture

**HIST 1080**  
Humanitarianism and Conflict in Africa

**HIST 1969A**  
Israel-Palestine: Lands and Peoples

**HIST 1969D**  
Palestine versus the Palestinians

**PHP 1802S**  
Human Security and Humanitarian Response: Increasing Effectiveness and Accountability

**POL 1380**  
Ethnic Politics and Conflict

**POL 1440**  
Security, Governance and Development in Africa

**RELS 0909M**  
Islam, Violence and Media

**SOC 1270**  
Race, Class, and Ethnicity in the Modern World

**SOC 1620**  
Globalization and Social Conflict

**Empire, Imperialism, and Conflict**

**HIST 0202**  
African Experiences of Empire
The objective of the International Relations concentration is to foster creative thinking about pressing global problems and to equip students with the analytic tools, language expertise, and cross-cultural understanding to guide them in that process. To this end, the concentration draws on numerous departments including political science, history, economics, anthropology, sociology, psychology, religious...
The International Relations concentration will only accept new declarations through the class of 2023. Students in any class year can learn more about the new concentration (https://watson.brown.edu/iapa/about/faqs/) in International and Public Affairs.

**Requirements**

The IR concentration will be available to students graduating through the class of 2023. The IR concentration requires 14 courses and the equivalent of 3 years study of a second language. Regardless of track, all IR concentrators must take all five core courses, research methods, regional focus, and capstone courses.

### Security and Society track

**Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems: Environment, Development, and Governance</td>
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<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
</tr>
<tr>
<td>POLS 0400 or POLS 0200</td>
<td>Introduction to International Politics or Introduction to Comparative Politics</td>
</tr>
<tr>
<td>SOC 1620</td>
<td>Globalization and Social Conflict</td>
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Plus 1 History course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>HIST 0150A</td>
<td>History of Capitalism</td>
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<td>HIST 0203</td>
<td>Modern Africa: From Empire to Nation-State</td>
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<tr>
<td>HIST 0218</td>
<td>The Making of Modern East Asia</td>
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<tr>
<td>HIST 0244</td>
<td>Understanding the Middle East: 1800s to the Present</td>
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<tr>
<td>HIST 0270B</td>
<td>From the Columbian Exchange to Climate Change: Modern Global Environmental History</td>
</tr>
<tr>
<td>HIST 1121</td>
<td>The Modern Chinese Nation: An Idea and Its Limits</td>
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**Track Requirements (five courses distributed between the sub-themes):**

**Governance and Diplomacy** (two or three courses):

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>COLT 1812V</td>
<td>War, Anti-War, Postwar: Culture and Contestation in the Americas</td>
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<td>CSCI 1800</td>
<td>Cybersecurity and International Relations</td>
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<td>ENVS 0160</td>
<td>Migration and Borders in a Time of Climate Crisis</td>
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<td>ENVS 1575</td>
<td>Engaged Climate Policy at the UN Climate Change Talks</td>
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<td>FREN 1900H</td>
<td>La France en guerre</td>
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<tr>
<td>GNSS 1960M</td>
<td>Sense and Scientific Sensibility: Beyond Vision, From the Scientific Revolution to Now</td>
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<td>HIST 0150C</td>
<td>Locked Up: A Global History of Prison and Captivity</td>
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<td>HIST 0276</td>
<td>A Global History of the Atomic Age</td>
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<td>HIST 0523B</td>
<td>State Surveillance in History</td>
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<td>HIST 0559A</td>
<td>Culture and U.S. Empire</td>
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<td>HIST 1972H</td>
<td>U.S. Human Rights in a Global Age</td>
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<td>HMAN 1971T</td>
<td>Law, Nationalism, and Colonialism</td>
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<td>IAPA 1203</td>
<td>History of American Intervention</td>
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<td>International Journalism: Foreign Reporting in Practice</td>
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<td>Iran and the Islamic Revolution</td>
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<td>Roots of Crisis in Central America</td>
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<td>IAPA 1815A</td>
<td>Computers, Freedom and Privacy: Current Topics in Law and Policy</td>
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<td>When Leaders Lie: Machiavelli in International Context</td>
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<td>From Dictatorship to Democracy in the Iberian Peninsula: Transformations and Current Challenges</td>
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<td>Politics of the Illicit Global Economy</td>
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<td>Politics in Russia and Eastern Europe</td>
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<td>Maps and Politics</td>
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<td>U.S. Gender Politics</td>
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<td>Ethnic Politics and Conflict</td>
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<td>Roots of Radical Islam</td>
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<td>Security, Governance and Development in Africa</td>
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<td>The International Law and Politics of Human Rights</td>
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<td>War in Film and Literature</td>
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<td>Political Psychology of International Relations</td>
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<td>Nuclear Weapons and International Politics</td>
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<td>Geopolitics of Oil and Energy</td>
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<td>POLS 1822J</td>
<td>Ethics of War and Peace</td>
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<td>Laws of Violence</td>
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<td>POLS 1822L</td>
<td>Comparative Constitutional Law</td>
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<td>POLS 1822R</td>
<td>The Politics of Food Security</td>
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<td>POLS 1822U</td>
<td>War and Human Rights</td>
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<td>POLS 1822X</td>
<td>Technology and International Politics</td>
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<td>POLS 1823D</td>
<td>War and Peace in International Society</td>
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<td>POLS 1823E</td>
<td>Market Democracy in Chile</td>
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<td>POLS 1823F</td>
<td>Between Colonialism and Self-Determination: A History of the International Order</td>
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<td>POLS 1823Q</td>
<td>Democratic Theory and Globalization</td>
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<td>POLS 1824Q</td>
<td>The International Politics of Climate Change</td>
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<td>POLS 1824T</td>
<td>Foreign Policy in the People’s Republic of China</td>
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<td>SOC 0300G</td>
<td>Populations in Danger</td>
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### Society (two or three courses):

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<th>Course Code</th>
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<tr>
<td>POLS 1823G</td>
<td>The Anti-Trafficking Savior Complex: Saints, Sinners, and Modern-Day Slavery</td>
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<tr>
<td>ANTH 0302</td>
<td>Anthropology of Gender and Globalization</td>
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<tr>
<td>ANTH 1224</td>
<td>Human Trafficking, Transnationalism, and the Law</td>
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<tr>
<td>ANTH 1229</td>
<td>Democracy and Difference: Political Anthropology, Citizenship and Multiculturalism</td>
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<td>ANTH 1230</td>
<td>Political Anthropology</td>
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<td>ANTH 1232</td>
<td>War and Society</td>
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<td>ANTH 1233</td>
<td>Ethnographies of Global Connection: Politics, Culture and International Relations</td>
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<td>ANTH 1244</td>
<td>Religion and Secularism: Affinities and Antagonisms</td>
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<td>ANTH 1251</td>
<td>Violence and the Media</td>
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<tr>
<td>ANTH 1310</td>
<td>International Health: Anthropological Perspectives</td>
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<td>ANTH 1411</td>
<td>Nations within States</td>
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<td>ANTH 1412</td>
<td>Anthropology of State Power and Powerlessness</td>
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<td>ANTH 1910E</td>
<td>Media and the Middle East</td>
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<td>ANTH 1910G</td>
<td>Senior Seminar: Politics and Symbols</td>
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<td>COLT 1440F</td>
<td>1948 Photo Album: From Palestine To Israel</td>
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<td>COLT 1812I</td>
<td>Collective Struggles and Cultural Politics in the Global South</td>
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<td>ENGL 0200F</td>
<td>How We Became Machines</td>
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<td>ENGL 0500G</td>
<td>Literature and Revolutions, 1640-1840</td>
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<td>La France en guerre</td>
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<td>HIST 0150D</td>
<td>Refugees: A Twentieth-Century History</td>
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<td>HIST 1080</td>
<td>Humanitarianism and Conflict in Africa</td>
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<td>HIST 1969B</td>
<td>Israel-Palestine: Lands and Peoples II</td>
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<tr>
<td>HIST 1969A</td>
<td>Israel-Palestine: Lands and Peoples I</td>
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<tr>
<td>HIST 1974J</td>
<td>Decolonizing Minds: A People's History of the World</td>
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<td>Law and Religion</td>
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<td>IAPA 0100</td>
<td>Global Health, Humanitarianism, and Inequality</td>
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<td>IAPA 1803A</td>
<td>Rwanda Past and Present</td>
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<tr>
<td>IAPA 1809C</td>
<td>Senior Thesis Preparation</td>
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<tr>
<td>IAPA 1811A</td>
<td>Humanitarianism in Uniform</td>
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<td>IAPA 1813A</td>
<td>Revolutions that Changed the World</td>
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<td>JUDS 0902</td>
<td>History of the Holocaust</td>
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<td>MCM 1202J</td>
<td>Faking Globalization: Media, Piracy and Urbanism</td>
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<td>MCM 1502P</td>
<td>Nation and Identity in Cinema</td>
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<td>POBS 1600I</td>
<td>The End of Empires? A Global History of Decolonization</td>
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<td>POBS 1601A</td>
<td>The Birth of the Modern World: A Global History of Empires</td>
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<td>POLS 1380</td>
<td>Ethnic Politics and Conflict</td>
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<td>POLS 1530</td>
<td>Gender, Slavery, and Freedom</td>
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<td>Democratic Erosion</td>
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<td>POLS 1821L</td>
<td>International Relations of Russia, Europe and Asia</td>
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<td>POLS 1822F</td>
<td>Social Movements and Struggles for Justice</td>
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<td>POLS 1823G</td>
<td>Women and War</td>
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<td>POLS 1823N</td>
<td>Nationalism: Problems, Paradoxes and Power</td>
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<td>POLS 1823V</td>
<td>Politics of Ethnic Conflict</td>
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<tr>
<td>POLS 1824W</td>
<td>Political Violence</td>
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<td>RELS 0068</td>
<td>Religion and Torture</td>
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<td>RELS 0090E</td>
<td>Faith and Violence</td>
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<tr>
<td>RELS 0600C</td>
<td>Radical Islam (?)</td>
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<td>RELS 0841</td>
<td>Far-Right Religious Terrorism</td>
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<td>RELS 1380C</td>
<td>Law and Religion</td>
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<tr>
<td>RELS 1610</td>
<td>Sacred Sites: Law, Politics, Religion</td>
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### Research Methods

Prior to 7th semester. Quantitative or qualitative course from the following approved list.

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<tr>
<td>ANTH 1151</td>
<td>Ethnographies of the Muslim Middle East</td>
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<tr>
<td>ANTH 1940</td>
<td>Ethnographic Research Methods</td>
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<td>ECON 1620</td>
<td>Introduction to Econometrics</td>
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<td>Mathematical Econometrics I</td>
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<td>EDUC 1100</td>
<td>Introduction to Qualitative Research Methods</td>
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<td>EDUC 1110</td>
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<td>Foundations of Political Analysis</td>
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<td>POLS 1600</td>
<td>Political Research Methods</td>
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<td>SOC 1020</td>
<td>Methods of Social Research</td>
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<td>SOC 1050</td>
<td>Methods of Research in Organizations</td>
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<td>SOC 1100</td>
<td>Introductory Statistics for Social Research</td>
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### Regional Focus

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<td>ANTH 1910G</td>
<td>Senior Seminar: Politics and Symbols</td>
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<td>FREN 1900H</td>
<td>La France en guerre</td>
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<td>HIST 1969B</td>
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<tr>
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<td>Diplomacy, Economics &amp; Influence</td>
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<tr>
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<td>Perspectives in Human Capital: Investing in Women as a Strategy for Global Growth</td>
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<td>Risk, Regulation and the Comparative Politics of Finance</td>
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<td>IAPA 1809A</td>
<td>The International Politics of Organized Crime</td>
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<td>IAPA 1810A</td>
<td>Humanitarianism in Uniform</td>
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<td>IAPA 1811A</td>
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</tr>
<tr>
<td>POLS 1821L</td>
<td>International Relations of Russia, Europe and Asia</td>
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<td>POLS 1823G</td>
<td>Women and War</td>
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<td>IAPA 1816A</td>
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<td>Contraband Capitalism: States and Illegal Global Markets</td>
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<td>War and Human Rights</td>
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**Soc 1872L** 20th Century World – A Sociology of States and Empires

**Pols 1823N** Nationalism: Problems, Paradoxes and Power

**Pols 1823V** Politics of Ethnic Conflict

**Pols 1824W** Political Violence

**Rels 0068** Religion and Torture

**Rels 0090E** Faith and Violence

**Rels 0600C** Radical Islam (?)

**Rels 0841** Far-Right Religious Terrorism

**Rels 1380C** Law and Religion

**Rels 1610** Sacred Sites: Law, Politics, Religion

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<td>Fren 1900H</td>
<td>La France en guerre</td>
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<tr>
<td>Hist 1969B</td>
<td>Israel-Palestine: Lands and Peoples II</td>
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</tr>
<tr>
<td>Hman 1970K</td>
<td>Law and Religion</td>
</tr>
<tr>
<td>Iapa 1804A</td>
<td>Iran and the Islamic Revolution</td>
</tr>
<tr>
<td>Iapa 1806A</td>
<td>Diplomacy, Economics &amp; Influence</td>
</tr>
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<td>Perspectives in Human Capital: Investing in Women as a Strategy for Global Growth</td>
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</tr>
<tr>
<td>Iapa 1810A</td>
<td>Humanitarianism in Uniform</td>
</tr>
<tr>
<td>Iapa 1811A</td>
<td>Humanitarianism in Uniform</td>
</tr>
<tr>
<td>Pols 1821L</td>
<td>International Relations of Russia, Europe and Asia</td>
</tr>
<tr>
<td>Pols 1823G</td>
<td>Women and War</td>
</tr>
<tr>
<td>Iapa 1816A</td>
<td>Senior Honors Seminar</td>
</tr>
<tr>
<td>Pols 1820H</td>
<td>Contraband Capitalism: States and Illegal Global Markets</td>
</tr>
<tr>
<td>Pols 1822I</td>
<td>Geopolitics of Oil and Energy</td>
</tr>
<tr>
<td>Pols 1822U</td>
<td>War and Human Rights</td>
</tr>
</tbody>
</table>
## Political Economy and Society Track

### Core Courses

Students must take all 5 core courses, preferably during freshman or sophomore year. AP credit does not count toward the concentration.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems:</td>
<td>5</td>
</tr>
<tr>
<td>ECON 0110</td>
<td>Principles of Economics</td>
<td></td>
</tr>
<tr>
<td>POLS 0400</td>
<td>Introduction to International Politics</td>
<td></td>
</tr>
<tr>
<td>POLS 0200</td>
<td>Introduction to Comparative Politics</td>
<td></td>
</tr>
<tr>
<td>SOC 1620</td>
<td>Globalization and Social Conflict</td>
<td></td>
</tr>
</tbody>
</table>

Plus 1 History course from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 0150A</td>
<td>History of Capitalism</td>
</tr>
<tr>
<td>HIST 0203</td>
<td>Modern Africa: From Empire to Nation-State</td>
</tr>
<tr>
<td>HIST 0218</td>
<td>The Making of Modern East Asia</td>
</tr>
<tr>
<td>HIST 0244</td>
<td>Understanding the Middle East: 1800s to the Present</td>
</tr>
<tr>
<td>HIST 0270B</td>
<td>From the Columbian Exchange to Climate Change: Modern Global Environmental History</td>
</tr>
<tr>
<td>HIST 1121</td>
<td>The Modern Chinese Nation: An Idea and Its Limits</td>
</tr>
</tbody>
</table>

### Track Requirements (five courses from distributed between the sub-themes):

Economics (two or three courses): All students MUST take Micro and Macro

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ECON 1110</td>
<td>Intermediate Microeconomics</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
</tr>
</tbody>
</table>

Plus an International Economics course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 0510</td>
<td>Development and the International Economy</td>
</tr>
<tr>
<td>ECON 0520</td>
<td>The Economics of Gender Equality and Development</td>
</tr>
<tr>
<td>ECON 1450</td>
<td>Economic Organizations and Economic Systems</td>
</tr>
<tr>
<td>ECON 1500</td>
<td>Current Global Macroeconomic Challenges</td>
</tr>
<tr>
<td>ECON 1510</td>
<td>Economic Development</td>
</tr>
<tr>
<td>ECON 1530</td>
<td>Health, Hunger and the Household in Developing Countries</td>
</tr>
<tr>
<td>ECON 1540</td>
<td>International Trade</td>
</tr>
<tr>
<td>ECON 1550</td>
<td>International Finance</td>
</tr>
<tr>
<td>ECON 1560</td>
<td>Economic Growth</td>
</tr>
<tr>
<td>ECON 1570</td>
<td>The Economics of Latin Americans</td>
</tr>
<tr>
<td>ECON 1590</td>
<td>The Economy of China since 1949</td>
</tr>
<tr>
<td>ECON 1760</td>
<td>Financial Institutions</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
</tr>
</tbody>
</table>

Political Economy (two or three courses):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 0450</td>
<td>Inequality, Sustainability, and Mobility in a Car-Clogged World</td>
</tr>
<tr>
<td>ANTH 1020</td>
<td>AIDS in Global Perspective</td>
</tr>
<tr>
<td>ANTH 1320</td>
<td>Anthropology and International Development: Ethnographic Perspectives on Poverty and Progress</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 1324</td>
<td>Money, Work, and Power: Culture and Economics</td>
<td></td>
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<tr>
<td>ECON 1350</td>
<td>Environmental Economics and Policy</td>
<td></td>
</tr>
<tr>
<td>ECON 1486</td>
<td>The Economic Analysis of Political Behavior</td>
<td></td>
</tr>
<tr>
<td>ENVS 0510</td>
<td>International Environmental Law and Policy</td>
<td></td>
</tr>
<tr>
<td>ENVS 1350</td>
<td>Environmental Economics and Policy</td>
<td></td>
</tr>
<tr>
<td>ENVS 1355</td>
<td>Environmental Issues in Development Economics (ECON 1355)</td>
<td></td>
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<tr>
<td>ENVS 1720</td>
<td>Environmental Justice: The Science and Political Economy of Environmental Health and Social Justice</td>
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<tr>
<td>ENVS 1755</td>
<td>Globalization and the Environment</td>
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<tr>
<td>ENVS 1925</td>
<td>Energy Policy and Politics</td>
<td></td>
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<tr>
<td>ETHN 1890C</td>
<td>Business, Culture, and Globalization: An Ethnographic Perspective</td>
<td></td>
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<tr>
<td>HIST 0150A</td>
<td>History of Capitalism</td>
<td></td>
</tr>
<tr>
<td>HMAN 1970G</td>
<td>International Perspectives on NGOs, Public Health, and Health Care Inequalities</td>
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<tr>
<td>IAPA 1401</td>
<td>Economic Development in Latin America</td>
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<tr>
<td>IAPA 1806A</td>
<td>Diplomacy, Economics &amp; Influence</td>
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<tr>
<td>IAPA 1204</td>
<td>The Political Economy of Strategy: From the Financial Revolution to the Revolution in Military Affa</td>
<td></td>
</tr>
<tr>
<td>IAPA 1805A</td>
<td>Politics of International Finance</td>
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</tr>
<tr>
<td>IAPA 1808A</td>
<td>Risk, Regulation and the Comparative Politics of Finance</td>
<td></td>
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<tr>
<td>IAPA 1810A</td>
<td>Perspectives in Human Capital: Investing in Women as a Strategy for Global Growth</td>
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</tr>
<tr>
<td>POLS 1020</td>
<td>Politics of the Illicit Global Economy</td>
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<tr>
<td>POLS 1150</td>
<td>Prosperity: The Ethics and Economics of Wealth Creation</td>
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<tr>
<td>POLS 1200</td>
<td>Reimagining Capitalism</td>
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</tr>
<tr>
<td>POLS 1210</td>
<td>Latin American Politics</td>
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</tr>
<tr>
<td>POLS 1240</td>
<td>Politics, Markets and States in Developing Countries</td>
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<tr>
<td>POLS 1280</td>
<td>Politics, Economy and Society in India</td>
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<tr>
<td>POLS 1415</td>
<td>Classics of Political Economy</td>
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<tr>
<td>POLS 1420</td>
<td>Money and Power in the International Political Economy</td>
<td></td>
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<tr>
<td>POLS 1450</td>
<td>Development in Theory and Practice</td>
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</tr>
<tr>
<td>POLS 1460</td>
<td>International Political Economy</td>
<td></td>
</tr>
<tr>
<td>POLS 1465</td>
<td>Introduction to Political Economy</td>
<td></td>
</tr>
<tr>
<td>POLS 1490</td>
<td>Building a Better World: Film and Social Change</td>
<td></td>
</tr>
<tr>
<td>POLS 1540</td>
<td>Politics of Nuclear Weapons</td>
<td></td>
</tr>
<tr>
<td>POLS 1730</td>
<td>Politics of Globalization</td>
<td></td>
</tr>
<tr>
<td>POLS 1820H</td>
<td>Contraband Capitalism: States and Illegal Global Markets</td>
<td></td>
</tr>
<tr>
<td>POLS 1821O</td>
<td>Politics of Economic Development in Asia</td>
<td></td>
</tr>
<tr>
<td>POLS 1821X</td>
<td>The Politics of Social Welfare in the Middle East</td>
<td></td>
</tr>
<tr>
<td>POLS 1822F</td>
<td>Social Movements and Struggles for Justice</td>
<td></td>
</tr>
<tr>
<td>POLS 1822H</td>
<td>Corruption and Governance Across Democracies</td>
<td></td>
</tr>
<tr>
<td>POLS 1822I</td>
<td>Geopolitics of Oil and Energy</td>
<td></td>
</tr>
<tr>
<td>POLS 1822M</td>
<td>Capitalism: For and Against</td>
<td></td>
</tr>
<tr>
<td>POLS 1822T</td>
<td>Politics of Health in the Global South</td>
<td></td>
</tr>
</tbody>
</table>
Students may choose from the following:

- Must be taken senior year. Must incorporate language skills.

**Capstone Course, from the following options:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 1823O</td>
<td>The Political Economy of Renewable Energy</td>
</tr>
<tr>
<td>POLS 1824J</td>
<td>Culture, Identity and Development</td>
</tr>
<tr>
<td>SOC 1600</td>
<td>Comparative Development</td>
</tr>
<tr>
<td>SOC 1650</td>
<td>Unequal Societies</td>
</tr>
<tr>
<td>SOC 1870K</td>
<td>Demographics and Development</td>
</tr>
<tr>
<td>SOC 1870L</td>
<td>The Economic Foundations of Everyday Life</td>
</tr>
<tr>
<td>SOC 1871R</td>
<td>Knowledge Networks and Global Transformation</td>
</tr>
<tr>
<td>SOC 1872B</td>
<td>Sociology of Money</td>
</tr>
</tbody>
</table>

**Research Methods**

Prior to 7th semester. Quantitative or qualitative course from the following approved list.

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ANTH 1151</td>
<td>Ethnographies of the Muslim Middle East</td>
</tr>
<tr>
<td>ANTH 1940</td>
<td>Ethnographic Research Methods</td>
</tr>
<tr>
<td>APMA 0650</td>
<td>Essential Statistics</td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
</tr>
<tr>
<td>ECON 1620</td>
<td>Introduction to Econometrics</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I</td>
</tr>
<tr>
<td>EDUC 1100</td>
<td>Introduction to Qualitative Research Methods</td>
</tr>
<tr>
<td>EDUC 1110</td>
<td>Introductory Statistics for Education Research and Policy Analysis</td>
</tr>
<tr>
<td>POLS 0500</td>
<td>Foundations of Political Analysis</td>
</tr>
<tr>
<td>POLS 1600</td>
<td>Political Research Methods</td>
</tr>
<tr>
<td>SOC 1020</td>
<td>Methods of Social Research</td>
</tr>
<tr>
<td>SOC 1050</td>
<td>Methods of Research in Organizations</td>
</tr>
<tr>
<td>SOC 1100</td>
<td>Introductory Statistics for Social Research</td>
</tr>
</tbody>
</table>

**Regional Focus**

Both courses must be on the same area. Students are required to link these to language study.

**Language**

Three years university study or equivalent. Must correspond to region.

**Capstone Course, from the following options:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 1910G</td>
<td>Senior Seminar: Politics and Symbols</td>
</tr>
<tr>
<td>FREN 1900H</td>
<td>La France en guerre</td>
</tr>
<tr>
<td>HIST 1969B</td>
<td>Israel-Palestine: Lands and Peoples II</td>
</tr>
<tr>
<td>HIST 1974J</td>
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<td>Contraband Capitalism: States and Illegal Global Markets</td>
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<tr>
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<td>International Relations of Russia, Europe and Asia</td>
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<tr>
<td>POLS 1822I</td>
<td>Geopolitics of Oil and Energy</td>
</tr>
<tr>
<td>POLS 1822U</td>
<td>War and Human Rights</td>
</tr>
<tr>
<td>POLS 1822X</td>
<td>Technology and International Politics</td>
</tr>
<tr>
<td>POLS 1823E</td>
<td>Market Democracy in Chile</td>
</tr>
<tr>
<td>POLS 1823G</td>
<td>Women and War</td>
</tr>
<tr>
<td>POLS 1823Q</td>
<td>Democratic Theory and Globalization</td>
</tr>
<tr>
<td>POLS 1824B</td>
<td>Post Conflict Politics</td>
</tr>
<tr>
<td>POLS 1824J</td>
<td>Culture, Identity and Development</td>
</tr>
</tbody>
</table>

The concentration requires that students demonstrate proficiency in the Italian language by completing up to ITAL 0600 (or the equivalent in Bologna). ITAL 0400 is the first language course that counts toward the ten required courses for the concentration (except for students who have taken Italian prior to 7th semester). All senior concentrators must complete a total of nine courses.

**ITALIAN STUDIES COURSES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITAL 0550</td>
<td>Gold, Wool and Stone: Painters and Bankers in Renaissance Tuscany (HIAA 0550)</td>
</tr>
<tr>
<td>ITAL 0560</td>
<td>Constructing the Eternal City: Popes and Pilgrims in Renaissance Rome (HIAA 0560)</td>
</tr>
<tr>
<td>ITAL 0600</td>
<td>Advanced Italian II</td>
</tr>
<tr>
<td>ITAL 0750</td>
<td>Truth on Trial: Justice in Italy</td>
</tr>
<tr>
<td>ITAL 0751</td>
<td>When Leaders Lie: Machiavelli in International Context</td>
</tr>
<tr>
<td>ITAL 0950</td>
<td>Introduction to Italian Cinema: Italian Film and History</td>
</tr>
<tr>
<td>ITAL 0951</td>
<td>The Grand Tour, or a Room with a View: Italy and the Imagination of Others</td>
</tr>
<tr>
<td>ITAL 0975</td>
<td>Let's Eat, Italy: Italian History and Culture through Food</td>
</tr>
<tr>
<td>ITAL 0981</td>
<td>When Leaders Lie: Machiavelli in International Context</td>
</tr>
<tr>
<td>ITAL 0985</td>
<td>Visions of War: Representing Italian Modern Conflicts</td>
</tr>
<tr>
<td>ITAL 1000A</td>
<td>Luigi Pirandello: Masks and Society</td>
</tr>
<tr>
<td>ITAL 1000B</td>
<td>Reading Recent Italian Fiction</td>
</tr>
<tr>
<td>ITAL 1000C</td>
<td>Nord - Sud e Identità Italiana</td>
</tr>
<tr>
<td>ITAL 1000D</td>
<td>Italian National Identity: Criticisms and Crises</td>
</tr>
<tr>
<td>ITAL 1000E</td>
<td>Masterpieces of Italian Cinema - Capolavori del cinema italiano</td>
</tr>
<tr>
<td>ITAL 1000F</td>
<td>20th Century Italian Poetry</td>
</tr>
<tr>
<td>ITAL 1000G</td>
<td>Italian Identity</td>
</tr>
<tr>
<td>ITAL 1000H</td>
<td>Resounding Cinema</td>
</tr>
<tr>
<td>ITAL 1010</td>
<td>Dante in English Translation: Dante's World and the Invention of Modernity</td>
</tr>
</tbody>
</table>
Italian Studies Concentration and the Brown Program in Bologna

Concentrators who enroll in the Brown in Bologna program should fulfill the requirements according to the following sequence: prior to departure, the student should complete the level of Italian language study required (ITAL 0300) and enroll in one of the courses in the four distribution areas -- Italian literature; Italian History; history of Italian art and architecture; film or performance. Upon return from Bologna, the student should enroll in at least one advanced course offered by the department, preferably a course taught in Italian. Any student returning from the Bologna program must enroll in a course above the language level of ITAL 0600. Credits toward the Italian Studies concentration may also be transferred from the Brown in Bologna Program. Concentrators may count three courses per semester toward the concentration (or six courses total for the year), although the course content must focus on Italy if the student wishes to count the course toward the concentration requirements. Concentrators should consult the concentration advisor to know which courses may or may not transfer as credits toward the concentration.

Honors in Italian Studies

Concentrators are encouraged to expand their understanding of Italian language, history, or culture through independent research that will result in a thesis, a translation, or a multimedia project, developed in consultation with the undergraduate concentration advisor and the individual faculty member who will advise the student's project. The Honors thesis in Italian Studies is a two-semester thesis. Students who intend to complete an honors project should enroll for the first semester in ITAL 1920 (Independent Study), and have their project approved by their advisor by October 15. During the second semester, honors students enroll in ITAL 1990 and continue to work with their advisor to complete the project. ITAL 1990 does not count as one of the eight courses required for the concentration.

Capstone Experiences in Italian Studies

A Capstone experiences in Italian Studies would consist of a course or project that a student, in consultation with the undergraduate advisor, feels would integrate the various intellectual engagements of this interdisciplinary concentration, and constitute a culminating experience in Italian Studies at Brown. Such experiences are strongly encouraged, and should be arrived at through conversations with the concentration advisor or a professor in the department. This could include the Brown Program in Bologna, typically taken in the Junior year, and/or the honors thesis in the senior year. However, students may also apply early in the Fall or Spring semester of their senior year for permission to designate one of their courses (1000-level or above) a Capstone course. In consultation with the professor, students in Capstone courses complete an independent research, writing, or multimedia project that is well beyond the required
assignment for the course. ITAL 1920 (Independent Study) may also be designated a Capstone course with the permission of the instructor.

**Judaic Studies**

Jews have lived and flourished over thousands of years in a variety of social contexts, stretching from the Land of Israel and the eastern Mediterranean to Asia, Africa, Europe, and the Americas. Concentrators will have the opportunity to study Jews in these contexts, getting to know their social structures, and what they have created. The subjects of study cover an astonishing range, including history and society, Jewish law and philosophy, and Jewish literature and ritual. Students will learn to unlock this wealth in both the ancient and the modern worlds through a number of academic disciplines - History, Religious Studies, and Literature. These also provide tools for studying and analyzing human societies and cultures in general, for which Jewish experiences provide an important perspective.

**PROGRAM IN JUDAIC STUDIES**

**Required Coursework**

A concentration in Judaic Studies includes the following requirements:

1. All students are required to take a total of ten courses.
2. All students must take one full year of Hebrew (two of the ten required courses). Generally, this requirement will consist of two courses in Elementary Hebrew (HEBR 0100/HEBR 0200) or the equivalent as determined by a proficiency examination. Fulfillment of the Hebrew requirement through examination does not reduce the requirement to take ten courses for the concentration.
3. Upon declaring a concentration in Judaic studies, each student must define his or her primary disciplinary track (History, Religious Studies, or Language/Literature). Concentrators will then be assigned a faculty mentor in that discipline (within the JS faculty) to help the students select courses and construct a coherent concentration plan.
4. Of the courses required in the Program in Judaic Studies, at least one should focus on the ancient period and one should focus on the modern period.
5. Each student, in discussion with his/her mentor, is required to designate an advanced course (1000 level) in his/her senior year either within the Judaic Studies program or in the corresponding disciplinary department as the capstone for his/her concentration. Within the frame of this capstone course, the concentrator will write a final paper on a topic in Judaic Studies that displays in an appropriate way the theoretical and interpretive issues of the concentration focus. If students opt to fulfill this requirement in a course outside the Program in Judaic Studies, the student must get permission in advance both from his/her mentor and from the professor of the course in question since the student’s final project will address a Judaic Studies topic or theme.
6. Double concentrators may count up to two courses that deal with Judaic Studies topic or theme.

Students choosing to continue with Hebrew language study may apply up to two additional Hebrew language courses (HEBR 0300, HEBR 0400, or HEBR 0500) to the additional four required courses for the concentration.

**Language/Literature Track:**

Students are expected to complete:

1. Five courses in Hebrew language (HEBR 0100 / HEBR 0200; HEBR 0300/HEBR 0400; HEBR 0500).
2. “Issues in Israel in Hebrew” (HEBR 0600)
3. One further course in Judaic Studies with a disciplinary focus upon Literature.
4. Two additional courses in the disciplinary focus, at least one of which must be outside the Program in Judaic Studies in a department of shared disciplinary focus (e.g. English or Comparative Literature).
5. Fulfillment of the Hebrew requirement through proficiency examination does not reduce the requirement to take ten courses for the concentration.
6. Of the courses required in this track one should focus on the ancient period.
7. A 1000-level Capstone

**Study Abroad:**

Students who study at other institutions, either in the United States or abroad, may apply a maximum of four courses (two topical and two language courses) to the concentration.

**Honors Program**

Any student who wishes to engage more deeply in research related to Judaic Studies in any of its disciplines or branches is invited to consider writing an Honors Thesis.

**The Honors Thesis**

The goal of the thesis is to add to the existing scholarship in the field of Judaic Studies. It should be based on original research, involving the close reading of primary sources. The honors thesis is expected to present an argument based on the student’s own analysis and will engage an ongoing debate or discussion in the field, demonstrating an awareness of the major research done until now and clearly identifying its own contribution, however limited. Since it is the equivalent of two semester-long courses, it should be a substantial piece of work (typically between 35,000-55,000 words) containing a sustained and consistently supported argument. To be successful, the student needs to adopt both a critical research methodology and a logical research strategy, both of which should be discussed in the thesis itself. In addition to being assessed in all these aspects, the thesis will also be graded on its organization (the way in which it is structured into separate and clearly defined chapters to support the main argument) as well as the quality and precision of its writing. Work that simply describes and summarizes its sources along with previous research is not acceptable. The goal here is original research and analysis.

**Entering the Program**

In order to be considered a candidate for Honors, students will be expected to have maintained an outstanding record (at least A in Judaic Studies courses). The Honors thesis, which fulfills the capstone requirement, will normally be written as a two-semester individual study project (numbered JUDS 1975/JUDS 1976) during the senior year. A student contemplating a thesis should approach the faculty member with whom he or she hopes to work during the sixth semester. Once he or she has agreed to be the advisor (or helped find another member of the program better suited to the project), the student begins a process of consultation in order to determine a topic for the thesis, its sources, and proposed methodology. The contours of the project should also be laid out so that the student can commence productive research at the very beginning of the seventh semester. After this, a second reader for the thesis should be chosen by the advisor in consultation with the student. This may be a faculty member of the Judaic Studies program, one of the affiliate faculty, or, should the topic require it, a member of a different department. By the last week of the semester, the student should submit
a thesis information form detailing the thesis topic with a short description of the proposed project, countersigned by advisor and second reader.

**Thesis Proposal**

During the first three weeks of the seventh semester, the student should work with the faculty advisor to write a thesis proposal.

This should be a brief document (1,500-2,000 words) explaining the topic chosen for the thesis and its significance to the field of Judaic Studies, with reference to previous research on the subject. The proposal should detail the questions to be asked and the kind of argument that will be made as well as explaining the primary sources and research methodology that will be employed. The proposed research strategy (i.e. the stages by which research and writing will be done) and timetable should be appended together with a brief, one page bibliography of primary sources and major research to be consulted.

Once the advisor is satisfied with the proposal, the student will be considered fully accepted into the Honors program and can enroll in the required independent study course by the last day to add a course in the fourth week of the term.

**Research and Writing**

It is the responsibility of the student to carry out the research program outlined in the proposal, as well as to write the thesis in an organized and timely fashion. During the process of research and writing, the advisor will continue to work closely with the student, providing guidance on research methods and suggesting further secondary reading. A regular meeting schedule will be set up to help the student meet the short- and long-term deadlines he or she has set. The advisor will also evaluate the progress of the research, providing any necessary direction and detailed feedback on written drafts.

The second reader will also be available to provide a measure of input and guidance during the process of research and writing. This may be particularly important in those areas where the primary advisor has limited expertise. The second reader may also be willing to help with giving feedback on various sections of the thesis drafts. All these rules should be determined by a process of consultation involving the advisor, the student, and the second reader him/herself.

The final thesis should have a complete scientific apparatus - citations and a full bibliography - in a form determined by the advisor.

It should be submitted no later than April 15 for May graduates and November 15 for December completers.

**Assessment**

The thesis will be assessed independently by the advisor and the second reader in written reports. In order to receive Honors, it should be deemed excellent according to the following standards:

- Is the scope of the work appropriate for an Honors thesis?
- To what extent does it qualify as original research?
- To what degree does it sustain an analytic argument throughout?
- To what degree is it rooted in an engagement with previous research?
- How well does it reflect critically on its method and process?
- To what extent is the organization adequate to the argument presented?
- How well is the thesis rooted in the common conventions of the field?
- To what degree is the writing clear, cogent, and free of errors of grammar, tone, and style?

The two reports will be circulated to all faculty members in the program, who will review them before making the final determination at the next faculty meeting whether the thesis merits Honors. The meeting must be held, the decision reached, and the candidate informed before the Registrar's deadline for that semester.

**Further Information**

Students who are interested in further information about the concentration should contact the Judaic Studies Office at 163 George Street to make an appointment with the undergraduate concentration advisor. [Tel: 401.863.3910] or Judaic@brown.edu.

HEBR 0100.HEBR 0200

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**Latin American and Caribbean Studies**

The concentration in Latin American and Caribbean Studies (LACA) leads to a strong, interdisciplinary understanding of culture, history, and contemporary issues in Latin America, the Caribbean, and the Latinx diaspora.

Requirements are intentionally broad and flexible to accommodate the focused interests of students in understanding the diverse reality of this region. Concentration requirements include four themes: language, area studies, research, and internship or service work. A wide selection of courses from departments across the University expose students to the methods and materials of different disciplines and provide a background in the contemporary and historical contours of Latin American, Caribbean, and Latinx societies. For more information, contact the Director of Undergraduate Studies, Professor Erica Durante (erica_durante@brown.edu?subject=LACA%20concentration).

**Concentration Requirements**

1. **Ten courses on Latin American, Caribbean, and/or Latinx subjects.** These may be explicitly designated as LACA classes, but do not need to be. Up to two of these courses can be language learning classes. Relevant courses from study abroad may count toward this total. For double concentrators, up to two classes can count toward the course requirements of both LACA and another concentration. At least two different academic disciplines should be represented in the ten courses. Courses in which the student did substantial work on a Latin American, Caribbean, or Latinx subject may count toward this total, even if the course as a whole has a more general subject matter. Concentrators should periodically update their courses on ASK and confirm with the Director of Undergraduate Studies that they are on track to meeting the coursework requirement.

The courses must include at least one survey course providing a comprehensive and comparative view of the region. Examples include the following:

- **LACA 0500** Around Latin America in 80 Days: An Historical and Cultural Journey
- **LACA 1504G** Arts of the Environment in the Americas
- **LACA 1510** Urban Latin America
- **LACA 1630** Engaged Humanities: Storytelling in the Americas
- **HISP 0730** Encounters: Latin America in Its Literature and Culture
- **HISP 1330Z** Tropical Fictions: Geography and Literature in Latin American Culture
- **HIST 0234** Modern Latin America
- **HIST 1966Q** Colonial Encounters and the Creation of Latin America
- **POLIS 1210** Latin American Politics
- **POBS 0280** Mapping Food, Eating Meaning, Making Community: A Welcome to the Lusophone world

2. **Competence in a Latin American and/or Caribbean language.** Competence in Spanish, Portuguese, French, Haitian Kreyol, Kaqchikel Maya, etc. may be demonstrated through a departmental test, AP credit, language courses at Brown or elsewhere, study abroad, etc; please contact the concentration advisor to confirm. (If the student's primary area of study is the Anglophone Caribbean, a field language is not necessary.)

3. **An internship or volunteer service,** located in the U.S. or overseas, for one semester or one summer. Work completed during study abroad may count toward this requirement. The service work will connect theory to practice, applying scholarly knowledge to social challenges. Students are encouraged to consult with the Swearer Center for Public Service for assistance finding a volunteer placement. Students should also meet with the DUS by the beginning of junior year to discuss their work plan for their service component. Upon completion of the internship or service...
work, students fill and submit via ASK the Internship, Work or Volunteer Service Form, available online in the LACA Undergraduate Concentration webpage (https://watson.brown.edu/clacs/education/undergraduate/). In addition they are expected to submit via ASK a short letter from a supervisor confirming the completion of the work.

4. A capstone project. This may be a senior honors thesis or creative project, supervised by a primary advisor and a secondary reader; a non-honors research paper; or a reflective paper about non-academic work (such as service or foreign study) related to Latin America, the Caribbean, or the Latinx experience. The project may be completed for honors if the student is eligible (see Honors, below).

Students undertaking a capstone project are encouraged to enroll in LACA 1900. Alternatively, they may elect to enroll in one or two semesters of independent study (LACA 1990, LACA 1991) with their thesis/project advisor.

Writing Requirement
To satisfy Brown’s writing requirement as a LACA concentrator (which must be completed by the end of the 7th semester), students are encouraged to consider courses that have an emphasis on revision and feedback such as the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LACA 1900</td>
<td>Preparation for Honors and Capstone Projects on Latin American and Caribbean Topics</td>
</tr>
<tr>
<td>ETHN 1200D</td>
<td>Latinx Literature</td>
</tr>
<tr>
<td>LACA 0500</td>
<td>Around Latin America in 80 Days: An Historical and Cultural Journey</td>
</tr>
<tr>
<td>LACA 1504G</td>
<td>Arts of the Environment in the Americas</td>
</tr>
<tr>
<td>LACA 1630</td>
<td>Engaged Humanities: Storytelling in the Americas</td>
</tr>
<tr>
<td>COLT 0710I</td>
<td>New Worlds: Reading Spaces and Places in Colonial Latin America</td>
</tr>
<tr>
<td>HISP 0730</td>
<td>Encounters: Latin America in Its Literature and Culture</td>
</tr>
<tr>
<td>HIST 0233</td>
<td>Colonial Latin America</td>
</tr>
<tr>
<td>HIST 1977I</td>
<td>Gender, Race, and Medicine in the Americas</td>
</tr>
</tbody>
</table>

Engaged Scholars Program
The concentration also allows students to pursue the Engaged Scholars Program (http://watson.brown.edu/clacs/node/654/). The Engaged Scholars Program (ESP) in Latin American and Caribbean Studies (LACA) is designed for LACA concentrators who are especially interested in making deeper connections between their academic work and local communities in Providence and beyond. Engaged Scholars combine hands-on experiences such as internships, public service, humanitarian, and development work with their academic learning in order to develop a deeper understanding of, and appreciation for, social engagement.

Honors
Qualified undergraduates may work towards the A.B. in Latin American and Caribbean Studies with Honors.

Requirements to graduate with Honors:
1. Maintenance of at least an A- average in the ten courses counting for the Latin American and Caribbean Studies concentration
2. Maintenance of at least a B+ average in all course work at Brown
3. Completion of a senior honors thesis or project with a grade of A Grades of S do not negatively affect the eligibility for honors. Graduating seniors with Honors in Latin American and Caribbean Studies are eligible for an award administered by the concentration for Outstanding Senior Thesis or Project.

Senior Honors Thesis or Project Timeline:
For Senior-Year Students:

- By end of sixth semester: Students fill and submit a one page proposal to the concentration advisor the Honors Thesis Declaration Form available online in the LACA Undergraduate Concentration webpage (https://watson.brown.edu/clacs/education/undergraduate/). In the form, they are expected to indicate their thesis or project title and short description. The Honors Thesis Declaration Form must be signed by a primary advisor. Students who study abroad spring semester junior year may apply for admission to the Honors Program but must meet the application deadline. Students in this position should start thinking about a proposal and contact advisors well in advance.
- By October 15: Students submit the first section of their thesis or project to their research advisor for review. They should agree with their advisor on the schedule for the remaining portions.
- By March 15: A draft of the entire thesis or project is due to the primary advisor and the secondary reader for review and feedback.
- By 5 pm on April 15: The final, complete senior honors thesis or project is due.
- Students submit one copy each to the primary advisor and the secondary reader.
- Students submit one paper copy and one electronic copy to the concentration advisor and one electronic copy to the Brown Library Digital Repository (BDR).

For Mid-Year Completers:
Mid-year completors must apply for the Honors Program their 6th semester, as 2nd semester Juniors. They undertake the thesis in their 7th and 8th semesters, allowing them to complete the following Honors course sequence:

- By the end of the 6th semester: Students fill and submit to the concentration advisor the Honors Thesis Declaration Form available online in the LACA Undergraduate Concentration webpage (https://watson.brown.edu/clacs/education/undergraduate/). In the form, they are expected to indicate their thesis or project title and short description. The Honors Thesis Declaration Form must be signed by a primary advisor.
- By May 15: Students submit the first section of their thesis or project to their research advisor for review. They should agree with their advisor on the schedule for the remaining portions.
- By October 15: A draft of the entire thesis or project is due to the primary advisor and the secondary reader for review and feedback.
- By 5 pm on November 15: The final, complete senior honors thesis or project is due.
- Students submit one copy each to the primary advisor and the secondary reader.
- Students submit one paper copy and one electronic copy to the concentration advisor and one electronic copy to the Brown Library Digital Repository (BDR).

Linguistics
Language is a uniquely human capacity that enables us to communicate a limitless set of messages on any topic. While human languages can differ greatly in certain respects, all are intricate, complex, rule-governed systems. Linguistics is the scientific study of these systems, their use in communicative and other social settings, and their cognitive and neural underpinnings. The linguistics concentration at Brown gives students a background in the "core" aspects of the language system: phonetics/phonology (the study of speech sounds and their patterning), syntax (the study of combinatorics of words, phrases, and sentences), and semantics/pragmatics (the study of the meanings of words, sentences, and conversation). Beyond this, students may focus more heavily in one or more of these areas and/or explore related questions such as how children and adults learn language (language acquisition), how utterances are produced and understood in real time (psycholinguistics), or how speaking and understanding are anchored in underlying neural systems (neurolinguistics). Other areas such as historical linguistics, sociolinguistics, philosophy of language, and linguistic
anthropology can also be pursued in conjunction with offerings in other departments.

Students who wish to pursue one or more aspects of Linguistics in greater depth than does the Bachelor of Arts, and to focus on some of the more technical, computational, and/or experimental areas of the field may choose to take a Bachelor of Science in Linguistics. Students will choose a focus pathway which will direct their choices. Pathways include: Language, Computation, and Information; Language, Mind, and Brain; Meaning and Logic, or one of the student's design, with approval from the concentration advisor.

A.B. Requirements (10 courses)

<table>
<thead>
<tr>
<th>Prerequisite Course</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0300</td>
<td>Introduction to Linguistics (May be waived in special instances)</td>
</tr>
</tbody>
</table>

**Required Courses**

| 2 |
| CLPS 1310 Phonology | 1 |
| and either |
| CLPS 1330 Introduction to Syntax | 1 |
| OR |
| CLPS 1331 Linguistic Typology | 1 |

AND one of:

| 1 |
| CLPS 1341 Lexical Semantics |
| CLPS 1342 Compositional Semantics |
| CLPS 1370 Pragmatics |

One course in Psycholinguistics to be drawn from the following:

| 1 |
| CLPS 0800 Language and the Mind |
| CLPS 1650 Child Language Acquisition |
| CLPS 1800 Language Processing |
| CLPS 1820 Language and the Brain |
| CLPS 1821 Neuroimaging and Language |
| CLPS 1890 Laboratory in Psycholinguistics |

or any Topics Course in Language Acquisition or Language Processing

5 additional appropriate electives forming a thematically related set to be determined in consultation with the Concentration Advisor. At least one of these must be drawn from the list of advanced courses listed below, and we strongly recommend that at least one course be an appropriate methods and a topics course. No more than 2 of these courses may be drawn from below 1000 level courses. The electives can be drawn from any of the above courses, or any of the other linguistic/language related courses in the CLPS department. Electives may also be drawn from courses in other in consultation with the Concentration Advisor; a list of courses which standardly count towards the Linguistics Concentration (provided they form part of the thematically related set) is appended below.

**Advanced Courses**

| CLPS 1320 The Production, Perception, and Analysis of Speech |
| CLPS 1332 Issues in Syntactic Theory |
| CLPS 1342 Compositional Semantics |
| CLPS 1360 Introduction to Corpus Linguistics |
| A course from the 1381 series (Topics in Phonetic & Phonology) |
| A course from the 1383 series (Topics in Syntax and Semantics). For example: |
| CLPS 1383D Topics in Syntax and Semantics |
| A course from the 1385 series (Topics in Language Acquisition) |
| A course from the 1387 series (Topics in Neurolinguistics) |
| A course from the 1389 series (Topics in Language Processing) |
| CLPS 1390 Linguistic Field Methods |

CLPS 1800 Sociolinguistics, Discourse and Dialogue |
CLPS 0050M Playing with Words: The Linguistic Principles Behind Word Games and Puzzles |
CLPS 1365 Historical Linguistics |
CSCI 1460 Computational Linguistics |
EAST 1510 Chinese: A History of the Language |
EGYT 2310 History of the Ancient Egyptian Language |
SLAV 1300 Sociolinguistics (with Case Studies on the Former USSR and Eastern Europe) |
PHIL 0540 Logic |
PHIL 1760 Philosophy of Language |

**Total Credits:** 10

1 It is recommended that students take CLPS 1310 and CLPS 1330 before higher level courses.

**Honors (12 courses)**

Candidates for Honors in Linguistics must meet all of the requirements above, write an Honors thesis, and take two additional courses. One course is normally CLPS 1980 (Directed Research in Cognitive, Linguistic, and Psychological Sciences) - intended for work on the Honors thesis. Three of the total 12 courses must be drawn from the advanced list above (the Directed Research course counts as one of the advanced courses). Normally a 3.5 grade-point average in the concentration is required for admission to the Honors program. Honors candidates should formalize their projects in consultation with their advisors by the end of September. Refer to the CLPS Honors Program page for detailed information about the Linguistics Honors program.

**Independent Study**

Independent study is encouraged for the A.B. degree. Students should sign up for CLPS 1980 with a faculty advisor who is a member of the Department of Cognitive and Linguistic Sciences (CLPS). Arrangements should be made in Semester 6 for students expecting to do independent study during Semesters 7 and/or 8.

**Do Foreign Language Courses Count?**

Foreign language courses will generally not count towards the concentration requirements, except those that focus on the structure or history of the language. Students are, however, advised to gain familiarity with a foreign language, and are encouraged to take at least one course which deals with the structure of a language other than English.

**ScB Requirements (16 courses)**

Students who wish to pursue one or more aspects of Linguistics in greater depth than does the A.B., and to focus on some of the more technical, computational, and/or experimental areas of the field may choose to take an Sc.B in Linguistics. Students will choose a focus pathway which will direct their choices. Three possible pathways are described below in additional detail, though other pathways are possible, if approved by the concentration advisor. The core requirements are:

- One gateway course
- Four breath requirements, one each in Phonology, Syntax, Semantics or Pragmatics, and Psycholinguistics.
- Three electives in the focus area (see individual pathways below)
Language, Computation, and Information Pathway

Gateway course
- CLPS 0300 Introduction to Linguistics

At least one course in phonetics / phonology, such as:
- CLPS 1310 Phonology

At least one course in syntax, such as:
- CLPS 1330 Introduction to Syntax
- CLPS 1331 Linguistic Variation and Universals

At least one course in semantics / pragmatics, such as:
- CLPS 1341 Lexical Semantics
- CLPS 1342 Compositional Semantics
- CLPS 1370 Pragmatics

At least one course in psycholinguistics, such as:
- CLPS 0800 Language and the Mind
- CLPS 1850 Child Language Acquisition
- CLPS 1800 Language Processing
- CLPS 1890 Laboratory in Psycholinguistics

Three electives specifically in the focus area, such as:
- CLPS 1360 Introduction to Corpus Linguistics
- CLPS 1361 Information Theory in Language
- CLPS 1800 Language Processing
- CLPS 1850 Language Processing in Humans and Machines
- CSCI 0220 Introduction to Discrete Structures and Probability
- CSCI 1460 Computational Linguistics

Four non-linguistic focus area electives, such as:
- CLPS 0950 Introduction to programming
- CLPS 2908 Multivariate Statistical Techniques
- APMA 1650 Statistical Inference I
- CSCI 0220 Introduction to Discrete Structures and Probability
- CSCI 1410 Artificial Intelligence
- CSCI 1420 Machine Learning
- CSCI 1951A Data Science
- PHP 1560 Statistical Programming in R
- MATH 0520 Linear Algebra

Two additional courses outside the main focus that satisfy the Linguistics AB requirement, such as:
- CLPS 1390 Linguistic Field Methods
- CLPS 1331 Linguistic Variation and Universals
- ANTH 1800 Sociolinguistics, Discourse and Dialogue
- SLAV 1300 Sociolinguistics (with Case Studies on the Former USSR and Eastern Europe)

Or many others (see Linguistics AB for examples)

One additional class in linguistics (related or unrelated to the focus area), such as:
- CLPS 1342 Compositional Semantics
- CLPS 1850 Language Processing in Humans and Machines

One independent study / capstone requirement
- CLPS 1970 Directed Reading in Cognitive, Linguistic and Psychological Sciences

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Language, Mind and Brain Pathway

Gateway course
- CLPS 0300 Introduction to Linguistics

At least one course in phonetics / phonology, such as:
- CLPS 1310 Phonology

At least one course in syntax, such as:
- CLPS 1330 Introduction to Syntax
- CLPS 1331 Linguistic Variation and Universals

At least one course in semantics / pragmatics, such as:
- CLPS 1341 Lexical Semantics
- CLPS 1342 Compositional Semantics
- CLPS 1370 Pragmatics

At least one course in psycholinguistics, such as:
- CLPS 0800 Language and the Mind
- CLPS 1650 Child Language Acquisition
- CLPS 1800 Language Processing
- CLPS 1890 Laboratory in Psycholinguistics

Three electives specifically in the focus area, such as:
- CLPS 0800 Language and the Mind
- CLPS 1331 Linguistic Variation and Universals
- CLPS 1650 Child Language Acquisition
- CLPS 1385 Topics in Language Acquisition: Language Acquisition and Cognitive Development
- CLPS 1800 Language Processing
- CLPS 1890 Laboratory in Psycholinguistics
- CLPS 1850 Language Processing in Humans and Machines

Four non-linguistic focus area electives, such as:
- CLPS 0200 Human Cognition
- CLPS 0400 Cognitive Neuroscience
- CLPS 0610 Children's Thinking: The Nature of Cognitive Development
- CLPS 0900 Statistical Methods
- CLPS 1420 Cognitive Neuropsychology
- CLPS 1492 Computational Cognitive Neuroscience
- CLPS 1610 Cognitive Development
- CLPS 1620 Developmental Cognitive Neuroscience
- CLPS 1900 Research Methods And Design
- EDUC 1860 Social Context of Learning and Development
- NEUR 0650 Biology of Hearing
- NEUR 0680 Introduction to Computational Neuroscience
- NEUR 1030 Neural Systems
- PHIL 1770 Philosophy of Mind

Two additional courses outside the main focus that satisfy the Linguistics AB requirement, such as:
- CLPS 1390 Linguistic Field Methods
- CLPS 1331 Linguistic Variation and Universals
- ANTH 1800 Sociolinguistics, Discourse and Dialogue
- SLAV 1300 Sociolinguistics (with Case Studies on the Former USSR and Eastern Europe)

Or many others (see Linguistics AB for examples)

One additional class in linguistics (related or unrelated to the focus area), such as:
- CLPS 1342 Compositional Semantics
### Meaning and Logic Pathway

**Gateway course**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0300</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1310</td>
<td>1</td>
</tr>
</tbody>
</table>

**At least one course in syntax, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1330</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1331</td>
<td>1</td>
</tr>
</tbody>
</table>

**At least one course in semantics / pragmatics, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1341</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1342</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1370</td>
<td>1</td>
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</table>

**At least one course in psycholinguistics, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0800</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1650</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1800</td>
<td>1</td>
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<tr>
<td>CLPS 1890</td>
<td>1</td>
</tr>
</tbody>
</table>

**Three electives specifically in the focus area, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1331</td>
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</tr>
<tr>
<td>CLPS 1341</td>
<td>3</td>
</tr>
<tr>
<td>CLPS 1342</td>
<td>3</td>
</tr>
<tr>
<td>CLPS 1370</td>
<td>3</td>
</tr>
</tbody>
</table>

**Four non-linguistic focus area electives, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0750</td>
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</tr>
<tr>
<td>CSCI 0220</td>
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</tr>
<tr>
<td>PHIL 0990T</td>
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<tr>
<td>PHIL 1630</td>
<td>4</td>
</tr>
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<td>PHIL 1830</td>
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<td>PHIL 1870</td>
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<td>PHIL 1880</td>
<td>4</td>
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<tr>
<td>CLPS 0200</td>
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</tr>
<tr>
<td>CLPS 0610</td>
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</tr>
<tr>
<td>CLPS 0700</td>
<td>4</td>
</tr>
</tbody>
</table>

**Two additional courses outside the main focus that satisfy the Linguistics AB requirement, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1390</td>
<td>2</td>
</tr>
<tr>
<td>CLPS 1331</td>
<td>2</td>
</tr>
<tr>
<td>ANTH 1800</td>
<td>2</td>
</tr>
<tr>
<td>SLAV 1300</td>
<td>2</td>
</tr>
<tr>
<td>Or many others</td>
<td></td>
</tr>
</tbody>
</table>

**One additional class in linguistics (related or unrelated to the focus area), such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1361</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1800</td>
<td>1</td>
</tr>
</tbody>
</table>

---

### Honors (17 courses)

The Honors program requires one additional elective, which will typically be a second CLPS 1980 Directed Research course during the senior year (thus leading to a full year of Directed Reading or Directed Research). Admission to the honors program requires a majority of A grades in the concentration. The student’s work will culminate in an Honors' thesis on an approved topic (see Departmental regulations regarding Honors' theses, which can be found at [https://www.brown.edu/academics/cognitive-linguistic-psychological-sciences/honors](https://www.brown.edu/academics/cognitive-linguistic-psychological-sciences/honors)).

**Four non-linguistic focus area electives, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLSP 1850</td>
<td>4</td>
</tr>
</tbody>
</table>

**Two additional courses outside the main focus that satisfy the Linguistics AB requirement, such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1970</td>
<td>2</td>
</tr>
<tr>
<td>CLPS 1980</td>
<td>2</td>
</tr>
</tbody>
</table>

**One additional class in linguistics (related or unrelated to the focus area), such as:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 1361</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1800</td>
<td>1</td>
</tr>
</tbody>
</table>

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### Literary Arts

Brown’s Program in Literary Arts provides a home for innovative writers of fiction, poetry, playwriting, screenwriting, literary translation, electronic writing and mixed media. The concentration allows students writers to develop their skills in one or more genres while deepening their understanding of the craft of writing. Many courses in this concentration require a writing sample; students should consult a concentration advisor or the concentration website for strategies on getting into the appropriate course(s).

Candidates for the Bachelor of Arts degree with concentration in Literary Arts will be expected to complete the following course work:

1. At least four creative writing workshops from among the following series: LITR 0100A, LITR 0100B, LITR 0110A, LITR 0110B, LITR 0110D, LITR 0110E. The various courses under LITR 0210, LITR 0310, LITR 0610, LITR 1010, LITR 1110, LITR 1150/1151 and LITR 1410. At least two genres must be covered within the four courses taken. An independent study in literary arts (LITR 1310 and LITR 1510) may count toward the workshop requirement. Other writing-intensive courses may also count, at the discretion of the advisor.

2. Six elective reading and research in literary arts courses, which must include:
   - A course in literary theory or the history of literary criticism
   - A course that primarily covers readings and research in literary arts created before 1800
   - A course that primarily covers readings and research in literary arts created after 1800

These courses, selected in consultation with a concentration advisor, may come from (but are not limited to) the following departments: Africana Studies, American Civilization, Classics, Comparative Literature, East Asian Studies, Egyptology, French Studies, German Studies, Hispanic Studies, Italian Studies, Judaic Studies, Linguistics, Literatures and Cultures in English, Middle East Studies, Modern Culture and Media, Music, Portuguese and Brazilian Studies, Slavic Studies, South Asian Studies, Theatre, Speech and Dance, Visual Arts. With approval from the concentration advisor, courses covering pre-20th century time periods may be distributed in a variant manner, so long as they cover two distinct literary time periods that precede the 20th century.
3. Among the ten required courses, at least four must be at the 1000-level or above. At least six classes (workshops and reading/research courses) that shall count toward the concentration must be taken at Brown through the Literary Arts Department; up to one of the six LITR courses may be a course taken in another department but cross-listed by Literary Arts. No more than two of the ten required courses for the concentration may also count toward fulfilling a second concentration.

4. During the senior year, all students must take at least one course within the Literary Arts course offerings (courses with LITR designation by the Registrar, or courses approved by the concentration advisor).

Honors in Creative Writing: Course requirements are the same as those for the regular concentration (four workshops, six elective literature-reading courses), with the following changes and additions: honors candidates must include two 1000-level workshops or independent studies among their courses; and complete a thesis. Students who are enrolled in or have completed at least one 1000-level workshop (or independent study) may submit honors applications to the Literary Arts Department from the first day of the fall semester to 25 September. Interested students should obtain information from the office of the Literary Arts Department.

Mathematics

Mathematics is a grouping of sciences, including geometry, algebra, and calculus, that study quantity, structure, space, and change. Mathematics concentrators at Brown can explore these concepts through the department’s broad course offerings and flexible concentration requirements. The concentration leads to either the Bachelor of Arts or Bachelor of Science degree (the latter is strongly recommended for students in applied math. Students must identify a series of electives that cohere around a common theme. As with other concentrations offered by the department, students have the option to pursue an interdisciplinary Bachelor of Science degree.

It is strongly recommended that students take MATH 1010 before taking MATH 1130.

Standard program for the A.B. degree

Prerequisites:

Multivariable calculus and linear algebra (choose one of the following sequences): 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0180</td>
<td>Intermediate Calculus and Linear Algebra</td>
</tr>
<tr>
<td>MATH 0180 &amp; MATH 0520</td>
<td>Intermediate Calculus and Honors Linear Algebra</td>
</tr>
<tr>
<td>MATH 0200 &amp; MATH 0520</td>
<td>Intermediate Calculus (Physics/Engineering) and Linear Algebra</td>
</tr>
<tr>
<td>MATH 0350 &amp; MATH 0540</td>
<td>Honors Calculus and Honors Linear Algebra</td>
</tr>
</tbody>
</table>

Or the equivalent

Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1530</td>
<td>Abstract Algebra</td>
</tr>
<tr>
<td>Five other 1000- or 2000-level Mathematics courses</td>
<td>The year-long sequence 0750/0760 may be substituted for one of these course credits.</td>
</tr>
</tbody>
</table>

Total Credits: 8

Standard program for the Sc.B. degree

Prerequisites:

Multivariable calculus and linear algebra (choose one of the following sequences): 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0180 &amp; MATH 0520</td>
<td>Intermediate Calculus and Linear Algebra</td>
</tr>
<tr>
<td>MATH 0180 &amp; MATH 0540</td>
<td>Intermediate Calculus and Honors Linear Algebra</td>
</tr>
</tbody>
</table>

MATH 0200 & MATH 0520
Intermediate Calculus (Physics/Engineering) and Linear Algebra

MATH 0350 & MATH 0540
Honors Calculus and Honors Linear Algebra

Or the equivalent

Program:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1130</td>
<td>Functions of Several Variables</td>
</tr>
<tr>
<td>MATH 1140</td>
<td>Functions Of Several Variables</td>
</tr>
<tr>
<td>MATH 1530</td>
<td>Abstract Algebra</td>
</tr>
<tr>
<td>MATH 1540</td>
<td>Topics in Abstract Algebra</td>
</tr>
<tr>
<td>MATH 1560</td>
<td>Number Theory</td>
</tr>
<tr>
<td>Four other 1000- or 2000-level Mathematics courses. The year-long sequence 0750/0760 may be substituted for one of these course credits.</td>
<td></td>
</tr>
<tr>
<td>Four additional courses in mathematics, science, economics, or applied mathematics approved by the concentration advisor.</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 14

Honors

Honors degrees may be recommended for students who have exhibited high achievement in mathematics. Candidates must complete at least eight mathematics courses at the 1000 or 2000 level with sufficiently good grades and must write an honors thesis under the guidance of a faculty member. The honors thesis is usually written while the candidate is enrolled in MATH 1970. The candidate should consult with the concentration advisor for the precise grade requirements.

Those interested in graduate study in mathematics are encouraged to take:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1130</td>
<td>Functions of Several Variables</td>
</tr>
<tr>
<td>MATH 1140</td>
<td>Functions Of Several Variables</td>
</tr>
<tr>
<td>MATH 1260</td>
<td>Complex Analysis</td>
</tr>
<tr>
<td>MATH 1410</td>
<td>Topology</td>
</tr>
<tr>
<td>MATH 1540</td>
<td>Topics in Abstract Algebra</td>
</tr>
</tbody>
</table>

Mathematics-Computer Science

Students may opt to pursue an interdisciplinary Bachelor of Science degree in Math-Computer Science, a concentration administered cooperatively between the mathematics and computer science departments. Course requirements include math- and systems-oriented computer science courses, as well as computational courses in applied math. Students must identify a series of electives that cohere around a common theme. As with other concentrations offered by the Computer Science department, students have the option to pursue the professional track (http://www.cs.brown.edu/ugrad/concentrations/professional.track.html) of the ScB program in Mathematics-Computer Science.

Requirements for the Standard Track of the Sc.B. degree.

Prerequisites

Three semesters of Calculus to the level of MATH 0180, MATH 0200, or MATH 0350 3

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0520</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>MATH 0540</td>
<td>Honors Linear Algebra</td>
</tr>
<tr>
<td>CSC 0530</td>
<td>Coding the Matrix: An Introduction to Linear Algebra for Computer Science</td>
</tr>
</tbody>
</table>

Core Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1530</td>
<td>Abstract Algebra</td>
</tr>
<tr>
<td>Select one of the following series:</td>
<td></td>
</tr>
<tr>
<td>Series A</td>
<td></td>
</tr>
</tbody>
</table>

Brown University
The requirements for the Professional Track of the Sc.B. degree.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two to four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student’s concentration advisor:

- What courses were put to use in your summer’s work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.

Mathematics-Economics

The Mathematics-Economics concentration is designed to give a background in economic theory plus the mathematical tools needed to analyze and develop additional theoretical constructions. The emphasis is on the abstract theory itself. Students may choose either the standard or the professional track, both award a Bachelor of Arts degree.

Standard Mathematics-Economics Concentration

### Economics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1130</td>
<td>Intermediate Microeconomics (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1210</td>
<td>Intermediate Macroeconomics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1630</td>
<td>Mathematical Econometrics I (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1170</td>
<td>Welfare Economics and Social Choice Theory</td>
<td>2</td>
</tr>
<tr>
<td>ECON 1225</td>
<td>Advanced Macroeconomics: Monetary, Fiscal, and Stabilization Policies</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1460</td>
<td>Industrial Organization (Mathematical)</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1470</td>
<td>Bargaining Theory and Applications</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1490</td>
<td>Designing Internet Marketplaces</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1660</td>
<td>Big Data</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1670</td>
<td>Advanced Topics in Econometrics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1750</td>
<td>Investments II</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1820</td>
<td>Theory of Behavioral Economics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1850</td>
<td>Theory of Economic Growth</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1860</td>
<td>The Theory of General Equilibrium</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1870</td>
<td>Game Theory and Applications to Economics</td>
<td>1</td>
</tr>
</tbody>
</table>

One course from the ‘data methods’ group:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 1301</td>
<td>Economics of Education I</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1305</td>
<td>Economics of Education: Research</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1310</td>
<td>Labor Economics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1360</td>
<td>Health Economics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1410</td>
<td>Urban Economics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1480</td>
<td>Public Economics</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1510</td>
<td>Economic Development</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1530</td>
<td>Health, Hunger and the Household in Developing Countries</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1629</td>
<td>Applied Research Methods for Economists</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1640</td>
<td>Mathematical Econometrics II</td>
<td>1</td>
</tr>
<tr>
<td>ECON 1650</td>
<td>Financial Econometrics</td>
<td>1</td>
</tr>
</tbody>
</table>

Two additional 1000-level economics courses

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### Mathematics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI 0150 &amp; CSCI 0160</td>
<td>Introduction to Object-Oriented Programming and Computer Science and Introduction to Algorithms and Data Structures</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0170 &amp; CSCI 0180</td>
<td>Computer Science: An Integrated Introduction and Computer Science: An Integrated Introduction</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0190</td>
<td>Accelerated Introduction to Computer Science (and an additional CS course not otherwise used to satisfy a concentration requirement; this course may be CSCI 0180, an intermediate-level CS course, or a 1000-level CS course)</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0320 or CSCI 0330</td>
<td>Introduction to Software Engineering Introduction to Computer Systems</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 0220 or CSCI 1010</td>
<td>Introduction to Discrete Structures and Probability Theory of Computation</td>
<td>1</td>
</tr>
<tr>
<td>Three 1000-level Mathematics courses</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Three advanced courses in Computer Science</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Three additional courses different from any of the above chosen from Mathematics, Computer Science, Applied Mathematics, or related areas</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>A capstone course in Computer Science or Mathematics</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

### Total Credits

19

1. These courses must be at the 1000-level or higher. Two of these courses and the intermediate courses must satisfy one of the CS pathways [https://cs.brown.edu/degrees/undergrad/concentration-requirements/pathways-for-undergraduate-and-masters-students/](https://cs.brown.edu/degrees/undergrad/concentration-requirements/pathways-for-undergraduate-and-masters-students/).

2. Note: CSCI 1010 may be used either as a math-oriented intermediate course or as an advanced course. CSCI 1010 was formerly known as CSCI 510: they are the same course and hence only one may be taken for credit. CSCI 1450 was formerly known as CSCI 450: they are the same course and hence only one may be taken for credit. Applied Math 1650 or 1655 may be used in place of CSCI 1450 in CS pathway requirements [https://cs.brown.edu/degrees/concentration-requirements/pathways-for-undergraduate-and-masters-students/](https://cs.brown.edu/degrees/concentration-requirements/pathways-for-undergraduate-and-masters-students/). However, concentration credit will be given for only one of Applied Math 1650, 1655, and CSCI 1450.

3. These must be approved by a concentration advisor.

4. A one-semester course, taken in the student’s last undergraduate year, in which the student (or group of students) use a significant portion of their undergraduate education, broadly interpreted, in studying some current topic in depth, to produce a culminating artifact such as a paper or software project. The title and abstract of the artifact, along with the student’s and faculty-sponsor’s names, will be placed in the CS website. The inclusion of a relevant image or system diagram is strongly encouraged. The complete text of the best artifacts of each class will be featured on the CS website. A senior thesis, which involves two semesters of work, may count as a capstone [http://cs.brown.edu/degrees/undergrad/concentration/capstone/](http://cs.brown.edu/degrees/undergrad/concentration/capstone/).

Requirements for the Professional Track of the Sc.B. degree.

The requirements for the professional track include all those of the standard track, as well as the following:

Students must complete two to four-month full-time professional experiences, doing work that is related to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.

On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student’s concentration advisor:

- Which courses were put to use in your summer’s work? Which topics, in particular, were important?
- In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
- Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
- What did you learn from the experience that probably could not have been picked up from course work?
- Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
- Would you recommend your summer experience to other Brown students? Explain.
Mathematics
Calculus: MATH 0180 or higher  1
Linear Algebra - one of the following:  1
  MATH 0520  Linear Algebra
  MATH 0540  Honors Linear Algebra
Probability Theory - one of the following:  1
  MATH 1610  Probability
  MATH 1620  Mathematical Statistics
  APMA 1650  Statistical Inference
Analysis - one of the following:  1
  MATH 1010  Analysis: Functions of One Variable
  MATH 1130  Functions of Several Variables
  MATH 1140  Functions Of Several Variables
Differential Equations - one of the following:  1
  MATH 1110  Ordinary Differential Equations
  MATH 1120  Partial Differential Equations
One additional course from the Probability, Analysis, and Differential Equations courses listed above  1
Total Credits  14

Honors and Capstone Requirement:
Admission to candidacy for honors in the concentration is granted on the following basis: 3.7 GPA for Economics courses, and 3.5 GPA overall. To graduate with honors, a student must write an honors thesis in senior year following the procedures specified by the concentration (see Economics Department website).

Professional Track
The requirements for the professional track include all those of the standard track, as well as the following:
Students must complete two two-to-four month full-time professional experiences, doing work that is relevant to their concentration programs. Such work is normally done within an industrial organization, but may also be at a university under the supervision of a faculty member.
On completion of each professional experience, the student must write and upload to ASK a reflective essay about the experience addressing the following prompts, to be approved by the student’s concentration advisor:
  • Which courses were put to use in your summer’s work? Which topics, in particular, were important?
  • In retrospect, which courses should you have taken before embarking on your summer experience? What are the topics from these courses that would have helped you over the summer if you had been more familiar with them?
  • Are there topics you should have been familiar with in preparation for your summer experience, but are not taught at Brown? What are these topics?
  • What did you learn from the experience that probably could not have been picked up from course work?
  • Is the sort of work you did over the summer something you would like to continue doing once you graduate? Explain.
  • Would you recommend your summer experience to other Brown students? Explain.

Medieval Cultures
The program in Medieval Studies offers a concentration in Medieval Cultures with two tracks with distinct foci: one in Medieval Cultures and the other in Late Antique Cultures. Medieval Cultures focuses on the 6th-15th centuries, combining interdisciplinary perspectives with in-depth study of one or two related disciplines.
Late Antique Cultures deals with the 3rd-9th centuries, when ancient cultural forms were still in place but medieval cultures were beginning to take shape simultaneously. The first undergraduate degree of its kind in this country, Late Antique Studies examines the changing relation of cultural practices, social patterns, political and economic forms, and artistic and literary traditions in this important transition period.
A traditional area of study in Medieval Cultures is Western Europe in the High Middle Ages, but students are encouraged to work comparatively in Byzantine, Islamic, Judaic and/or Slavic cultures in the middle ages.

Medieval Cultures Track
It is recommended that prospective concentrators take the introductory course, Medieval Perspectives, during their freshman or sophomore year.

Requirements
Ten courses approved by the Program in Medieval Studies, including two courses in medieval history and one 1000- or 2000-level course that uses primary texts in a medieval language other than Middle English. Interested students are invited to discuss their plans with an appropriate faculty member of the Program. A concentration proposal should be prepared in consultation with the faculty advisor and submitted to the Program Chair for approval.
Under the supervision of the director of the program, students may choose courses from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELS 0025</td>
<td>Wealth: Religious Approaches</td>
</tr>
<tr>
<td>JUDS 0050M</td>
<td>Difficult Relations: Judaism and Christianity from the Middle Ages until the Present</td>
</tr>
<tr>
<td>ENGL 0100D</td>
<td>Matters of Romance</td>
</tr>
<tr>
<td>RELS 0110</td>
<td>Christians</td>
</tr>
<tr>
<td>RELS 0150</td>
<td>Islam Unveiled</td>
</tr>
<tr>
<td>HIST 0150B</td>
<td>The Philosophers’ Stone: Alchemy From Antiquity to Harry Potter</td>
</tr>
<tr>
<td>ENGL 0150C</td>
<td>The Medieval King Arthur</td>
</tr>
<tr>
<td>RELS 0290D</td>
<td>Islamic Sexualities</td>
</tr>
<tr>
<td>ENGL 0300F</td>
<td>Beowulf to Aphra Behn: The Earliest British Literatures</td>
</tr>
<tr>
<td>ENGL 0310F</td>
<td>Prose Sagas of the Medieval North</td>
</tr>
<tr>
<td>HIAA 0321</td>
<td>Toward a Global Late Antiquity:200-800 CE</td>
</tr>
<tr>
<td>MDVL 0360</td>
<td>Cities: Medieval Perspectives</td>
</tr>
<tr>
<td>RELS 0410</td>
<td>Christianity in Late Antiquity</td>
</tr>
<tr>
<td>RELS 0415</td>
<td>Ancient Christian Culture</td>
</tr>
<tr>
<td>HIAA 0460</td>
<td>Muslims, Jews and Christians in Medieval Iberia</td>
</tr>
<tr>
<td>COLT 0510K</td>
<td>The 1001 Nights</td>
</tr>
<tr>
<td>HIST 0521A</td>
<td>Christianity in Conflict in the Medieval Mediterranean</td>
</tr>
<tr>
<td>HIST 0521M</td>
<td>The Holy Grail and the Historian’s Quest for the Truth</td>
</tr>
<tr>
<td>CLAS 0600</td>
<td>The Literary Worlds of Late Antiquity</td>
</tr>
<tr>
<td>MDVL 0620</td>
<td>Muslims, Jews, and Christians in Medieval Iberia</td>
</tr>
<tr>
<td>HIST 0621B</td>
<td>The Search for King Arthur</td>
</tr>
<tr>
<td>RELS 0640</td>
<td>Dying To Be With God: Jihad, Past and Present</td>
</tr>
<tr>
<td>CLAS 0660</td>
<td>The World of Byzantium</td>
</tr>
</tbody>
</table>
Honors
This is awarded to students who present a meritorious honors thesis in addition to completing the required courses of the concentration. The thesis permits the student to synthesize various disciplines or interests, or to pursue a new interest in greater depth. To be eligible for Honors, candidates must complete a minimum of six approved courses in Medieval Studies by the end of their third year with more grades of A than B. Students should apply for admission to Honors and should meet with their faculty advisor(s) no later than spring of the junior year to plan the thesis project. Accepted candidates write the thesis in a two-semester course sequence under the supervision of a director and second reader drawn from the Medieval Studies faculty.

Interested students should contact the concentration advisor for further details or consultation (863-1994).

Late Antique Cultures Track
Requirements:

One course in Roman history: 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 1310</td>
<td>Roman History I: The Rise and Fall of an Imperial Republic</td>
</tr>
<tr>
<td>CLAS 1320</td>
<td>Roman History II: The Roman Empire and Its Impact (recommended)</td>
</tr>
</tbody>
</table>

One class in medieval history 1

One course at the advanced level (numbered at least 1000) in one approved language 1

Six other courses drawn from appropriate offerings and with the approval of the concentration advisor. These courses should support a concentrational area of special interest. 6

Total Credits 9

1 The language in most cases will be Latin, but students will present different competencies and interests; other languages, such as Greek, Hebrew, or one of the medieval vernaculars can be substituted for Latin, with the approval of the concentration advisor and in conjunction with a clearly articulated program of study.

Under the supervision of the director of the program, students may choose courses from the following:

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>CLAS 0660</td>
<td>The World of Byzantium</td>
</tr>
<tr>
<td>CLAS 1120G</td>
<td>The Idea of Self</td>
</tr>
<tr>
<td>CLAS 1120V</td>
<td>The Age of Constantine: The Roman Empire in Transition</td>
</tr>
<tr>
<td>CLAS 1750L</td>
<td>Erotic Desire in the Premodern Mediterranean</td>
</tr>
</tbody>
</table>

JUDS 0681 Great Jewish Books
HISP 0750E Topics in Hispanic Culture and Civilization
MUSC 0910 Medieval and Renaissance Music
ITAL 1010 Dante in English Translation; Dante's World and the Invention of Modernity
PHIL 1100C Medieval Arabic Philosophy
LATN 1110F Fortunatus
LATN 1110H Literature at the Court of Charlemagne
LATN 1110L Medieval Latin Lyric
GREK 1110Q Greek Erotic Literature: From Plato to the Medieval Romances
GREK 1110T Rhetors and Philosophers: Intellectual Thought and Sophistic Style in the Ancient World
LATN 1120C Survey of Late and Medieval Latin
LATN 1120D Alcuin
CLAS 1120G The Idea of Self
CLAS 1120V The Age of Constantine: The Roman Empire in Transition
HIST 1205 The Long Fall of the Roman Empire
HIST 1210A The Viking Age
HIST 1211 Crusaders and Cathedrals, Deviants and Dominance: Europe in the High Middle Ages
HIST 1260D Living Together: Muslims, Christians, and Jews in Medieval Iberia
HIST 1280 Death from Medieval Relics to Forensic Science
RELS 1300 Ancient Christianity and the Sensing Body
COLT 1310E A Classical Islamic Education: Readings in Arabic Literature
ENGL 1310T Chaucer
ENGL 1310V Chaucer: The Canterbury Tales
ENGL 1311E History of the English Language
ENGL 1311H Sagas Without Borders: Multilingual Literatures of Early England
ENGL 1311L From Mead-Hall to Mordor: The Celtic and Germanic Roots of Tolkien's Fiction
RELS 1325D Desire and the Sacred
HISP 1330T El amor en espanol
ENGL 1360F Quest, Vision, Diaspora: Medieval Journey Narratives
ENGL 1360H Introduction to the Old English Language
ENGL 1360J Middle English Literature
ENGL 1360U Europe in the Vernacular
ENGL 1361D Women's Voices in Medieval Literature
ENGL 1361K Seminar in the Old English Language II
HIST 1440 The Ottomans: Faith, Law, Empire
HIAA 1440B Architecture of Solitude: The Medieval Monastery
RELS 1520 Pilgrimage and Sacred Travel in the Lands of Islam
RELS 1530A Methods and Problems in Islamic Studies: Narratives
RELS 1530D Medieval Islamic Sectarianism
HIAA 1560A Italy and the Mediterranean
ASYR 1600 Astronomy Before the Telescope
JUDS 1630 The Talmud
CLAS 1750L Erotic Desire in the Premodern Mediterranean
COLT 1813P Captive Imaginations: Writing Prison in the Middle Ages
ENGL 1900Y Medieval Manuscript Studies: Paleography, Codicology, and Interpretation
HIST 1963L Barbarians, Byzantines, and Berbers: Early Medieval North Africa, AD 300-1050
HIST 1963M Charlemagne: Conquest, Empire, and the Making of the Middle Ages
HIST 1963Q Sex, Power, and God: A Medieval Perspective
MDVL 1970 Independent Study
HIST 1979H Prostitutes, Mothers, + Midwives: Women in Pre-modern Europe and North America
MDVL 1990 Honors Thesis
HISP 2030D Fifteenth-Century Sentimental Romances and Celestina
GREK 2110F Greek Palaeography and Premodern Book Cultures
ENGL 2360Q Manuscript, Image, and the Middle English Text
HIST 2970A New Perspectives on Medieval History
HIST 1974M
HIST 1963M
HIST 1211
HIST 1260D
HIST 1210A
HIST 0621B
HIST 0521M
HIST 0610C
HIST 0150B
HISP 2030D
HIAA 1440B
GREK 2110F
ENGL 1361D
ENGL 1360U
ENGL 1360J
ENGL 1360H
ENGL 1360F
ENGL 1311L
ENGL 1311H
ENGL 1310V
ENGL 1310T
ENGL 0310F
ENGL 0300F
ENGL 0150C
ENGL 0100D
COLT 1813P
COLT 0510K
HISP 2030D
HIAA 0321
HIAA 0460
HIAA 1440B
GREK 1110Q
GREK 1110T
GREK 2110F
HIAA 0321
HIAA 0460
HIAA 1440B
ENGL 1360F
ENGL 1360H
ENGL 1360J
ENGL 1360U
ENGL 1361D
ENGL 1900Y
ENGL 2360Q
GREK 1110Q
GREK 1110T
GREK 2110F
HIAA 0025
PHIL 1100C
MDVL 1970
MDVL 1990
RELS 1530D
RELS 1530A
RELS 1520
RELS 1300
RELS 1530A
RELS 0410
RELS 0640
RELS 0290D
RELS 0150
RELS 0100
RELS 0025
LATN 1110F
LATN 1110H
LATN 1120C
LATN 1120D
MDVL 0360
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MDVL 1970
MDVL 1990
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RELS 0410
RELS 0640
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RELS 1530A
Honors

When in Late Antique Cultures, these are awarded to students who present a meritorious honors thesis in addition to completing the required courses of the concentration. Application for admission to honors should be made in the spring of the junior year, by which time honors candidates must have completed a minimum of six approved courses in Late Antique Studies. Accepted candidates write the thesis in a two-semester course sequence (MDVL 1990) under the supervision of a director and a second reader to be determined in consultation with the advisor.

Middle East Studies

The concentration in Middle East Studies (MES) seeks to build a strong, interdisciplinary understanding of historical and contemporary issues within the Middle East, broadly defined. Requirements are intentionally flexible to accommodate the focused interests of students in understanding the diverse dynamics, histories, and societies of this region. A variety of courses from departments across the University, addressing subjects from antiquity to the present day, expose students to methods and materials of different disciplines and help them build a framework for understanding the Middle East in historical and contemporary context. Concentration requirements are structured around four major cornerstones: language, foundational knowledge and methods, multidisciplinary area studies, and research.

Standard Program for the AB Degree

Foundational Courses: All MES concentrators are expected to take both of the following foundational courses. It is recommended that students take the first foundational course (MES 0100: The Middle East: Cultures and Societies—offered every spring) before taking the second foundational course (MES 1968: Approaches to the Middle East—offered every fall). Foundational course requirements cannot be fulfilled via independent study, study abroad, or transfer credits.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Description</th>
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<tbody>
<tr>
<td>MES 0100</td>
<td>The Middle East: Cultures &amp; Societies</td>
<td>Offered every spring</td>
</tr>
<tr>
<td>MES 1968</td>
<td>Approaches to the Middle East</td>
<td>Offered every fall</td>
</tr>
</tbody>
</table>
Capstone/Honors Project: MES requires all concentrators to conduct a capstone project within their senior year (i.e., in their last two semesters before graduation). The purpose of the capstone is to synthesize and apply the skills and knowledge that MES concentrators have acquired through the MES curriculum—including disciplinary perspectives, methodological and theoretical approaches, background in the historical and contemporary dynamics of the region, and language competency—to particular interests developed through the concentration. Capstones offer students the opportunity to integrate and build upon their experiences within the concentration, while demonstrating intellectual creativity, research skills, and effective communication, and should serve in some sense as a culmination of or reflection on what one has gained in the concentration. All students are expected to present their capstone research in the final semester before graduation. Presentations of honors theses will be approximately twenty minutes long, and those of non-honors capstone projects will be approximately ten minutes long, both followed by a question-and-answer session. Capstone projects must fulfill the following requirements:

- Must be taken in the final two semesters before graduation (excluding summer and winter sessions)
- Must incorporate research in a Middle Eastern language.
- Must be taken for a letter grade.
- Must be approved or overseen by a MES or MES-affiliated faculty member.
- Must be presented in the final semester before graduation.

Capstones can take one of three forms:

a. A Middle East–focused research paper of at least 20 pages for an existing concentration-eligible (MES-coded or X-Listed) course, undertaken with the permission and supervision of the instructor.

b. An independent study or project (artistic, research, or otherwise), approved by the DUS and supervised by at least one faculty member for at least one semester under the MES 1970 - Independent Study designation.

c. A two-semester honors thesis, completed under the supervision of a primary reader (who is an MES or MES-affiliated faculty member) and a secondary reader (who can be from other Brown departments and programs), and in coordination with the DUS.

For concentrators graduating before 2023, courses designated “Foundational Courses” under previous concentration requirements may be used to fulfill this requirement. Please meet with the MES Director of Undergraduate Studies (DUS) to discuss any such arrangements.

Previously HIST 1968 or HIST 1968A: Approaches to the Middle East. Any student who has taken HIST 1968 or HIST 1968A: Approaches to the Middle East, will have fulfilled this requirement.

Concentrators are encouraged to discuss options for fulfilling language requirements with the DUS.

Two semesters of Independent Study (MES 1970 & MES 1971) are required for honors and will raise the number of required courses to 13. One of these Independent Study courses should take the form of a thesis writing workshop supervised by the DUS or other designated MES faculty during the first semester of thesis writing. Students must declare their intention to write an honors thesis and submit a thesis prospectus (to include a thesis proposal, research plan, proposed thesis outline, initial literature review, and initial bibliography) by April 25th of their junior year (for May graduates) or November 20th of their junior year (for December graduates).
**Study Abroad**
Concentrators may apply up to two courses per semester of study abroad toward their MES concentration requirements, with a maximum of four courses (for two semesters abroad). Students must meet with their advisors and have them sign off on their specific course selections prior to embarking upon their program. Study abroad transfer credits may only be applied toward fulfilling elective and language requirements. Study abroad transfer credit may not be used to fulfill foundational course requirements.

**Dual Concentrators**
Middle East Studies concentrators may apply up to two courses that fulfill MES concentration requirements toward fulfilling the requirements of another concentration. Language courses do not count toward this two-course limit on overlapping courses.

**Honors**
To be eligible for honors, students will have earned an ’A’ in the majority of courses for the concentration. Honors students will be required to have at least six semesters of language study (Advanced), two semesters of which may be counted toward the elective requirement. Two semesters of Independent Study (MES 1970 and MES 1971) towards the Honors Thesis with the thesis advisor(s) are required. This is typically done during senior year and will raise the total number of required courses to 13.

**Modern Culture and Media**
Modern Culture and Media (MCM) is an interdisciplinary concentration that explores the ties between media and broader cultural and social formations. We stress creative thinking and critical production: comparative analysis and theoretical reflection, as well as work that integrates practice and theory. We thus bring together aspects of modern culture that are normally separated by departmental structures such as film and media studies, fine art, literature, literary arts and philosophy. This concentration offers the student a range of possible specializations. A student might decide to focus on the critical study and production of a certain type or combination of media (print, photography, sound recording, cinema, video, television, and digital media); or they might focus on certain cultural, theoretical and/or social formations (for example, gender/sexuality in post-Cold War television, postcolonial theory and film, the changing form of the novel, theories of subjectivity and ideology, video games and theories of representation).

These paths are united by a commitment to critical thinking/practice: rather than reproducing conventions, MCM concentrators learn how conventions emerge, what work they do, and explore ways to change them.

**Track I**
Track I concentrators may choose to study a particular historical moment, a medium, or a mode of textual production, in combination with theoretical studies that examine the categories of cultural analysis: for example, the distinction between high and low culture. Examples of areas of interest include but are not limited to film, gender/sexuality, digital media, television, post-coloniality, the novel, modern thought, the modern arts, sound, and theories of ideology and subjectivity. Productive work in some modern medium or textual mode is encouraged for all concentrators. MCM’s approach to production recognizes the inextricable link between theory and practice, and the possibility of a fruitful complicity between them. Production, in the sense defined here, is a theoretically informed sphere or practice, one within which acknowledged forms of cultural creation are tested and extended in close complementarity with the analyses conducted elsewhere in MCM.

**Track I consists of 11 courses.**

<table>
<thead>
<tr>
<th>Core courses</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCM 0150 Text/Media/Culture: Theories of Modern Culture and Media</td>
<td>1</td>
</tr>
<tr>
<td>Select two of the following:</td>
<td>2</td>
</tr>
<tr>
<td>MCM 0220 Print Cultures: Textuality and the History of Books</td>
<td>2</td>
</tr>
<tr>
<td>MCM 0230 Digital Media</td>
<td>2</td>
</tr>
</tbody>
</table>

**Additional courses**

<table>
<thead>
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<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>One must be an upper level course from the MCM 1200 series</td>
</tr>
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</tr>
<tr>
<td>Two must be at any level in MCM above MCM 0260</td>
</tr>
</tbody>
</table>

Three additional courses. These courses must be in MCM or in related departments.

Total Credits 11

1. No more than three courses from this list may count for concentration requirements.
2. The specific courses must be approved by an MCM concentration advisor as part of a coherent program of study.

**Honors:**
The honors program in MCM is designed for students who wish to integrate their skills in a special project. Students who qualify for Honors in Track I are eligible to apply to do an Honors project or thesis. Students should submit a letter of intent in their 6th semester, and a formal proposal by the first day of their 7th semester. Applications will be screened by the MCM Honors Committee. (Application forms are available in the MCM office.) If approved, a student must then register for MCM 1980 (taken in the 7th semester), a one-credit course which can count towards their Focus Area requirements, and MCM 1990 (taken in the 8th semester), a one-credit thesis course in which they complete the Honors project/thesis.

**Track II**
Track II concentration combines production courses with the critical study of the cultural role of practice. It aims to engage students in the analysis of theories of production elaborated within philosophical, artistic, and technological traditions, while encouraging them to produce works that interrogate these traditions.

**Track II consists of 11 courses:**

<table>
<thead>
<tr>
<th>Two core courses</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCM 0150 Text/Media/Culture: Theories of Modern Culture and Media</td>
<td>1</td>
</tr>
<tr>
<td>Select one MCM Introductory Practice course (MCM0700 series), Introductory practice courses in other disciplines may fulfill this requirement and should be selected in consultation with the concentration advisor. Possible disciplines include Literary Arts, Music, Theatre Arts and Performance Studies, Visual Art.</td>
<td>1</td>
</tr>
<tr>
<td>MCM 0700A Introduction to the Production Image</td>
<td>1</td>
</tr>
</tbody>
</table>

**Additional courses**

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Three additional courses. These courses must be in MCM or in related departments.

Total Credits 11

1. No more than three courses from this list may count for concentration requirements.
2. The specific courses must be approved by an MCM concentration advisor as part of a coherent program of study.

Other Requirements:
1. Focus Area: Of the 11 courses required for the concentration, at least 3 courses must be in a focus area approved by a concentration advisor. These courses may be MCM courses, related courses, or a combination of the two, and they must represent a focus on some aspect of modern literature, theory, media, art or culture. Examples of possible focus areas are: mass/popular culture, gender/sexuality, language/representation/subjectivity, narrative, digital media, film, modern thought, television, the modern arts, the novel, colonialism and post-colonialism. This is not an exhaustive list. Production courses may be in the focus area but must be in addition to the minimum 3 courses.
2. Production: Work in production is encouraged but not required for Track I concentrators. Of the 11 courses required for concentration, as many as 3 may be in production. These may be production courses offered by MCM (film, video, digital media) or courses in creative writing, painting, photography, journalism, etc., provided they do not bring the total number of concentration courses taken outside MCM to more than 3.

**Honors:**
The honors program in MCM is designed for students who wish to integrate their skills in a special project. Students who qualify for Honors in Track I are eligible to apply to do an Honors project or thesis. Students should submit a letter of intent in their 6th semester, and a formal proposal by the first day of their 7th semester. Applications will be screened by the MCM Honors Committee. (Application forms are available in the MCM office.) If approved, a student must then register for MCM 1980 (taken in the 7th semester), a one-credit course which can count towards their Focus Area requirements, and MCM 1990 (taken in the 8th semester), a one-credit thesis course in which they complete the Honors project/thesis.

**Track II**
Track II concentration combines production courses with the critical study of the cultural role of practice. It aims to engage students in the analysis of theories of production elaborated within philosophical, artistic, and technological traditions, while encouraging them to produce works that interrogate these traditions.

**Track II consists of 11 courses:**

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<td>MCM 0150 Text/Media/Culture: Theories of Modern Culture and Media</td>
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</tr>
<tr>
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Three additional courses. These courses must be in MCM or in related departments.

Total Credits 11

1. No more than three courses from this list may count for concentration requirements.
2. The specific courses must be approved by an MCM concentration advisor as part of a coherent program of study.

Other Requirements:
1. Focus Area: Of the 11 courses required for the concentration, at least 3 courses must be in a focus area approved by a concentration advisor. These courses may be MCM courses, related courses, or a combination of the two, and they must represent a focus on some aspect of modern literature, theory, media, art or culture. Examples of possible focus areas are: mass/popular culture, gender/sexuality, language/representation/subjectivity, narrative, digital media, film, modern thought, television, the modern arts, the novel, colonialism and post-colonialism. This is not an exhaustive list. Production courses may be in the focus area but must be in addition to the minimum 3 courses.
2. Production: Work in production is encouraged but not required for Track I concentrators. Of the 11 courses required for concentration, as many as 3 may be in production. These may be production courses offered by MCM (film, video, digital media) or courses in creative writing, painting, photography, journalism, etc., provided they do not bring the total number of concentration courses taken outside MCM to more than 3.
The creation of music is also central to the Music Concentration. Students are encouraged to make music in a number of ways, including participation in ensembles, solo performance, composition, music production, and/or conducting. Music faculty will be available to advise students on shaping the flexible parts of their Concentration and achieving their goal at Brown.

Students who declare a concentration prior to Fall 2019 can view concentration requirements here: https://bulletin.brown.edu/archive/2018-19/the-college/concentrations/musc/

Concentration Requirements:

Music Theory
# Two courses in music theory, which may include one 400-level and one 500-level course, or two 500-level courses.
MUSC 0400A Introduction to Music Theory 1
MUSC 0400B Introduction to Popular Music Theory and Songwriting 1
MUSC 0550 Theory of Tonal Music I 1
MUSC 0560 Theory of Tonal Music 1
MUSC 0570 Jazz and Pop Harmony 1

Music Scholarship, Production and Advanced Theory
A minimum of four upper-level courses above 1000, must include:
# One upper-level course in musicology or ethnomusicology
# Any three upper-level courses, including graduate-level courses

Additional Electives (according to student interest)
Four additional elective courses, may include:
# Up to four half-credit courses in performance - AMP music instruction and/or Ensemble Participation (2 credits)
# Up to two courses outside of the department
# One music course below the 1000 level

Senior Project
All music concentrators will choose a culminating experience for their senior year, either a capstone project or honors project. This may take the form of a performance, scholarly study, or original creative work. All students will have a primary advisor for their Senior Project. The work may be done independently of a course for credit, as an independent study, or within the framework of an existing course.

Additional Notes
All concentration substitutions and/or exceptions must be approved by the concentration advisor in consultation with the Director of Undergraduate Studies. A substitution or exception is not approved until specified in writing in the student's concentration file in ASK.

Honors in Music (optional)
Faculty Rules stipulate “Brown University shall, at graduation, grant honors to students whose work in a field of concentration has demonstrated superior quality and culminated in an honors thesis of distinction.”

In order to apply for Honors in Music, a student must fulfill the following criteria:
1. The student must have acquired a 3.5 cumulative grade point average overall.
2. The student must also have acquired a 3.5 cumulative grade point average in courses that count towards the concentration. (“S with distinction” equates with “A”. Grades of “S” are not computed in the grade point average.)

Departmental Procedures:
The Department designates three kinds of projects leading to honors in music:
(a) Research project in history, theory, or ethnomusicology.
(b) Performance project accompanied by pertinent research of lesser scope than (a). (Scholarly program notes required)
(c) Composition/Computer Music project. (score required if applicable; recording and/or video documentation desired, short project description)
NOTE: the term HONORS COMMITTEE refers to a student's honors thesis advisor and readers.

A student wishing to propose a project should proceed as follows:

1. An honors candidate must secure a faculty advisor and a second reader to serve as an honors committee for his or her project by the end of the year before graduation—typically, the end of the sixth semester. At the beginning of the penultimate semester the student will submit a proposal describing the project to the honors committee for approval. The proposal must receive committee approval and be given to Mary Rego for distribution to the full faculty by the first day of the first full week of classes of the semester. The department faculty will vote on the proposals at the next regularly scheduled meeting. Decisions will be based on the student’s overall performance in music courses and on the quality of the proposal. The advisor will notify the student of the faculty’s decision.

2. It is expected that honors projects will normally take two semesters to complete. Students pursuing honors may choose to register for MUSC 1970 in the Fall and/or in the Spring. In any case, they will establish a series of regular meetings with their advisor. By finals week of the penultimate semester, honors candidates must demonstrate substantial progress by submitting to the honors committee a partial draft of a paper or composition or, for performance projects, by playing a significant portion of the programmed repertoire. Failure to make sufficient progress may result in the termination of the honors project.

3. Last semester deadlines: Honors candidates must submit a complete draft to their honors committee by the first day of classes following the eighth week of the last semester. The committee will comment on the project and suggest revisions. Revisions must be completed, and the final project submitted to the honors committee by the first day of classes two weeks later. In the case of performance projects, this means that both the public performance and the scholarly component must have been completed by this date. In the case of research projects, all figures, notes, bibliography, and other critical apparatus must have been completed. Failure to make the deadline may result in the forfeiting of honors by the candidate, though the student may complete the project as a capstone project.

4. The honors committee will confer to determine their views on their projects. If the second reader is outside Music, the advisor may solicit a written recommendation about the merits of the project.

5. The advisor will deliver a copy of the completed thesis to the Mary Rego by the middle of the eleventh week of the last semester so that it may be made available for review by the full faculty. (Online, or hard copy on reserve in the Music Library.)

6. During the twelfth week of the last semester, the advisor will report on the project at a meeting of the Department faculty for a vote. The advisor will notify the student of the faculty’s decision.

7. Honors recipients will present their projects at a Department of Music Convocation held once annually at noon on the first day of final examination period in Semester II.

Neuroscience

Neuroscience is an interdisciplinary field that seeks to understand the functions and diseases of the nervous system. It draws on knowledge from neurobiology as well as elements of psychology and cognitive science, and mathematical and physical principles involved in modeling neural systems. Through the Neuroscience concentration, students develop foundational knowledge through courses in biology, chemistry, and mathematics as well as three core courses in neuroscience. They are also required to develop facility with research methodologies (through courses in statistics and laboratory methods) before moving into specific topics in the field (e.g., visual physiology, neurochemistry and behavior, and synaptic transmission and plasticity). Members of the Neuroscience faculty are affiliated with the Brown Institute for Brain Science, a multidisciplinary program that promotes collaborative research about the brain. Prospective concentrators should contact Elyse_Netto@brown.edu in order to have a faculty advisor assigned to them.

Standard program for the Sc.B. degree

The concentration combines a general science background with a number of specific courses devoted to the cellular, molecular, and integrative functions of the nervous system. The concentration allows considerable flexibility for students to tailor a program to their individual interests. Elective courses focus on a variety of areas including molecular mechanisms, cellular function, sensory and motor systems, neuropharmacology, learning and memory, animal behavior, cognitive function, bioengineering, theoretical neuroscience and computer modeling.

The concentration in neuroscience leads to an Sc.B. degree. The following background courses, or their equivalent, are required for the degree:

**Background Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0090</td>
<td>Introductory Calculus, Part I</td>
<td>1</td>
</tr>
<tr>
<td>MATH 0100</td>
<td>Introductory Calculus, Part II</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 0030</td>
<td>Basic Physics A</td>
<td>1</td>
</tr>
<tr>
<td>PHYS 0040</td>
<td>Basic Physics B</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 0350</td>
<td>Organic Chemistry</td>
<td>1</td>
</tr>
</tbody>
</table>

**Core Concentration Courses:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 0010</td>
<td>The Brain: An Introduction to Neuroscience</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1020</td>
<td>Principles of Neurobiology</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1030</td>
<td>Neural Systems</td>
<td>1</td>
</tr>
</tbody>
</table>

**One critical reading course:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 1440</td>
<td>Mechanisms and Meaning of Neural Dynamics</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1530</td>
<td>Communication In the Brain: What We Know and How We Know It</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1560</td>
<td>Developmental Neurobiology</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1970</td>
<td>Independent Study</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1760</td>
<td>The Moral Brain</td>
<td>1</td>
</tr>
<tr>
<td>PHP 1890</td>
<td>The Craving Mind</td>
<td>1</td>
</tr>
</tbody>
</table>

**1930/40 Topics in Neuroscience**

**One statistics course:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHP 1501</td>
<td>Essentials of Data Analysis</td>
<td>1</td>
</tr>
<tr>
<td>PHP 1510</td>
<td>Principles of Biostatistics and Data Analysis</td>
<td>1</td>
</tr>
<tr>
<td>PHP 2510</td>
<td>Principles of Biostatistics and Data Analysis</td>
<td>1</td>
</tr>
<tr>
<td>APMA 0650</td>
<td>Essential Statistics</td>
<td>1</td>
</tr>
<tr>
<td>APMA 1650</td>
<td>Statistical Inference I</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
<td>1</td>
</tr>
<tr>
<td>SOC 1100</td>
<td>Introductory Statistics for Social Research</td>
<td>1</td>
</tr>
<tr>
<td>EDUC 1110</td>
<td>Introductory Statistics for Education Research and Policy Analysis</td>
<td>1</td>
</tr>
<tr>
<td>BIOL 0495</td>
<td>Statistical Analysis of Biological Data</td>
<td>1</td>
</tr>
</tbody>
</table>

**One lab method:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEUR 0680</td>
<td>Introduction to Computational Neuroscience</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1600</td>
<td>Experimental Neurobiology</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1630</td>
<td>Big Data Neuroscience Lab</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1650</td>
<td>Structure of the Nervous System</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1660</td>
<td>Neural Computation in Learning and Decision-Making</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1670</td>
<td>Neuropharmacology and Synaptic Transmission</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1680</td>
<td>Computational Neuroscience</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 1970</td>
<td>Independent Study</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1194</td>
<td>Sleep and Chronobiology Research</td>
<td>1</td>
</tr>
</tbody>
</table>
Four electives related to neuroscience

Four courses that will enhance your understanding of the field of neuroscience. While electives need not be from the neuroscience department, the following list are common courses taught by Neuroscience and other departments that are often used as electives. We encourage students to explore the broader range of electives, rather than limiting themselves to this list:

- CLPS 1490: Functional Magnetic Resonance Imaging: Theory and Practice
- CLPS 1491: Neural Modeling Laboratory
- CLPS 1492: Computational Cognitive Neuroscience
- BIOL 0800: Principles of Physiology
- BIOL 1880: Comparative Biology of the Vertebrates

Philosophy

The Philosophy concentration offers courses covering subjects from the philosophy of religion to the philosophies of science and literature. It also provides survey courses on various periods in the history of philosophy. Concentrators can expect to strengthen their knowledge of and skills in ancient philosophy, early modern philosophy, logic, epistemology and metaphysics. Students are asked to identify an area of specialization. There is also a related, but separate concentration in physics and philosophy.

Standard Concentration

10 courses total, of which no more than one may be below PHIL 0350, and at least three must be at or above PHIL 0990.

A. Five Area Requirements:

One course in Ancient Philosophy, e.g. 1
- PHIL 0350: Ancient Philosophy
- PHIL 1250: Aristotle
- PHIL 1260: Plato
- PHIL 1310: Myth and the Origins of Science

One course in Early Modern Philosophy, e.g. 1
- PHIL 0360: Early Modern Philosophy
- PHIL 1700: Locke, Berkeley, Hume and Others
- PHIL 1710: 17th Century Continental Rationalism
- PHIL 1720: Kant: The Critique of Pure Reason

One course in Epistemology or Metaphysics, e.g. 1
- PHIL 1660: Metaphysics
- PHIL 1750: Epistemology
- PHIL 1760: Philosophy of Language
- PHIL 1770: Philosophy of Mind

One course in Ethics or Political Philosophy, e.g. 1
- PHIL 0500: Moral Philosophy
- PHIL 0560: Political Philosophy
- PHIL 0880: Ethical Themes in the Contemporary American Short Story
- PHIL 1400: Ethics in the Novel
- PHIL 1640: The Nature of Morality
- PHIL 1650: Moral Theories

One course in Logic, e.g. 1
- PHIL 0540: Logic
- PHIL 1630: Mathematical Logic
- PHIL 1880: Advanced Deductive Logic

B. Five further courses, chosen to include an item under each of the following three headings: 5

1) One seminar: a course from the PHIL 0990 series or a seminar at the 2000-level

2) Either a Specialization: Three related courses from one single area of philosophy: e.g., logic and language; philosophy of science; epistemology; philosophy of mind; moral philosophy; political philosophy; ancient philosophy, etc. See Notes below for further details.

Or: a broader selection of courses chosen with the approval of the department's Director of Undergraduate Studies (DUS)

3) Capstone: One of the following four options

- Independent study and honors research projects are encouraged.
a. Reading Course (PHIL 1990): a reading course for one semester involving one professor and one student, leading to the preparation of a substantial research paper on a particular topic. The Reading Course may accompany a 1000-level course being taken concurrently. In this case, the 1000-level course would provide a general overview of the topic and the reading course would consist of a deeper foray into the topic. A one-semester Reading Course may also be a first step towards writing an Honors Thesis.

b. Senior Seminar (PHIL 0990 or 0991): Seminars aimed primarily at advanced undergraduates, on varying topics each year, requiring the completion of substantial research and writing.

c. Graduate Seminar (PHIL 2000-level): seminars mainly aimed at graduate students, but also open to advanced undergraduates, requiring the completion of substantial research and writing. (A 0990- or 2000-level seminar taken as a Capstone also fulfills requirement (B, 1) for a seminar).

d. Honors Thesis: a piece of work expected to be more substantial than the above-mentioned research papers, typically researched and written over the course of the entire senior year (with enrollment in PHIL 1995 Senior Thesis for two semesters) under the supervision of a thesis advisor (possibly, though not necessarily, the specialization advisor). See also Honors Requirements below.

Honors Requirements:

• Philosophy GPA must be greater than 3.5. (This refers to the GPA at the beginning of the senior year in all philosophy courses, and including at least six courses, five of which were taken for a letter grade).

• Thesis: for further details, see ‘Senior Year Options’ and ‘Thesis’ on the Departmental website.

Physics

Physics is the scientific study of the fundamental principles governing the behavior of matter and the interaction of matter and energy. Mathematics is used to describe fundamental physical principles, the behavior of matter, and the interactions of matter and energy. As the most fundamental of sciences, physics provides a foundation for other scientific fields as well as the underpinnings of modern technology. The Physics department is unique because of the breadth of its faculty expertise and research, and the relatively intimate size of its classes above the introductory level. Physics concentrators may choose to pursue either the A.B. or the more intensive Sc.B. degree. Course work on either path covers a broad base of topics (for example, electricity and magnetism, classical and quantum mechanics, thermodynamics, and statistical mechanics). The Sc.B. degree requires additional advanced topics as well as a senior thesis project.

Standard concentration for the A.B. degree

Select one of the following Series:

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0070 &amp; PHYS 0160</td>
<td>Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics</td>
</tr>
<tr>
<td>PHYS 0030 &amp; PHYS 0040</td>
<td>Basic Physics A and Basic Physics B</td>
</tr>
<tr>
<td>PHYS 0050 &amp; PHYS 0060</td>
<td>Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics</td>
</tr>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 0560</td>
<td>Experiments in Modern Physics</td>
</tr>
<tr>
<td>PHYS 1410</td>
<td>Quantum Mechanics A</td>
</tr>
<tr>
<td>PHYS 1530</td>
<td>Thermodynamics and Statistical Mechanics</td>
</tr>
</tbody>
</table>

One additional 1000-level course or a mathematics course beyond the introductory level.

Total Credits: 8

Standard program for the Sc.B. degree

Prerequisites:

Select one of the following series:

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0070 &amp; PHYS 0160</td>
<td>Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics</td>
</tr>
<tr>
<td>PHYS 0050 &amp; PHYS 0060</td>
<td>Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
</tr>
</tbody>
</table>

Or MATH 0090, MATH 0100

Program:

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 0560</td>
<td>Experiments in Modern Physics</td>
</tr>
<tr>
<td>PHYS 1410</td>
<td>Quantum Mechanics A</td>
</tr>
<tr>
<td>PHYS 1420</td>
<td>Quantum Mechanics B</td>
</tr>
<tr>
<td>PHYS 1510</td>
<td>Advanced Electromagnetic Theory</td>
</tr>
<tr>
<td>PHYS 1530</td>
<td>Thermodynamics and Statistical Mechanics</td>
</tr>
<tr>
<td>PHYS 1560</td>
<td>Modern Physics Laboratory</td>
</tr>
</tbody>
</table>

One additional 1000 or 2000 level Physics course or upper level course in related fields of science chosen by the student with agreement of his or her advisor.

Four Mathematics courses beyond MATH 0190 or 0090, 0100 including choices from Applied Mathematics

<table>
<thead>
<tr>
<th>Course(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1990</td>
<td>Senior Conference Course</td>
</tr>
</tbody>
</table>

Total Credits: 17

1 In addition, courses in computer programming are recommended.
2 A senior thesis is required. This is to be prepared in connection with PHYS 1990 under the direction of a faculty supervisor. The topic may be in a related department or of interdisciplinary nature. In any event, a dissertation must be submitted.

Honors

Candidates for honors in physics will be expected to pursue a more rigorous and extensive program than those merely concentrating in the subject. In addition they will be required to begin an honors thesis during the seventh semester and to complete it (as part of PHYS 1990) during the eighth semester. Honors candidates are also expected to take a
special oral examination on the thesis at the end of the eighth semester. Further details about the program may be obtained from the chair of the department or the departmental honors advisor.

**Astrophysics Track for the Sc.B. degree**

**Prerequisites:**
Select one of the following Series:

- PHYS 0070 & PHYS 0160: Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics
- PHYS 0050 & PHYS 0080: Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics
- PHYS 0270: Astronomy and Astrophysics

Select one of the following Series:

- MATH 0170 & MATH 0180: Advanced Placement Calculus and Intermediate Calculus
- MATH 0190 & MATH 0200: Advanced Placement Calculus (Physics/Engineering) and Intermediate Calculus (Physics/Engineering)
- MATH 0350: Honors Calculus (or equivalent)
- PHYS 0470: Electricity and Magnetism

**Program:**

- MATH 0520: Linear Algebra
- or MATH 0540: Honors Linear Algebra
- or PHYS 0720: Methods of Mathematical Physics

Select one of the following Math courses:

- APMA 0330: Methods of Applied Mathematics I
- APMA 0340: Methods of Applied Mathematics II
- APMA 0350: Applied Ordinary Differential Equations
- APMA 0360: Applied Partial Differential Equations
- MATH 1110: Ordinary Differential Equations
- MATH 1120: Partial Differential Equations
- PHYS 0500: Advanced Classical Mechanics
- PHYS 0560: Experiments in Modern Physics
- PHYS 1250: Quantum Mechanics
- PHYS 1530: Thermodynamics and Statistical Mechanics

Three of the following:

- PHYS 1100: General Relativity
- PHYS 1250: Stellar Structure and the Interstellar Medium
- PHYS 1270: Extragalactic Astronomy and High-Energy Astrophysics
- PHYS 1280: Introduction to Cosmology

Two additional 1000- or 2000-level courses in physics or a related field which are not listed as requirements.

- PHYS 1990: Senior Conference Course

Select one of the following Series:

**Series A**

- PHYS 0720: Methods of Mathematical Physics

**Series B**

- Select one of the following:
  - APMA 0330: Methods of Applied Mathematics I
  - APMA 0350: Applied Ordinary Differential Equations
  - MATH 1110: Ordinary Differential Equations

And select one of the following:

- MATH 0180: Intermediate Calculus
- MATH 0200: Intermediate Calculus (Physics/Engineering)
- MATH 0350: Honors Calculus
- MATH 0520: Linear Algebra
- MATH 0540: Honors Linear Algebra

**Basic Biology and Chemistry**

- BIOL 0200: The Foundation of Living Systems (or placement out of BIOL 0200)
- BIOL 0500: Cell and Molecular Biology
- CHEM 0330: Equilibrium, Rate, and Structure

**Advanced Biophysical Topics and Techniques**

- PHYS 1610: Biological Physics
- PHYS 1990: Senior Conference Course

**Elective Courses (four chosen from the following list, with at least two 1000-level courses, or additional courses approved by the concentration advisor):**

- APMA 0360: Applied Partial Differential Equations I
- APMA 0410: Mathematical Methods in the Brain Sciences
- APMA 0650: Quantitative Models of Biological Systems
- APMA 1080: Inference in Genomics and Molecular Biology
- BIOL 0280: Biochemistry
- BIOL 0407: Genetics
- BIOL 1050: Biology of the Eukaryotic Cell
- BIOL 1200: Protein Biophysics and Structure
- BIOL 1270: Advanced Biochemistry
- BIOL 1870: Techniques and Clinical Applications in Pathobiology
- CHEM 0350: Organic Chemistry
- CHEM 0360: Organic Chemistry
- MATH 0090: Introductory Calculus, Part I
- MATH 0170: Advanced Placement Calculus
- MATH 0190: Advanced Placement Calculus (Physics/Engineering)
- MATH 1610: Probability
- MATH 1620: Mathematical Statistics
- PHYS 0560: Experiments in Modern Physics
- PHYS 1510: Advanced Electromagnetic Theory
- PHYS 1560: Modern Physics Laboratory
- PHYS 2620F: Selected Topics in Molecular Biophysics

1 A senior thesis is required. This is to be prepared in connection with under the direction of a faculty supervisor. The topic may be in a related department or of interdisciplinary nature. In any event, a dissertation must be submitted.

**Biological Physics Track for the Sc.B. degree**

**Foundations of Physics**

- PHYS 0070: Analytical Mechanics
- or PHYS 0050: Foundations of Mechanics
- or ENGN 0040: Dynamics and Vibrations
- PHYS 0160: Introduction to Relativity, Waves and Quantum Physics

- or PHYS 0060: Foundations of Electromagnetism and Modern Physics
- PHYS 0470: Electricity and Magnetism
- PHYS 0500: Advanced Classical Mechanics
- PHYS 1410: Quantum Mechanics A
- PHYS 1530: Thermodynamics and Statistical Mechanics

Select one of the following:

**Series A**

- PHYS 0720: Methods of Mathematical Physics

**Series B**

- Select one of the following:
  - APMA 0330: Methods of Applied Mathematics I
  - APMA 0350: Applied Ordinary Differential Equations
  - MATH 1110: Ordinary Differential Equations

And select one of the following:

- MATH 0180: Intermediate Calculus
- MATH 0200: Intermediate Calculus (Physics/Engineering)
- MATH 0350: Honors Calculus
- MATH 0520: Linear Algebra
- MATH 0540: Honors Linear Algebra

**Basic Biology and Chemistry**

- BIOL 0200: The Foundation of Living Systems (or placement out of BIOL 0200)
- BIOL 0500: Cell and Molecular Biology
- CHEM 0330: Equilibrium, Rate, and Structure

**Advanced Biophysical Topics and Techniques**

- PHYS 1610: Biological Physics
- PHYS 1990: Senior Conference Course

**Elective Courses (four chosen from the following list, with at least two 1000-level courses, or additional courses approved by the concentration advisor):**

- APMA 0360: Applied Partial Differential Equations I
- APMA 0410: Mathematical Methods in the Brain Sciences
- APMA 0650: Quantitative Models of Biological Systems
- APMA 1080: Inference in Genomics and Molecular Biology
- BIOL 0280: Biochemistry
- BIOL 0407: Genetics
- BIOL 1050: Biology of the Eukaryotic Cell
- BIOL 1200: Protein Biophysics and Structure
- BIOL 1270: Advanced Biochemistry
- BIOL 1870: Techniques and Clinical Applications in Pathobiology
- CHEM 0350: Organic Chemistry
- CHEM 0360: Organic Chemistry
- MATH 0090: Introductory Calculus, Part I
- MATH 0170: Advanced Placement Calculus
- MATH 0190: Advanced Placement Calculus (Physics/Engineering)
- MATH 1610: Probability
- MATH 1620: Mathematical Statistics
- PHYS 0560: Experiments in Modern Physics
- PHYS 1510: Advanced Electromagnetic Theory
- PHYS 1560: Modern Physics Laboratory
- PHYS 2620F: Selected Topics in Molecular Biophysics

1 A senior thesis is required. This is to be prepared in connection with under the direction of a faculty supervisor. The topic may be in a related department or of interdisciplinary nature. In any event, a dissertation must be submitted.
## Mathematical Physics Track for the A.B. degree

**Prerequisites:**
- MATH 0090: Introductory Calculus, Part I 1
- or MATH 0100: Introductory Calculus, Part II
- or MATH 0190: Advanced Placement Calculus (Physics/Engineering)
- PHYS 0050: Foundations of Mechanics 1
- or PHYS 0070: Analytical Mechanics

**Mathematics Courses**
- MATH 0180: Intermediate Calculus 1
- & MATH 0200: Honors Calculus
- or MATH 0350: Honors Linear Algebra
- or PHYS 0720: Methods of Mathematical Physics

**Physics Courses**
- PHYS 0060: Foundations of Electromagnetism and Modern Physics 1
- or PHYS 0160: Introduction to Relativity, Waves and Quantum Physics
- PHYS 0470: Electricity and Magnetism 1
- PHYS 0500: Advanced Classical Mechanics 1
- PHYS 0560: Experiments in Modern Physics 1

Select at least two of the following:
- PHYS 1410: Quantum Mechanics A 2
- PHYS 1420: Quantum Mechanics B
- PHYS 1510: Advanced Electromagnetic Theory
- PHYS 1530: Thermodynamics and Statistical Mechanics
- PHYS 1560: Modern Physics Laboratory

### Total Credits: 18-20

1. Concentrators are required to take at least one course in mathematics and one in physics in each of their last two semesters.

## Mathematical Physics Track for the Sc.B. degree

**Prerequisites:**
- Select one of the following series:
  - PHYS 0070 & PHYS 0160: Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics 2
  - PHYS 0050 & PHYS 0060: Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics

Select one of the following:
- MATH 0190: Advanced Placement Calculus (Physics/Engineering) 1

### Total Credits: 17-18

1. Select Series A alone or two from Series B as indicated.
2. A senior thesis is required. This is to be prepared in connection with under the direction of a faculty supervisor. The topic may be in a related department or of interdisciplinary nature. In any event, a dissertation must be submitted.

### Mathematics Courses

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MATH 090</td>
<td>Introductory Calculus, Part I</td>
</tr>
<tr>
<td>&amp; MATH 0100</td>
<td>Introductory Calculus, Part II</td>
</tr>
<tr>
<td>or MATH 0190</td>
<td>Advanced Placement Calculus (Physics/Engineering)</td>
</tr>
<tr>
<td>PHYS 0050</td>
<td>Foundations of Mechanics</td>
</tr>
<tr>
<td>or PHYS 0070</td>
<td>Analytical Mechanics</td>
</tr>
</tbody>
</table>

### Physics Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0060</td>
<td>Foundations of Electromagnetism and Modern Physics</td>
</tr>
<tr>
<td>or PHYS 0160</td>
<td>Introduction to Relativity, Waves and Quantum Physics</td>
</tr>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
</tr>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 0560</td>
<td>Experiments in Modern Physics</td>
</tr>
</tbody>
</table>

Select at least two of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1410</td>
<td>Quantum Mechanics A</td>
</tr>
<tr>
<td>PHYS 1420</td>
<td>Quantum Mechanics B</td>
</tr>
<tr>
<td>PHYS 1510</td>
<td>Advanced Electromagnetic Theory</td>
</tr>
<tr>
<td>PHYS 1530</td>
<td>Thermodynamics and Statistical Mechanics</td>
</tr>
<tr>
<td>PHYS 1560</td>
<td>Modern Physics Laboratory</td>
</tr>
</tbody>
</table>

### Total Credits: 18-20

1. A senior thesis is required. This is to be prepared in connection with under the direction of a faculty supervisor.

## Physics and Philosophy

The Physics and Philosophy concentration is for students with a deep interest in physics who do not need to acquire the laboratory and computational skills of a professional physicist. The concentration allows students to grapple with computational problems and deepen their investigation of conceptual and epistemological issues. By the end of the program, concentrators possess an excellent conceptual understanding of the most philosophically interesting physics, relativity and quantum mechanics.

This concentration should prepare a student either for graduate study, especially in a history and philosophy of science (HPS) program, or for employment in science education or journalism. Other professions such as law and medicine will look favorably on such concentrators for having versatile interests and being able to master difficult material. The concentration may serve as an excellent preparation for a law school since physics and philosophy both exercise a rigorous approach to problems of immediate relevance to life but at the same time assume two complimentary and sometimes competing viewpoints.

### Advising

Concentration advisors from the Departments of Physics and Philosophy will guide students working towards the A.B. degree.

## Curriculum

The curriculum builds around the fields of physics that have had the biggest impact on philosophy, especially Quantum Physics, and the fields of philosophy most relevant for physics, such as Epistemology, Metaphysics and Philosophy of Physics. It is strongly recommended that students complete at least one relevant history course.

There are 11 required courses (5 in Physics, 5 in Philosophy or History, one course in mathematics) and a final project. The choice of the courses is dictated by the following considerations. The field of physics with both deepest philosophical implications and deepest influence on the rest of physics is Quantum Mechanics. Thus, a 1000-level course in Quantum Mechanics or a closely related field such as Statistical Mechanics is indispensable. The second field of physics most relevant for the concentration is Relativity. This field touches upon and serves as a foundation for a broad list of subjects with major philosophical implications of their own, for example: PHYS 1170, PHYS 1280, PHYS 1510, PHYS 1100. This requires another 1000-level physics course in the concentration. 1000-
level Physics courses cannot be taken without certain preliminary work, most importantly, PHYS 0470, which serves as a prerequisite for most higher-level physics courses and which relies in turn on PHYS 0160 or PHYS 0060. Another lower-level physics course is necessary for a student to develop familiarity with the tools which have been employed in producing the physics knowledge.

A natural introduction into philosophy of physics comes from a course in Early Modern Philosophy. To a large extent, Early Modern Philosophy was shaped by scholars who combined interest in philosophy and physics (e.g., Rene Descartes, Blaise Pascal, Gottfried Wilhelm Leibniz). The influence of the XVII century physics revolution on other central figures such as Kant is unquestionable. Early Modern Philosophy sets an intellectual stage for many subsequent developments in the Philosophy of Physics and directly addresses some of the most perplexing issues like the connection (or lack thereof) between physics and religion. The core of the Philosophy requirement involves two courses in Epistemology, Metaphysics and Philosophy of Science. One course in this field would not be sufficient due to its very broad nature. Students are strongly advised to take a relevant History course. This requirement can be substituted by an additional philosophy course to reflect interests of those students who want a deeper background in Epistemology, Metaphysics and Philosophy of Science or have other related interests such as Ancient Natural Philosophy.

In addition to the above philosophy courses, PHIL 0210 (Science, Perception, and Reality) serves as a gateway into the concentration. It may be substituted by other relevant courses such as PHYS 0100 (Flat Earth to Quantum Uncertainty: On the Nature and Meaning of Scientific Explanation).

A course in calculus is a prerequisite for most physics and some philosophy classes.

**Required courses for the A.B. degree are listed below:**

**Physics Courses**

Select one of the following introductory courses in Modern Physics:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0060</td>
<td>Foundations of Electromagnetism and Modern Physics</td>
</tr>
<tr>
<td>PHYS 0160</td>
<td>Introduction to Relativity, Waves and Quantum Physics</td>
</tr>
</tbody>
</table>

One course in Special Relativity and Classical Field Theory:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0470</td>
<td>Electricity and Magnetism</td>
</tr>
</tbody>
</table>

Select one of the following in Methods of Experimental and Theoretical physics:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 0500</td>
<td>Advanced Classical Mechanics</td>
</tr>
<tr>
<td>PHYS 0560</td>
<td>Experiments in Modern Physics</td>
</tr>
</tbody>
</table>

Select one of the following in Quantum Mechanics and its applications:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1410</td>
<td>Quantum Mechanics A</td>
</tr>
<tr>
<td>PHYS 1530</td>
<td>Thermodynamics and Statistical Mechanics</td>
</tr>
</tbody>
</table>

One more 1000-level Physics course

**Philosophy Courses**

Select one of the following gateway courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 0210</td>
<td>Science, Perception and Reality</td>
</tr>
<tr>
<td>PHIL 0100</td>
<td>Critical Reasoning</td>
</tr>
<tr>
<td>PHIL 0060</td>
<td>Modern Science and Human Values</td>
</tr>
<tr>
<td>PHIL 0540</td>
<td>Logic</td>
</tr>
</tbody>
</table>

Select one of the following courses in Early Modern Philosophy:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 0360</td>
<td>Early Modern Philosophy</td>
</tr>
<tr>
<td>PHIL 1700</td>
<td>Locke, Berkeley, Hume and Others</td>
</tr>
<tr>
<td>PHIL 1710</td>
<td>17th Century Continental Rationalism</td>
</tr>
<tr>
<td>PHIL 1720</td>
<td>Kant: The Critique of Pure Reason</td>
</tr>
</tbody>
</table>

Select two of the following courses in Epistemology, Metaphysics and Philosophy of Science:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 1590</td>
<td>Philosophy of Science</td>
</tr>
<tr>
<td>PHIL 1620</td>
<td>Philosophy of Quantum Mechanics</td>
</tr>
<tr>
<td>PHIL 1660</td>
<td>Metaphysics</td>
</tr>
<tr>
<td>PHIL 1670</td>
<td>Time</td>
</tr>
<tr>
<td>PHIL 1750</td>
<td>Epistemology</td>
</tr>
</tbody>
</table>

**History Courses**

Select one of the following courses in History of Science:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 0522N</td>
<td>Reason, Revolution and Reaction in Europe</td>
</tr>
<tr>
<td>HIST 1825M</td>
<td>Science at the Crossroads</td>
</tr>
<tr>
<td>HIST 1976I</td>
<td>Imperialism and Environmental Change</td>
</tr>
</tbody>
</table>

**Calculus**

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 0180</td>
<td>Intermediate Calculus</td>
</tr>
<tr>
<td>MATH 0200</td>
<td>Intermediate Calculus (Physics/Engineering)</td>
</tr>
<tr>
<td>MATH 0350</td>
<td>Honors Calculus</td>
</tr>
</tbody>
</table>

**Final Project**

Select one of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHIL 1990</td>
<td>Independent Studies</td>
</tr>
<tr>
<td>PHYS 1990</td>
<td>Senior Conference Course</td>
</tr>
</tbody>
</table>

A course from the PHIL 0990 Senior Seminar series

Any graduate seminar in Philosophy

| Total Credits | 12 |

1 Or one more Philosophy course.

**Honors**

Seniors wishing to earn honors by presenting a senior honors thesis should consult their concentration advisor during their sixth semester or at the start of the seventh semester concerning procedures and requirements. Students may earn honors by presenting a senior thesis judged to be of honors quality by two readers. In addition to completing the usual nonhonors requirements, the student should also have a grade point average of over 3.4 in physics, philosophy and history of science courses (of which at least five must be taken for a letter grade). Honors theses are usually prepared over a period of two semesters with an advisor from the Department of Physics or the Department of Philosophy.

**Political Science**

Why do Hindus and Muslims live in harmony in one city and fight bitterly in another just a few miles away? Why is the U.S. the only industrialized nation without a complete national health insurance? What is the legacy of slavery in the U.S.? Why are there so few women in Congress? How does radicalism in the Middle East changing? Why and how does democracy flourish? Just what is democracy? How do emotions shape our political behavior? What do war movies tell us about the USA? Would less government lead to more social justice? What is social justice? How does smuggling (of drugs, guns, and people) reshape international relations? How do immigrants see the American Dream? What is the American dream?

Political science is about questions like these. You can grapple with every one of them—and many more—in the classrooms of the Brown political science department. We study how people—nations, regions, cities, communities—live their common lives. How people solve (or duck) their common problems. How people govern themselves. How they think, talk, argue, fight, and vote. Students passionate about social challenges may also choose to pursue the Engaged Scholars Program, which allows them to connect theory and practice and gain hands-on experience working with community partners.

The undergraduate concentration is organized around three broad tracks, or programs of study: American politics, international and comparative politics, and political theory. Twelve courses are required overall: ten within the Department of Political Science and two from areas outside the department related to your chosen track. Thirteen courses are required if the methods requirement is fulfilled with a course outside the department.
Requirements:

Two introductory courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 0010</td>
<td>Introduction to the American Political Process</td>
</tr>
<tr>
<td>or POLS 0110</td>
<td>Introduction to Political Thought</td>
</tr>
<tr>
<td>or POLS 0200</td>
<td>Introduction to Comparative Politics</td>
</tr>
<tr>
<td>or POLS 0400</td>
<td>Introduction to International Politics</td>
</tr>
</tbody>
</table>

For the American politics track, the following two introductory courses are required:

- and -

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 0110</td>
<td>Introduction to Comparative Politics</td>
</tr>
<tr>
<td>or POLS 0200</td>
<td>Introduction to International Politics</td>
</tr>
</tbody>
</table>

For the international and comparative politics track; the following two introductory courses are required:

- and -

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 0010</td>
<td>Introduction to the American Political Process</td>
</tr>
<tr>
<td>or POLS 0110</td>
<td>Introduction to Political Thought</td>
</tr>
</tbody>
</table>

For the Political Theory track, the following two introductory courses are required:

- and -

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 0010</td>
<td>Introduction to Political Thought</td>
</tr>
<tr>
<td>or POLS 0200</td>
<td>Introduction to Comparative Politics</td>
</tr>
<tr>
<td>or POLS 0400</td>
<td>Introduction to International Politics</td>
</tr>
</tbody>
</table>

One course in the American politics subfield

One course in the political theory subfield

Two courses in the international and comparative politics subfield

Three upper-level courses in the chosen subfield

One methods course from Political Science:

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLS 0500</td>
<td>Foundations of Political Analysis</td>
</tr>
<tr>
<td>POLS 1600</td>
<td>Political Research Methods</td>
</tr>
</tbody>
</table>

One research seminar from the POLS 1820, 1821, 1822, 1823 or 1824 offerings that is track related

Two upper-level courses from outside the department related to the specialized track, chosen with the approval of the concentration advisor.

One research seminar from the POLS 1820, 1821, 1822, 1823 or 1824 offerings that is track related

Two upper-level courses from outside the department related to the specialized track, chosen with the approval of the concentration advisor.

To obtain an advisor contact the Concentration Coordinator Patti Gardner.

Portuguese and Brazilian Studies

Portuguese and Brazilian Studies examines the Portuguese-speaking world, a large and diverse geographical and cultural area spread over five continents. Inhabited by two hundred fifty million people, this area includes Brazil, Continental and Insular Portugal, Lusophone Africa and Luso-America. Although concentrators are encouraged to examine the global nature of the Portuguese-speaking world, typically they focus on one of the specific geographical entities mentioned above. Concentrators will strengthen their Portuguese language skills (Portuguese 400 or the equivalent is a pre-requisite) and explore relevant Lusophone literature, education, history and social science. The concentration offers one program in language and literature and another that is interdisciplinary. Most concentrators study abroad in either Brazil or Portugal.

Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>POBS 0610</td>
<td>Mapping Portuguese-Speaking Cultures: Brazil</td>
</tr>
<tr>
<td>POBS 0620</td>
<td>Mapping Portuguese-Speaking Cultures: Portugal and Africa</td>
</tr>
<tr>
<td>POBS 1030</td>
<td>Portuguese Stylistics: Advanced Language Study and Creative Writing</td>
</tr>
<tr>
<td>POBS 1800E</td>
<td>The Brazilian Puzzle: Confronting the Post-Colonial Legacy</td>
</tr>
<tr>
<td>POBS 1800F</td>
<td>The Lusophone World and the Struggle for Modernity</td>
</tr>
</tbody>
</table>

Four additional courses from Portuguese and Brazilian Studies and/or related departments, such as History, Africana Studies, Political Science, Anthropology, Sociology, Music, and the Watson Institute. These courses are intended to develop students' specific interests within the concentration.

Total Credits

1. One or both of these courses may be replaced by more advanced literature courses conducted in Portuguese.
2. Conducted in Portuguese, the seminar brings the concentrators together for an interdisciplinary consideration of key topics in the Portuguese-speaking world. A research paper written in Portuguese is required.

Senior Project (optional)

In addition to taking a POBS 1800-series concentration seminar, students may choose to complete a senior project attached to any course in Portuguese and Brazilian Studies and related fields, including the Concentration Seminar, the latter possibility to be made at the discretion of the instructor. The advisor of the senior project is the professor of the course from which the project stems. Projects are not limited to papers, and may include short documentaries, a visual arts project, or an oral history project.

Psychology

Psychology encompasses a range of phenomena and levels of analysis in pursuit of three goals: to deepen understanding of cognitive and neural mechanisms of sensation, perception, learning, and emotion; to probe the biological and evolutionary foundations of behavior; and to clarify the social perception and assessment of individuals and groups. Students pursuing the Bachelor of Arts or Bachelor of Science take foundation courses in the field's major sub-disciplines, including perception, cognition, developmental, behavioral neuroscience, and social psychology. Students also take a course in quantitative methods, and select from an array of seminars on specialized topics and laboratory courses that focus on research design and state-of-the-art techniques. Students pursuing a Bachelor of Science must complete both a research methods and a laboratory course and four additional science courses related to the same intellectual theme as the elective courses. The concentration in Psychology prepares students for careers in research, teaching, clinical psychology, business, law, and education, among others.
The A.B. concentration requires 12 courses. The Sc.B. concentration additionally requires 1 laboratory course and 4 approved science courses, totaling to 17 required courses.

**Common Core**

The introductory course, “CLPS 0010 Mind, Brain, and Behavior,” surveys the broad territory of the scientific study of the mind as uniquely represented by our department. The territory includes neural processes, perception, learning, memory, emotion, language, social development, social judgment, personality, and mental illness. The course could be taken by students interested in the CLPS concentrations, as an introduction at the beginning of one’s college career or as an integration after having completed a number of specialized courses in a particular concentration. AP or IB Psychology credit cannot be used as a substitute for CLPS 0010.

Careers in Psychology and related fields require familiarity with statistics. Therefore, the Psychology concentration requires a course in Quantitative Methods (CLPS 0900). CLPS 0900 is a prerequisite for most of the laboratory courses, so concentrators should plan to take this course by their fourth semester. Students may substitute APMA 1660, PHP 1501, or SOC 1100 with the approval of a concentration advisor. The department does not grant concentration credit for AP Statistics, regardless of score.

Another element in the Psychology concentration is a course on research methods. Research Methods and Design (CLPS 1900 or CLPS 1901) is the preferred course for fulfilling this requirement. This course builds on the introductory statistics course and exposes students to a variety of topics in the psychological sciences: to empirical methods (e.g., surveys, chronometry, eye tracking, brain imaging), to common designs (e.g., factorial experimental, correlational, longitudinal), to research ethics, and to best practices of literature review. CLPS 1900/CLPS 1901 (or an approved alternative laboratory course; consult with the Psychology advisors for details) should be taken before the senior year.

**Foundation**

To provide students with a solid foundation of knowledge in their area of concentration, the Psychology concentration requires four foundation courses. Students select one course from each of the following areas: Social/Personality, Perception/Cognition, Development, and Learning/Animal Behavior/Behavioral Neuroscience.

**Electives**

Concentrators will select four additional courses that examine in greater depth topics of special interest to them. The CLPS courses designed to count as electives will often have foundation courses as prerequisites and may include laboratory courses, or seminars. Students may choose up to two courses outside of CLPS as electives. Electives should fit into a coherent intellectual theme, and should be chosen in consultation with your Psychology advisor.

**Capstone**

Concentrators will additionally take either a seminar course or an independent research course (CLPS 1970, 1980) to serve as their capstone experience. See the Psychology advisors for a list of approved seminars.

**Additional requirements for Sc.B.**

In line with university expectations, the Sc.B. requirements include a greater number of courses and especially science courses. The definition of “science” is flexible. Some of these courses will be outside of CLPS, but several CLPS courses might fit into a coherent package as well. In addition, the Sc.B. degree also requires a laboratory course (in addition to CLPS 1900/CLPS 1901 or its alternative) to provide these students with in-depth exposure to research methods in a particular area of the science of the mind. Lists of approved laboratory courses can be obtained from the Psychology advisors.

**Honors Requirement**

The Honors Program in Psychology gives undergraduates a special opportunity to carry out a research project under the direction of a faculty member. The program also provides the opportunity for outstanding senior concentrators to receive their undergraduate degree with Honors. Participation in the program allows students to develop an understanding of research and acquire research skills and background.

Candidates for Honors in Psychology must meet all of the requirements of the concentration as described above. Candidates submit their application for the program in semester 7. We encourage students to seek out a faculty mentor prior to semester 7 as well as complete certain course requirements before semester 7. This includes completion of the statistics and laboratory requirements. A 3.5 grade-point average in the concentration is required for admission to the Honors program. Please refer to the CLPS Honors Program page for detailed information about the specific requirements for the Honors program in Psychology.

**FOR DETAILED UPDATES, PLEASE REFER TO THE COGNITIVE, LINGUISTIC, AND PSYCHOLOGICAL SCIENCES (CLPS) UNDERGRADUATE PAGE.**

**Requirements for the A.B. degree**

### STANDARD PROGRAM FOR THE A.B. DEGREE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0010</td>
<td>Mind, Brain and Behavior: An Interdisciplinary Approach</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1900</td>
<td>Research Methods And Design ((or approved alternative))</td>
<td>1</td>
</tr>
<tr>
<td>or CLPS 1901</td>
<td>Research Methods</td>
<td>1</td>
</tr>
<tr>
<td>One approved course in Social/Personality:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0700</td>
<td>Social Psychology</td>
<td></td>
</tr>
<tr>
<td>CLPS 0701</td>
<td>Personality</td>
<td></td>
</tr>
<tr>
<td>CLPS 0710</td>
<td>The Psychology and Philosophy of Happiness</td>
<td></td>
</tr>
<tr>
<td>One approved course in Perception/Cognition:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0200</td>
<td>Human Cognition</td>
<td></td>
</tr>
<tr>
<td>CLPS 0450</td>
<td>Brain Damage and the Mind</td>
<td></td>
</tr>
<tr>
<td>CLPS 0500</td>
<td>Perception and Mind</td>
<td></td>
</tr>
<tr>
<td>One approved course in Development:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0600</td>
<td>Developmental Psychology</td>
<td></td>
</tr>
<tr>
<td>CLPS 0610</td>
<td>Children’s Thinking: The Nature of Cognitive Development</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0620</td>
<td>Social and Moral Development</td>
<td></td>
</tr>
<tr>
<td>One approved course in Learning/Animal Behavior/Behavioral Neuroscience:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0100</td>
<td>Learning and Conditioning</td>
<td></td>
</tr>
<tr>
<td>CLPS 0110</td>
<td>Animal Behavior</td>
<td></td>
</tr>
<tr>
<td>CLPS 0150</td>
<td>Behavioral Neuroscience: Introduction to Biological Psychiatry</td>
<td>1</td>
</tr>
<tr>
<td>Four approved Electives related to Psychology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Independent Study (CLPS 1970, CLPS 1980) or approved seminar</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Total Credits**

12

**Requirements Specific for the Sc.B. degree**

### STANDARD PROGRAM FOR THE SC.B. DEGREE

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLPS 0010</td>
<td>Mind, Brain and Behavior: An Interdisciplinary Approach</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 0900</td>
<td>Statistical Methods</td>
<td>1</td>
</tr>
<tr>
<td>CLPS 1900</td>
<td>Research Methods And Design ((or approved alternative))</td>
<td>1</td>
</tr>
<tr>
<td>or CLPS 1901</td>
<td>Research Methods</td>
<td>1</td>
</tr>
<tr>
<td>One approved course in Social/Personality:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CLPS 0700</td>
<td>Social Psychology</td>
<td></td>
</tr>
<tr>
<td>CLPS 0701</td>
<td>Personality</td>
<td></td>
</tr>
</tbody>
</table>
Public Health

Public Health is an interdisciplinary concentration through which students examine a variety of health issues, including population health and disease, health policy, cross-cultural and international aspects of health, the organizational and social structures through which health services are delivered and received, and the public health system. Courses in the concentration allow students to explore the ways in which the social, political, behavioral and biological sciences contribute to the understanding of patterns of population distributions of health and disease. The concentration also provides students with courses in basic research and methods and statistics necessary for problem solving and critical thinking.

Requirements for Class of 2023 and Beyond

1. Core Courses (non-substitutable; 5 required for all students)
   - PHP 0310 Health Care in the United States 1
   - PHP 0320 Introduction to Public Health 1
   - PHP 0850 Fundamentals of Epidemiology 1
   - PHP 1501 Essentials of Data Analysis 1
   - PHP 1910 Public Health Senior Seminar 1

2. Environmental Health and Policy (select one of the following):
   - PHP 1101 World of Food: Personal to Global Perspectives on Nutrition, Agriculture and Policy 1
   - PHP 1700 Current Topics in Environmental Health

3. Health, Health Care Systems, and Policy (select one of the following):
   - PHP 0650 From Manufacturer to Patient: Why is the Cost of Prescription Drugs So Darn High? 1
   - PHP 1100 Comparative Health Care Systems

4. Social and Behavioral Science for Prevention (select one of the following):
   - PHP 1101 World of Food: Personal to Global Perspectives on Nutrition, Agriculture and Policy 1
   - PHP 1540 Alcohol Use and Misuse
   - PHP 1600 Obesity in the 21st Century: Causes, Consequences and Countermeasures
   - PHP 1610 Tobacco, Disease and the Industry: cigs, e-cigs and more
   - PHP 1680U Intersectionality and Health Inequities
   - PHP 1690 Technology and Health Behavior Change
   - PHP 1920 Social Determinants of Health

5. Global Health Elective (select one of the following): 1
   - PHP 1070 The Burden of Disease in Developing Countries
   - PHP 1160 The Global Burden of Mental Illness: A Public Health Approach
   - PHP 1400 HIV/AIDS in Africa: A Multidisciplinary Approach to Support HIV/AIDS Care and Treatment Programs
   - PHP 1802S Human Security and Humanitarian Response: Increasing Effectiveness and Accountability

6. Health Disparities Elective (select one of the following): 1
   - PHP 1680I Pathology to Power: Disability, Health and Community
   - PHP 1680U Intersectionality and Health Inequities
   - PHP 1820C Designing Education for Better Prisoner and Community Health
   - PHP 1920 Social Determinants of Health

7. Biology (select one of the following): 1
   - BIOL 0200 The Foundation of Living Systems
   - BIOL 0470 Genetics
   - BIOL 0510 Introductory Microbiology
   - BIOL 0530 Principles of Immunology
   - BIOL 0800 Principles of Physiology

8. Humanities/Fine Arts/Humanistic Social Sciences for Public Health (select one of the following): 1
   - AFRI 0550 African American Health Activism from Emancipation to AIDS
   - AFRI 1060W Policy, Culture and Discourse that Shape Health and Access to Healthcare
   - AFRI 1060Z Race, Sexuality, and Mental Disability History (HMAN 1973A)
   - AMST 1600C The Anti-Trafficking Savior Complex: Saints, Sinners, and Modern-Day Slavery
   - AMST 1601 Health and Healing in American History (STS 1110, GNSS 1960B)
   - CLPS 0710 The Psychology and Philosophy of Happiness (PHIL 0650)
   - COLT 0610Y Women's Writing in the Arab World
   - COLT 1810P Literature and Medicine
   - COST 0100 Introduction to Contemplative Studies
   - ENGL 1030C Writing Science
   - ENGL 1140D Writing Diversity
   - ETHN 1750B Treaty Rights and Food Fights: Eating Local in Indian Country
   - ETHN 1890J Native American Environmental Health Movements
   - GNSS 0900C Reproductive Health: Science and Politics
   - GNSS 0120 Introduction to Gender and Sexuality Studies
   - GNSS 1961H Literary Imaginations of the Law: Human Rights and Literature
### Requirements for Classes of 2021 and 2022

1. Core Courses: (non-substitutable; 4 required for honors, 5 for non-honors)
   - **PHP 0310** Health Care in the United States 1
     This course is best taken as a freshman or sophomore.
   - **PHP 0320** Introduction to Public Health 1
     This course is a prerequisite to the Fundamentals of Epidemiology (PHP 0850) and is best taken as a freshman or sophomore.
   - **PHP 0850** Fundamentals of Epidemiology 1
     This course is best taken by end of junior year before PHP 1910, Senior Seminar.
   - **PHP 1501** Essentials of Data Analysis 1
     This course is best taken by end of junior year before PHP 1910, Senior Seminar.
   - **PHP 1910** Public Health Senior Seminar 1
     This course is required for all non-honors seniors. PHP 0320 and PHP 0310 are required prerequisites.

2. Environmental Health and Policy (Select one of the following): 1
   - **PHP 1101** World of Food: Personal to Global Perspectives on Nutrition, Agriculture and Policy
   - **PHP 1700** Current Topics in Environmental Health
   - **PHP 1710** Climate Change and Human Health

3. Health, Health Care Systems and Policy (Select one of the following): 1
   - **PHP 0650** From Manufacturer to Patient: Why is the Cost of Prescription Drugs So Darn High?
   - **PHP 1070** The Burden of Disease in Developing Countries
   - **PHP 1100** Comparative Health Care Systems
   - **PHP 1500** Global Health Nutrition
   - **PHP 1520** Emergency Medical Systems: An Anatomy of Critical Performance
   - **PHP 1530** Case Studies in Public Health: The Role of Governments, Communities and Professions
   - **PHP 1802S** Human Security and Humanitarian Response: Increasing Effectiveness and Accountability
   - **PHP 1820** Designing Education for Better Prisoner and Community Health
   - **ECON 1360** Health Economics
   - **IAPA 1804E** Health Policy Challenges

4. Social and Behavioral Science for Prevention (Select one of the following): 1
   - **PHP 1010** Doctors and Patients: Clinical Communication in Medicine
   - **PHP 1400** HIV/AIDS in Africa: A Multidisciplinary Approach to Support HIV/AIDS Care and Treatment Programs
   - **PHP 1540** Alcohol Use and Misuse
   - **PHP 1600** Obesity in the 21st Century: Causes, Consequences and Countermeasures
   - **PHP 1610** Tobacco, Disease and the Industry: cigs, e-cigs and more
   - **PHP 1680U** Intersectionality and Health Inequities
   - **PHP 1880** Meditation, Mindfulness and Health
   - **PHP 1885** Measuring Mindfulness
   - **PHP 1890** The Craving Mind
   - **PHP 1920** Social Determinants of Health
   - **PHP 2355** Designing and Evaluating Public Health Interventions
   - **POLS 1740** Politics of Food

5. Biology (Select one of the following) 1
   - **BIOL 1820** Environmental Health and Disease
   - **ENVS 0705** Equity and the Environment: Movements, Scholarship, Solutions
   - **ENVS 1580** Environmental Stewardship and Resilience in Urban Systems

6. Humanities/Fine Arts/Humanistic Social Sciences Course for Public Health (Select one of the following) 1
   - **AFRI 0550** African American Health Activism from Emancipation to AIDS
   - **AFRI 1060W** Policy, Culture and Discourse that Shape Health and Access to Healthcare

Total Credits: 12
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>AFRI 1060Z</td>
<td>Race, Sexuality, and Mental Disability History</td>
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<tr>
<td>AMST 1600C</td>
<td>The Anti-Trafficking Savior Complex: Saints, Sinners, and Modern-Day Slavery</td>
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<tr>
<td>AMST 1601</td>
<td>Health and Healing in American History</td>
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<tr>
<td>COST 0100</td>
<td>Introduction to Contemplative Studies</td>
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<tr>
<td>ENGL 1030C</td>
<td>Writing Science</td>
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<tr>
<td>ETHN 1750B</td>
<td>Treaty Rights and Food Rights: Eating Local in Indian Country</td>
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<tr>
<td>ETHN 1890J</td>
<td>Native American Environmental Health Movements</td>
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<td>GNSS 0090C</td>
<td>Reproductive Health: Science and Politics</td>
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<tr>
<td>GNSS 0120</td>
<td>Introduction to Gender and Sexuality Studies</td>
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<tr>
<td>GNSS 1961H</td>
<td>Literary Imaginations of the Law: Human Rights and Literature</td>
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<tr>
<td>HISP 0490A</td>
<td>Spanish for Health Care Workers</td>
</tr>
<tr>
<td>HISP 0750Q</td>
<td>Health, Illness and Medicine in Spanish and Spanish American Literature and Film</td>
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<tr>
<td>HIST 0150H</td>
<td>Foods and Drugs in History</td>
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<tr>
<td>HIST 0270B</td>
<td>From the Columbian Exchange to Climate Change: Modern Global Environmental History</td>
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<tr>
<td>HIST 0286A</td>
<td>History of Medicine I: Medical Traditions in the Old World Before 1700</td>
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<tr>
<td>HIST 1080</td>
<td>Humanitarianism and Conflict in Africa</td>
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<tr>
<td>HIST 1830M</td>
<td>From Medieval Bedlam to Prozac Nation: Intimate Histories of Psychiatry and Self</td>
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<tr>
<td>HIST 1977I</td>
<td>Gender, Race, and Medicine in the Americas</td>
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<tr>
<td>HIST 1960Q</td>
<td>Medicine and Public Health in Africa</td>
</tr>
<tr>
<td>HIST 1972H</td>
<td>U.S. Human Rights in a Global Age</td>
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<tr>
<td>HMAN 1970G</td>
<td>International Perspectives on NGOs, Public Health, and Health Care Inequalities</td>
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<tr>
<td>LACA 1503H</td>
<td>Sexuality, Human Rights and Health: Latin American Perspective and Brazilian Experiences</td>
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<tr>
<td>PHIL 0060</td>
<td>Modern Science and Human Values</td>
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<tr>
<td>PHIL 0260</td>
<td>Philosophy of Social Science</td>
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<tr>
<td>PHIL 0390</td>
<td>Global Justice</td>
</tr>
<tr>
<td>POBS 1501E</td>
<td>Histories of Global Health from Lusophone Africa: Biomedical Actions in Angola, Mozambique, Guinea</td>
</tr>
<tr>
<td>TAPS 1281W</td>
<td>Artists and Scientists as Partners</td>
</tr>
</tbody>
</table>

7. General Electives (Class of 2021: Select two)

General electives may be selected from: A. All PHP and BIOL course offerings; B. the approved content area electives (#2, #3, #4, and #5) listed above; or C. the approved general electives listed below. No more than one (1) BIOL course can count as a general elective.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHP 0030</td>
<td>Health of Hispaniola</td>
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<tr>
<td>PHP 0050</td>
<td>Pain and the Human Condition: Exploring the Science, Medicine, and Culture of Pain</td>
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<tr>
<td>PHP 1400</td>
<td>HIV/AIDS in Africa: A Multidisciplinary Approach to Support HIV/AIDS Care and Treatment Programs</td>
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<tr>
<td>PHP 1680I</td>
<td>Pathology to Power: Disability, Health and Community</td>
</tr>
<tr>
<td>AFRI 1060W</td>
<td>Policy, Culture and Discourse that Shape Health and Access to Healthcare</td>
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<tr>
<td>AMST 1601</td>
<td>Health and Healing in American History</td>
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<tr>
<td>AMST 1906P</td>
<td>Food in American Society and Culture</td>
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<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems: Environment, Development, and Governance</td>
</tr>
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<td>ANTH 0300</td>
<td>Culture and Health</td>
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<td>ANTH 1020</td>
<td>AIDS in Global Perspective</td>
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<td>ANTH 1242</td>
<td>Bioethics and Culture</td>
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<tr>
<td>ANTH 1300</td>
<td>Anthropology of Addictions and Recovery</td>
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<tr>
<td>ANTH 1310</td>
<td>International Health: Anthropological Perspectives</td>
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<tr>
<td>BIOL 0030</td>
<td>Principles of Nutrition (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 0040</td>
<td>Nutrition for Fitness and Physical Activity</td>
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<tr>
<td>BIOL 0140K</td>
<td>Conservation Medicine</td>
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<tr>
<td>BIOL 0180</td>
<td>The Biology of AIDS</td>
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<tr>
<td>BIOL 0190E</td>
<td>Botanical Roots of Modern Medicine</td>
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<tr>
<td>BIOL 0200</td>
<td>The Foundation of Living Systems (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 0470</td>
<td>Genetics (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 0530</td>
<td>Principles of Immunology (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 0800</td>
<td>Principles of Physiology (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 0860</td>
<td>Diet and Chronic Disease</td>
</tr>
<tr>
<td>BIOL 0920A</td>
<td>Controversies in Medicine (Human Biology/Physiology course)</td>
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<tr>
<td>BIOL 1920C</td>
<td>Social Contexts of Disease</td>
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<tr>
<td>CLPS 0700</td>
<td>Social Psychology</td>
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<tr>
<td>CLPS 1700</td>
<td>Abnormal Psychology</td>
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<tr>
<td>CLPS 1783</td>
<td>Nudge: How to Use Social Psychology to Create Social Change</td>
</tr>
<tr>
<td>ECON 0510</td>
<td>Development and the International Economy</td>
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<tr>
<td>EDUC 0800</td>
<td>Introduction to Human Development and Education</td>
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<tr>
<td>ENV 0490</td>
<td>Environmental Science in a Changing World</td>
</tr>
<tr>
<td>ENV 1105</td>
<td>Introduction to Environmental GIS</td>
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<tr>
<td>ETHN 1890J</td>
<td>Native American Environmental Health Movements</td>
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<tr>
<td>GNSS 0090C</td>
<td>Reproductive Health: Science and Politics</td>
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<tr>
<td>HMAN 1970G</td>
<td>International Perspectives on NGOs, Public Health, and Health Care Inequalities</td>
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<tr>
<td>NEUR 0010</td>
<td>The Brain: An Introduction to Neuroscience (Human Biology/Physiology course)</td>
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<tr>
<td>NEUR 0700</td>
<td>Psychoactive Drugs and Society</td>
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<tr>
<td>IAPA 1700E</td>
<td>Nonprofit Organizations</td>
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<tr>
<td>IAPA 1700F</td>
<td>Engaged Research Engaged Publics</td>
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<tr>
<td>IAPA 1803E</td>
<td>Social Entrepreneurship</td>
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<tr>
<td>POLS 1740</td>
<td>Politics of Food</td>
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<tr>
<td>SOC 0230</td>
<td>Sex, Gender, and Society</td>
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<td>SOC 0300B</td>
<td>Environment and Society</td>
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<tr>
<td>SOC 0300E</td>
<td>HIV/AIDS: Politics, Culture and Society</td>
</tr>
<tr>
<td>SOC 0300F</td>
<td>Unequal From Birth: Child Health From a Social Perspective</td>
</tr>
<tr>
<td>SOC 0300K</td>
<td>Inequalities and Health</td>
</tr>
<tr>
<td>SOC 1250</td>
<td>Perceptions of Mental Illness</td>
</tr>
</tbody>
</table>
SOC 1315  Macro-Organizational Theory: Organizations in Social Context
SOC 1410  Aging and the Quality of Life
SOC 1540  Human Needs and Social Services
SOC 1550  Sociology of Medicine
SOC 1870D  Aging and Social Policy
SOC 1871H  Social Perspectives on HIV/AIDS
SOC 1871N  Military Health: The Quest for Healthy Violence
STS 0700B  Science and Social Controversy
STS 1700C  Science and Technology Policy in the Global South
UNIV 0090  Meditation and the Brain: Applications in Basic and Clinical Science

Total Credits  12

Honors:

Honors Track, Classes of 2021 & 2022
An Honors track is available for students who qualify. For Classes of 2021 & 2022, Honors track students do not enroll in PHP 1910, Senior Seminar during the Fall semester of their senior year, but rather are required to enroll in PHP 1980 for both semesters of their senior year to conduct research and write the honors thesis. Thus, for Classes of 2021 & 2022, thirteen courses are required for completion of the concentration requirements for an honors track student.

Honors Track, Classes of 2023 & Beyond
For Classes of 2023 & beyond, Honors track students enroll in PHP 1910, Senior Seminar during Fall semester of their senior year as well as PHP 1980. Honors Thesis Prep during both semesters of their senior year to conduct research and write the honors thesis. Thus, for Classes of 2023 & beyond, fourteen courses are required for completion of the concentration requirements for an honors track student.

Please visit https://www.brown.edu/academics/public-health/undergraduate/curriculum/ for details or email Elizabeth Mellen (elizabeth_mellen@brown.edu) for more information.

Study Abroad/Study Away: Up to four courses taken elsewhere (study abroad or other transfer) may be applied to non-core courses (up to two per semester abroad). Meet with your concentration advisor to discuss and provide a syllabus for each course to be considered for transfer to your concentration plan.

Public Policy
Housed in the Watson Institute for International and Public Affairs, the concentration in public policy is organized around the interdisciplinary and comparative study of human societies, but with a particular focus on the rules and norms by which we govern ourselves. The concentration is grounded in the analysis of pressing social problems and the design, implementation, and evaluation of better policies and practices. This commitment to using knowledge to improve the life chances of people who occupy different positions of wealth and power, and who have competing and contentious ideas of about the common good, makes public policy a value-laden and political enterprise that is as much an art as it is a science. It is also a team sport that requires players with different skills and talents to work together across a wide variety of settings.

Students will learn how social, economic, and political issues become the object of public policy, how policy decisions are crafted, made and implemented, and as well as different strategies for evaluating their impact. The concentration draws its instructors from a wide variety of disciplines and offers students opportunities for engaged scholarship at the local, national, and global levels. With the support of the advisory team, students develop their own curriculum of study, integrating core courses with electives, internships, independent research, and a capstone experience. The Public Policy concentration will only accept new concentration students who qualify. For Classes of 2023 & beyond, Honors track students do not enroll in PHP 1910, Senior Seminar during Fall semester of their senior year, but rather are required to enroll in PHP 1980 for both semesters of their senior year to conduct research and write the honors thesis. Thus, for Classes of 2021 & 2022, thirteen courses are required for completion of the concentration requirements for an honors track student.

Required Courses: 10 courses + capstone
The Public Policy concentration will be available to students graduating through the class of 2023.

Core Courses:
IAPA 0110  Introduction to Public Policy  1
Ethics and Public Policy  1
POLS 1050  Ethics and Public Policy  1
Economics for Public Policy  1
ECON 1110  Intermediate Microeconomics  1
ECON 1130  Intermediate Microeconomics (Mathematical)  1
EDUC 1130  Economics of Education I  1
Statistics for Public Policy  1
POLS 1600  Political Research Methods  1
EDUC 1100  Introduction to Qualitative Research Methods  1
ECON 1620  Introduction to Econometrics  1
ECON 1630  Mathematical Econometrics I  1
SOC 1100  Introductory Statistics for Social Research  1
Policy Analysis and Program Evaluation  1
IAPA 1700A  Program Evaluation  1

Elective Courses: 1, 2, 3
Three Broad Elective Courses: May be taken in any policy area
Two more electives in one of the areas you have already studied
Sample electives may include the following:

Health Policy:
PHP 1100  Comparative Health Care Systems
PHP 1520  Emergency Medical Systems: An Anatomy of Critical Performance
PHP 1530  Case Studies in Public Health: The Role of Governments, Communities and Professions
IAPA 1804E  Health Policy Challenges

Technology Policy:
CSCI 1800  Cybersecurity and International Relations
POLS 1822X  Technology and International Politics
STS 1700C  Science and Technology Policy in the Global South

Environmental Policy:
ENVS 1350  Environmental Economics and Policy
ENVS 1410  Environmental Law and Policy
ENVS 1530  From Locke to Deep Ecology: Property Rights and Environmental Policy
ENVS 1555  Urban Agriculture: The Importance of Localized Food Systems
PH 1700  Current Topics in Environmental Health

Governance, Law, and Ethics:
POLS 0220  City Politics
POLS 1010  Topics in American Constitutional Law

Social Policy:
ECON 1170  Welfare Economics and Social Choice Theory
SOC 1540  Human Needs and Social Services

Urban Policy:
SOC 1600  Comparative Development
URBN 1870F  Housing and Homelessness

Modes of Social Change:
IAPA 1700E  Nonprofit Organizations
Senior Capstone: The capstone may take the form of an Honors Thesis, Independent Study, a Public Policy internship, research Assistantship, UTRA Assistantship, or designated Senior Seminar.

<table>
<thead>
<tr>
<th>Total Credits</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Two of the five elective courses must have a primary listing in Public Policy. One of the five must be designated as a writing course.</td>
<td></td>
</tr>
<tr>
<td>2 One elective must be focused on global issues</td>
<td></td>
</tr>
</tbody>
</table>

Honors
Candidates for honors should apply in the Spring term of their third year. Successful candidates will enroll in the Public Policy Colloquium and prepare a senior honors paper.

Religious Studies
The concentration in Religious Studies cultivates understanding of societies and cultures throughout the world by exploring religious thought and practice in various historical, geographic, and political contexts.

1. Basic Requirement
A concentration in Religious Studies includes a minimum of nine semester-long courses. Those nine courses include RELS 1000 (a seminar in theories and methods in the study of religion) and eight other courses, which must satisfy the concentration's distribution requirements. Students who transfer to Brown or study abroad must complete at least five courses in Religious Studies at Brown.

2. Distribution of Introductory, Intermediate, and Advanced courses:
Among the eight concentration courses, no more than four courses (out of nine) can be at the introductory level (0001-0199). In addition to any introductory courses and RELS 1000, the plan of study must include at least two intermediate-level courses (0200-0999) and two advanced-level courses (above 1000).

3. Distribution of Focus and Approach:
Concentrators are encouraged to develop a broad understanding of religious activity as well as a deep understanding of particular forms of religion. A concentrator's course plan should include courses that examine a variety of geographic and cultural contexts, through a variety of approaches. The eight concentration courses (that is, the courses other than RELS 1000) must: 1) examine more than one religious tradition or culture; and 2) reflect more than one primary approach to the study of religion (e.g., philosophical, historical, textual).

To help students create a program of study that balances breadth of focus and approach with attention to the concentrator's particular interests and objectives, concentrators will meet with the Director of Undergraduate Studies (or an approved advisor from within the department) when declaring the concentration to discuss their intellectual priorities and provisional course plans. (In the concentration declaration form, concentrators will describe their priorities and plans.) Through these initial discussions as well as advising meetings in subsequent semesters, concentrators and their advisors will work together to recognize and cultivate each concentrator's theoretical, interpretive, or thematic interests in a way that engages the faculty's multidisciplinary expertise.

4. Courses in Other Departments
Courses cross-listed from other departments and courses listed in other departments but taught by Religious Studies faculty count toward the program of study. Up to three courses taught by faculty in other departments also can count toward the program (pending approval by the DUS) if relevant to the student's program of study. Students who transfer to Brown, study abroad, or otherwise petition to include Brown courses not cross-listed with Religious Studies must complete at least five courses in Religious Studies at Brown.

5. Capstone Project
In the final year of study, concentrators will undertake a capstone project that builds upon a student's previous work in the department and provides a culminating focus for a student's concentration. Concentrators may complete a capstone project within an existing course (subject to approval by its instructor) or an independent study. Concentrators also may satisfy the capstone requirement by undertaking an honors thesis. Whichever context concentrators choose to complete their capstone within, they will develop a plan for their project no later than the end of the spring semester of the junior year, in consultation with the Director of Undergraduate Studies and other faculty as appropriate.

Honors Thesis (Optional)
A thesis is an opportunity for students to conduct extended independent research under the guidance of faculty. If a student chooses to write an honors thesis, in addition to completing the typical eight concentration courses (in addition to RELS 1000) the student will enroll in RELS 1999 during both semesters of the senior year. Whether or not a student receives honors, RELS 1999 will serve as the student's capstone course. To be eligible to write a thesis, a student must have earned a grade point average of greater than 3.5 (A=4, B=3, C=2) on courses that count toward the concentration. Additionally, to be eligible for honors, concentrators may take no more than two of the concentration courses with the 'S/NC' option, after declaring a Religious Studies concentration. (Note: if a student is philosophically committed to taking the majority of her or his courses at Brown as 'S/NC,' that student may petition the Department to waive this 'S/NC' limit.) Writing the thesis is a necessary, but not sufficient, condition for receiving Honors. In order to receive Honors, the student's thesis must earn an A from its two readers, and the student's grade point average must be greater than 3.5 in the concentration and satisfied all other concentration requirements.

Jason A. Protass, Director of Undergraduate Studies
Tina Creamer, Departmental Administrator

Science, Technology, and Society
Science, Technology, and Society (STS, formerly Science and Society) is an interdisciplinary concentration that examines the processes of scientific discovery and the establishment of scientific policies and systems of belief from historical, philosophical, anthropological, and sociological perspectives. Concentrators analyze the practices, norms, and values that reflect and shape our deepest convictions about what is considered 'science.' Students select courses in the physical sciences, life sciences, or mathematics and choose a thematic track that may include the history and philosophy of science; gender and science; race, science and ethnicity; health and medicine; environment and society; or they may create their own independent focus. STS prepares students to follow, guide, and shape scientific knowledge as it travels from the laboratory into the public arena.

Requirements
Consisting of 12 courses, the program of study outlined below will be developed by each student in consultation with the concentration advisor. Where appropriate, independent reading, lab courses or GISPS may count for up to three of the twelve total courses. Students will take a minimum of 7 intermediate to advanced courses.
Required Courses (2)
The concentration has two required courses.
- STS 1000: Introduction to Science and Society: Theories and Controversies, or equivalent introductory course: usually taken in the second or third year.
- STS 1900: Senior Seminar in Science and Society, also open to non-majors with the proper background, usually taken senior year.

Thematic Track (3)
Students will organize their course of study around the choice of a thematic track. The theme may be thought of as the applied content portion of the concentration. Students will take a minimum of three courses, at least one of which must be at an advanced level, in one of the thematic areas listed below:
- History & Philosophy of Science
- Gender & Science
- Race, Science & Ethnicity
- Health & Medicine
- Representing Science in Literature & Culture
- Policy, Persuasion & the Rhetoric of Science
- Environment & Society
- Independent Focus

Science Track (4)
Students will take a minimum of four courses in one of the following scientific areas: physical sciences, life sciences, mathematics/computer science. The chosen area should provide appropriate background and support for the chosen concentration theme. The science courses will be sequenced such that a concentrator will move enough beyond the introductory level to gain some understanding of the world view of scientists within a chosen field. The particular sequence of courses which best meets the science requirement will be chosen in consultation with the concentration advisor. When necessary, the concentration advisor will seek guidance from faculty within the chosen scientific field.

Science and Technology Studies Theory (3)
Students will take three Science and Technology Studies-related courses in the social sciences and humanities. These courses, which will provide critical theoretical background for the study of Science and Society, should address questions of historiography, epistemology and methodology in the field of science and technology studies. A full list of such courses and sample concentrations may be found at https://www.brown.edu/academics/science-and-technology-studies/

Honors
To qualify for Honors a student must:
- Be in good standing
- Have completed at least two thirds of the concentration requirements by the application deadline
- Have earned a majority of “A” grades in the concentration.
Classes taken S/NC will count as qualifying towards that majority if they are marked “S with distinction” or are accompanied by a Course Performance Report (https://ask.brown.edu/performance_reports/) indicating that the student taken the course for a grade, the grade would have been an “A.”

Slavic Studies
Slavic Studies is concerned with the languages, literatures, and civilizations of the Slavic world. Built on sound knowledge of one or two Slavic languages (normally Russian or Czech) the program allows students to develop an in-depth appreciation and understanding of East European cultures and civilizations through a broad spectrum of interdisciplinary fields. Students take courses in literature, history, culture, theater, political science, economics, and international relations. Concentrators focusing on Russia learn one of the world’s most commonly spoken languages and study some of the world’s best-regarded authors and composers: Tolstoy and Dostoevsky, Gogol and Bulgakov, Tchaikovsky and Mussorgsky, and Rachmaninoff and Stravinsky. Focusing on Czech allows students to explore, for example, how Czechs distinguished themselves by peacefully transitioning from communism to capitalism (the “Velvet Revolution”) and separating peacefully with the Slovak Republic (the “Velvet Divorce”). Most concentrators study abroad in a Slavic country, either during the academic year or the summer.

Requirements for the AB Degree
Six semesters of one Slavic language or the equivalent (normally Czech or Russian), or a combined total of eight semesters of two Slavic languages or the equivalent.

- RUSS 0100 & RUSS 0200: Introductory Russian or RUSS 0110: Advanced Russian
- RUSS 0300: Intermediate Russian
- RUSS 0400: Intermediate Russian
- RUSS 0500: Advanced Russian
- RUSS 0600: Advanced Russian

Summer courses offered on the Brown in Petersburg Program can enable advanced placement in academic year courses:
- RUSS 0250: Introductory Russian in St. Petersburg
- RUSS 0350: Intermediate Russian in St. Petersburg
- RUSS 0550: Advanced Russian in St. Petersburg

In cases where a student’s interests and course of study warrant it, and only upon consulting the concentration advisor, the student may apply more than one Slavic language to the concentration (Czech or Polish in addition to Russian), and would then need a combined total of eight semesters of two Slavic languages:
- CZCH 0100 & CZCH 0200: Introductory Czech
- CZCH 0410A: Boys and Girls: Relationships under Socialist Bohemia
- CZCH 0410B: Coming of Age in Postwar Czechoslovakia
- CZCH 0410C: Czech View of Self and Others
- CZCH 0410D: Czechs and the Big Brother: Czech Lands in the 1980s
- CZCH 0610A: Czech Lands under Occupation and Terror
- CZCH 0610B: Psychosis of Occupation in the Czech Lands
- CZCH 0610C: Czech Cultural Icons, Emblems, and National Identity
- PLSH 0100 & PLSH 0200: Introductory Polish
- PLSH 0300 & PLSH 0400: Intermediate Polish

The concentration in Slavic Studies requires students to complete a minimum of seven 1000-level courses devoted to the study of the East European civilizations: literature, history, culture, theater, political science, economics, international relations. Typically, at least four of these courses will be from within the Department of Slavic Studies. Students’ choice of courses is subject to the approval of the concentration advisor.

Courses in the Department of Slavic Studies:
- RUSS 1110: Special Topics in Russian Studies I: Advanced Reading and Conversation
- RUSS 1200: Russian Fantasy and Science Fiction
- RUSS 1250: Russian Cinema
- RUSS 1290: Russian Literature in Translation I: Pushkin to Dostoevsky
- RUSS 1300: Russian Literature in Translation II: Tolstoy to Solzhenitsyn
- RUSS 1320: Soviet Literature from 1917 to 1953
The Sc.B. concentration in Social Analysis and Research provides both a conceptual and a working knowledge of the techniques for data collection and analysis used for social research in academic and non-academic environments. The centerpiece of the concentration is a rigorous and comprehensive collection of courses: (1) that develop an understanding of the principles underlying the processes of data collection and analysis; and (2) that train students in the application of advanced statistical techniques for data description and analysis. The concepts and skills learned in these courses are reinforced through engagement in applied research with Sociology faculty and/or internships with local organizations, in the for-profit and non-profit sectors.

Honors candidacy in Slavic studies assumes an excellent academic record, particularly in the concentration. Additional requirements are the same as those for a standard concentration, plus the writing of a senior thesis (SLAV 1990). For procedures and schedule for writing a senior thesis, please refer to the department guidelines.

### Social Analysis and Research

The Sc.B. concentration in Social Analysis and Research provides both a conceptual and a working knowledge of the techniques for data collection and analysis used for social research in academic and non-academic environments. The centerpiece of the concentration is a rigorous and comprehensive collection of courses: (1) that develop an understanding of the principles underlying the processes of data collection and analysis; and (2) that train students in the application of advanced statistical techniques for data description and analysis. The concepts and skills learned in these courses are reinforced through engagement in applied research with Sociology faculty and/or internships with local organizations, in the for-profit and non-profit sectors.

Concentrators also take courses that provide grounding in the theoretical approaches to social phenomena that are foundational to social research. Graduates develop an understanding of the concepts and processes that underlie the issues studied by sociologists and the analytic techniques that allow sociologists to understand social relations and individual behavior.

### Standard program for the Sc.B. degree

#### Required core:
- **MATH 0990** Introductory Calculus, Part I 1
- **SOC 1100** Introductory Statistics for Social Research 1
- or **APMA 0650** Essential Statistics 1
- or **ECON 1620** Introduction to Econometrics 1
- **SOC 1020** Methods of Social Research 1
- **SOC 2010** Multivariate Statistical Methods I 1
- **SOC 1010** Classical Sociological Theory 1
- **SOC 1950** Senior Seminar 1
- Three (3) substantive or theory courses (non-methodological courses) in Sociology, two (2) of which must be at the 1000-level or above. 3

### Course substitutions:

- Three (3) of the following advanced analysis courses: 3
  - **SOC 1117** Focus Groups for Market and Social Research
  - **SOC 1118** Context Research for Innovation
  - **SOC 1120** Market and Social Surveys
  - **SOC 1260** Market Research in Public and Private Sectors
  - **SOC 1340** Principles and Methods of Geographic Information Systems
  - **SOC 2020** Multivariate Statistical Methods II
  - **SOC 2210** Qualitative Methods
  - **SOC 2230** Techniques of Demographic Analysis
  - **SOC 2240** Event History Analysis
  - **SOC 2610** Spatial Thinking in Social Science
  - **SOC 2612** Geographic Information Systems and Spatial Analysis for the Social Sciences
  - **SOC 2960G** Spatial Data Analysis Techniques in the Social Sciences
  - **SOC 2960Y** Causal Analysis
  - **SOC 2961A** Advanced Spatial Data Analysis Techniques in the Social Sciences

#### Research experience (1 course) 0-1

- A one-semester research internship (not for credit or for credit as SOC 1970 - Independent Study), or a summer research internship (not for credit).

#### Total Credits 12-13

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***See the Sociology website [http://www.brown.edu/academics/sociology/](http://www.brown.edu/academics/sociology/) for details regarding Honors and Independent Studies***

#### Course substitutions:

Students may petition the Director or Co-Director of Undergraduate Studies to use one advanced analysis course taken in another department to count toward the three required advanced analysis courses.

### Research Internship

A one semester or a summer research internship is required. The research internship is designed to provide students with hands-on experience in social research. Students will typically complete the research internship in their junior year or during the summer between their junior and senior years. Students need to submit an Internship Proposal Form to the Undergraduate Concentration Advisor for approval prior to starting the internship. Upon completion of the internship, students are required to submit to the Undergraduate Concentration Advisor a brief summary report of their experience, which must be signed by the supervisor of the student's internship.

Academic research internships involve work on a faculty member's research project. Activities may range from data collection, data entry, data file management, descriptive analyses, and more advanced model estimation. Students are encouraged to approach faculty about opportunities for working on their research projects. Off-campus research internships are arranged through the Sociology Department Students Affairs Coordinator or the Undergraduate Concentration Advisor. Academic and off-campus research internships will typically entail 5-10 hours of work per week and may or may not involve compensation.

Students may receive academic credit for academic research internships and off-campus internships completed during the academic year if they combine the internship experience with an academic component under the direction of a faculty advisor. Students taking an internship for credit should register for an Individual Research Project (SOC 1970).

### The Senior Seminar

Social Analysis and Research requires all concentrators to complete a thesis or capstone project in their senior year. The purpose of the thesis or capstone project is to allow students an opportunity to apply the knowledge they acquired on a topic of their own interests. To fulfill this requirement students enroll in SOC 1950 [http://bulletin.brown.edu/search/?P=SOC%201950] – Senior Seminar. Participation in this seminar
allows each cohort of concentrators to discuss their diverse interests and expose them to the wide range of applications of Sociological knowledge. An undergraduate thesis must ask an original research question, answer it with appropriate evidence, and place that work within relevant scholarly literature in sociology. The thesis is supervised by a faculty member who serves as the primary advisor, and one additional faculty member who serves as a reader. By the end of the sixth semester, students must submit a prospectus of the senior thesis to the Co-Director of Undergraduate Studies. At the start of the seventh semester students should submit to the Co-Director of Undergraduate Studies a proposal (not more than four pages) accompanied by the signature of one faculty member indicating that he or she is willing to serve as primary advisor on the thesis. Only a senior thesis qualifies the student for Honors.

A capstone project is an independent, student-initiated project or experience developed during the Senior Seminar (SOC 1950) that connects in a meaningful way to the learning in the concentration. A capstone project differs from a thesis in its scholarly content and form, and it depends only on the evaluation of the senior seminar instructor. Whereas the senior thesis follows the form of a conventional research paper, the project allows a wider array of research and creative outputs, including but not limited to video documentaries, photographic exhibitions, and applied or policy related reports with an off-campus organization. Projects are complemented by a paper or report that situates the central subject matter of the project within the context of sociological scholarship.

Honors
In order to be considered for honors, students must receive a grade point average of at least 3.5 (A=4, B-3, C=2) on all concentration courses taken, and no more than one (1) of the concentration courses with the ‘S/NC’ option. Honors also requires a senior thesis, with a recommendation of Honors by the advisor and reader, that demonstrates an understanding of empirical research.

Independent Study
Students can use no more than one (1) Independent Study course (SOC 1970 (http://bulletin.brown.edu/search/?P=SOC%201970)) to meet the concentration course requirements. This course counts towards a 1000 level substantive requirement and will not serve as a substitute for any of the core concentration requirement.

Sociology
The concentration in Sociology (leading to a Bachelor of Arts) provides a foundation in sociological theory and methods and the opportunity to cultivate more specialized knowledge in the discipline’s substantive interests. Students develop that focus through their coursework, taking courses in diverse areas such as social inequality, family and gender, organizations, environmental sociology, race and ethnicity and globalization. Students refine their interests during the senior seminar and through their completion of a senior thesis or capstone project. The concentration also allows students to pursue the Engaged Scholars Program (https://www.brown.edu/academics/college/special-programs/public-service/engaged-scholars-program/) (ESP). ESP is for students with an interest in making deeper connections between their concentration and long-term community-engaged activities such as internships, public service, and many other possible forms of community involvement.

Standard program for the A.B. degree
Ten courses are required to complete the concentration.

<table>
<thead>
<tr>
<th>Required core:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 0010 Social Forces: An Introduction to Sociology</td>
</tr>
<tr>
<td>SOC 1010 Classical Sociological Theory</td>
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<tr>
<td>SOC 1020 Methods of Social Research</td>
</tr>
<tr>
<td>SOC 1100 Introductory Statistics for Social Research</td>
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<tr>
<td>or APMA 0650 Essential Statistics</td>
</tr>
<tr>
<td>or ECON 1620 Introduction to Econometrics</td>
</tr>
<tr>
<td>or CLPS 0900 Statistical Methods</td>
</tr>
</tbody>
</table>

SOC 1950 Senior Seminar 1

5 additional courses:

- a) At least three of the optional courses have to be 1000 level and one of them must be a substantive seminar (1870/1871).
- b) Students can choose to take up to two (showcase) lower level (0100 level) courses.
- c) Students can petition to take two courses outside of the discipline (this will be allowed only when the proposed course makes sense given the interests of the student, and there is no equivalent sociology course).

Total Credits 10

Organizational Studies Track
Ten courses to complete the concentration

<table>
<thead>
<tr>
<th>Required Core:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOC 0010 Social Forces: An Introduction to Sociology</td>
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<td>SOC 1010 Classical Sociological Theory</td>
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<tr>
<td>SOC 1020 Methods of Social Research</td>
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<tr>
<td>SOC 1100 Introductory Statistics for Social Research</td>
</tr>
<tr>
<td>or APMA 0650 Essential Statistics</td>
</tr>
<tr>
<td>or ECON 1620 Introduction to Econometrics</td>
</tr>
<tr>
<td>or CLPS 0900 Statistical Methods</td>
</tr>
</tbody>
</table>

SOC 1950 Senior Seminar 1

Foundations of Organizational Studies (choose two of the following):

- SOC 0300 Organizations and Society
- SOC 1311 Micro-Organizational Theory: Social Behavior in Organizations
- SOC 1315 Macro-Organizational Theory: Organizations in Social Context

Advanced Organizational Studies Course (choose one course). The following are approved EXAMPLES. Please consult Courses@Brown/Concentration Advisor for current offerings.

- SOC 1060 Leadership in Organizations
- SOC 1070 Introduction to Economic Sociology
- SOC 1115 The Enlightened Entrepreneur: Changemakers, Inspired Protagonists and Unreasonable People
- SOC 1117 Focus Groups for Market and Social Research
- SOC 1118 Context Research for Innovation
- SOC 1120 Market and Social Surveys
- SOC 1220 Future of Work
- SOC 1260 Market Research in Public and Private Sectors
- SOC 1311 Micro-Organizational Theory: Social Behavior in Organizations (If not used to meet the ‘Foundations’ requirement, above)
- SOC 1315 Macro-Organizational Theory: Organizations in Social Context (If not used to meet the ‘Foundations’ requirement, above)
- SOC 1870A Investing in Social Change
- SOC 1870L The Economic Foundations of Everyday Life
- SOC 1871C Sociology of the Legal Profession
- SOC 1871O Law, Innovation and Entrepreneurship
- SOC 1872B Sociology of Money
- SOC 1872H Sociology of FIRE: Finance, Insurance, + Real Estate
Two additional courses. Each of these courses must be either (a) offered by the Sociology Department, or (b) drawn from the following list of interdisciplinary Organization-Relevant Electives:

- AMST 1610A American Advertising: History and Consequences
- CLPS 1250 Human Factors
- CLPS 1470 Mechanisms of Motivated Decision Making
- CLPS 1730 Psychology in Business and Economics
- ECON 0110 Principles of Economics
- ECON 1760 Financial Institutions
- EDUC 1650 Policy Implementation in Education
- EDUC 1730 American Higher Education in Historical Context
- ETHN 1890C Business, Culture, and Globalization: An Ethnographic Perspective
- ENGN 1930S Land Use and Built Environment: An Entrepreneurial View
- HIST 0150A History of Capitalism
- PHIL 1550 Decision Theory: Foundations and Applications
- POLS 1150 Prosperity: The Ethics and Economics of Wealth Creation
- POLS 1240 Politics, Markets and States in Developing Countries
- POLS 1820W Market Liberalism: Origins, Principles and Contemporary Applications

Total Credits 10

Additional Restrictions to the Organizational Studies Track:

Lower-level Coursework: Students may count no more than two 0100-level (showcase) courses toward the Organizational Studies and Concentration Elective requirements (combined). SOC 0300, if taken, will count as part of this lower-level course allowance.

Upper-level Coursework: At least three of the five courses counted toward the Organizational Studies and Concentration Elective requirements (combined) must be at the 1000-level, and at least one must be a substantive seminar (1870/1871)

Interdisciplinary Coursework: Students may petition to count non-Sociology courses beyond the Organization-Relevant Elective list toward the Concentration Elective requirement. This will be allowed only when the proposed course makes sense given the interests of the student, and the Sociology Department offers no equivalent course.

The Senior Seminar (SOC 1950)

Sociology requires all concentrators to complete a thesis or capstone project in their senior year. The purpose of the thesis or capstone project is to allow students an opportunity to apply their sociological learning to a topic of their own interest. (Students in the Organizational Studies track are expected to focus their senior thesis or capstone project on an Organizational Studies topic.) To fulfill this requirement students enroll in SOC 1950 Senior Seminar. This seminar allows each cohort of concentrators to discuss their diverse interests and exposes participants to the wide range of applications of Sociological knowledge.

A senior thesis must ask an original research question, answer it with appropriate evidence, and place that work within relevant scholarly literature in sociology. The thesis is supervised by a faculty member who serves as the primary advisor, and one additional faculty member who serves as a reader. By the end of the sixth semester, students must submit a prospectus for the senior thesis to the Co-Director of Undergraduate Studies. At the start of the seventh semester, students should submit to the Co-Director of Undergraduate Studies a thesis proposal (not more than four pages) accompanied by the signature of one faculty member indicating that he or she is willing to serve as primary advisor on the thesis. Students wishing to qualify for Honors must complete a senior thesis, rather than a capstone project (see below).

A capstone project is an independent, student-initiated project or experience developed during the Senior Seminar (SOC 1950) that connects in a meaningful way to learning in the concentration. A capstone project differs from a thesis in its scholarly content and form, and it depends only on the evaluation of the senior seminar instructor. Whereas the senior thesis follows the form of a conventional research paper, the capstone project allows a wider array of research and creative outputs, including but not limited to video documentaries, photographic exhibitions, and applied or policy related reports for an off-campus organization. Projects are complemented by a poster presentation, literature review, and report that situates the central subject matter of the project within the context of sociological scholarship.

Independent Study

Students may use no more than one (1) Independent Study course (SOC 1970) to meet the concentration course requirement. An Independent Study course cannot serve as a substitute for any of the "required core" concentration requirements.

Honors

In order to be considered for honors, students must achieve a grade point average of at least 3.5 (A=4, B=3, C=2) on all courses counted toward concentration requirements. No more than one (1) of the courses counted toward concentration requirements may be taken with the "S/N/C" option. Honors also requires a senior thesis (as described above), that demonstrates an understanding of empirical research and that receives a recommendation of Honors from the advisor and reader.

South Asian Studies

South Asian Studies is an interdisciplinary concentration in which students work across the humanities and social sciences, geographical locations, and time periods. The concentration emphasizes both the diversity of South Asia as a region, as well as the long-term historical connections among people and places in Pakistan, Nepal, Bhutan, India, Bangladesh, and Sri Lanka. The concentration takes a comparative approach, bringing attention to history, politics, and culture within the region, as well as in the equally vital global South Asian diaspora.

Course Requirements

All South Asian Studies concentrators must take and pass 10 courses as approved by their concentration advisor. Students who wish to earn honors must take 12 courses total (see Senior-Year Project below).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>SAST 0700</td>
<td>Introduction to Modern South Asia</td>
</tr>
<tr>
<td>or HIST 1620</td>
<td>Resisting Empire: Gandhi and the Making of Modern South Asia</td>
</tr>
</tbody>
</table>

Two courses in the Humanities with a majority focus in South Asia, such as:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLAS 0995</td>
<td>India’s Classical Performing Arts</td>
</tr>
<tr>
<td>CLAS 1140</td>
<td>Classical Philosophy of India</td>
</tr>
<tr>
<td>COST 0034</td>
<td>Dharma: A History of Classical Indian Civilization</td>
</tr>
<tr>
<td>RELS 1510</td>
<td>Islam in South Asia</td>
</tr>
<tr>
<td>RELS 0036</td>
<td>Love and War in India</td>
</tr>
<tr>
<td>RELS 0037</td>
<td>Sensing the Sacred: Sensory Culture in South Asian Religions</td>
</tr>
<tr>
<td>RELS 0526</td>
<td>This Whole World is OM: Mantras in Indian Religions</td>
</tr>
<tr>
<td>COST 0145</td>
<td>Karma, Rebirth and Liberation: Life and Death in South Asian Religions</td>
</tr>
<tr>
<td>COST 0525</td>
<td>The History and Practice of Yoga in India and Beyond</td>
</tr>
</tbody>
</table>

Two courses in the Social Sciences with a majority focus on South Asia, such as:

Brown University
### South Asian Studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 0110</td>
<td>Anthropology and Global Social Problems: Environment, Development, and Governance</td>
</tr>
<tr>
<td>HIST 1979D</td>
<td>Ruined History: Visual and Material Culture in South Asia</td>
</tr>
<tr>
<td>POLS 1280</td>
<td>Politics, Economy and Society in India</td>
</tr>
<tr>
<td>SAST 0526</td>
<td>This Whole World is OM: Mantras in Indian Religions</td>
</tr>
<tr>
<td>SAST 0525</td>
<td>The History and Practice of Yoga in India and Beyond</td>
</tr>
<tr>
<td>SAST 0140</td>
<td>Food, Religion and Politics in South Asia</td>
</tr>
<tr>
<td>SAST 0037</td>
<td>Sensing the Sacred: Sensory Culture in South Asian Religions</td>
</tr>
<tr>
<td>SAST 0034</td>
<td>Dharma: A History of Classical Indian Civilization</td>
</tr>
</tbody>
</table>

**At least five additional elective courses. Students can take additional courses in the humanities or social sciences with a focus on South Asia, such as:**

- ANTH 0100  Introduction to Cultural Anthropology
- ANTH 2320  Ideology of Development
- COST 0100  Introduction to Contemplative Studies
- ECON 0510  Development and the International Economy
- ECON 2510  Economic Development I
- HIAA 0081  Architecture of the House Through Space and Time
- HIST 1440  The Ottomans: Faith, Law, Empire
- HNDI 0200  Beginning Hindi or Urdu
- HNDI 0400  Intermediate Hindi-Urdu
- HNDI 1080  Advanced Hindi-Urdu
- MCM 1505O  Does Utopia Still Exist? Media, politics and the hope of something else
- POLS 0200  Introduction to Comparative Politics
- POLS 1380  Ethnic Politics and Conflict
- RELS 0100  Buddhist Thought, Practice, and Society
- SAST 1970  Independent Study
- SANS 0200  Elementary Sanskrit II
- SANS 0400  Classical Sanskrit Story Literature
- SANS 1100  Vedic Sanskrit

**Total Credits:** 10

### Language Requirements

Proficiency in a South Asian language is required for the concentration. Demonstrating proficiency can entail passing a written and oral examination, 4 semesters of formal language study at Brown or another institution, or a high school transcript indicating that the language of instruction for all courses was a South Asian language. Native Hindi/Urdu speakers are encouraged to fulfill the language requirement by taking another South Asian language for four semesters, such as Sanskrit at Brown or a relevant language at another institution. Up to two language courses can count toward fulfilling the student's elective requirements.

### Senior-Year Project

Students must complete either a senior capstone project OR an honors thesis.

Capstone projects or honors theses are opportunities for students to creatively synthesize the thinking on South Asia that they have developed during the concentration. The project should exhibit an empirically and theoretically driven research question or argument about some aspect of South Asian Studies. The senior-year project should involve some research in at least one South Asian language.

All students are encouraged to start thinking about their capstones in their junior year.

**Capstones** can take two primary forms:

1. A research paper of approximately 30 pages on a topic related to South Asia for an existing concentration-eligible course, undertaken with the permission of the instructor.
2. An independent study-based project. The produce and/or process that constitutes this can be artistic, primary or secondary research-based, internship-related, or something else. The project must be supervised by at least one CCSA faculty member for at least one semester under SAST 1970. This course can count towards the five elective requirement.

At the end of the junior year, each student should meet with the Director of Undergraduate Study (DUS) to review their plan for completing their capstone. If pursuing a capstone project, students will be required to submit, by the end of the shopping period of the fall of their senior year, a short proposal (300 words) that describes how they are going to complete this requirement.

An **Honors Thesis** is a two-semester independent study supervised by a thesis advisor (SAST 1970). These two courses constitute the additional courses needed for honors in the concentration.

An honors thesis can be textual, or it can take other forms (multi-media, visual, artistic, or musical, for example). The form and substance of a non-textual honors thesis must conform to the rigorous regulations set out by the relevant department(s) and the Dean of the College.

**Additional Honors Requirements**

To be eligible for Honors, students will have earned an ‘A’ in the majority of courses for the concentration.

Students may graduate with Honors in South Asian Studies by completing an undergraduate Honors thesis under the supervision of at least one reader drawn from the CCSA faculty and one additional reader from the Brown (or RISD, in the case of Brown-RISD students) faculty community.

To pursue Honors, students must submit the following materials to the CCSA DUS by April 25:

1. A prospectus (3-5 pages, describing the major research questions and methods to be used, complete with bibliography) that has been read and vetted by the student’s intended primary reader.
2. An email from the faculty member who will serve as primary reader to the CCSA DUS noting their willingness to advise on the thesis.

In addition, students must:

1. Enroll in a two-semester sequence of Independent Study, SAST 1970 or under a relevant department course code
2. Designate a second reader by September 30 of the senior year.

In addition, students must:

1. Enroll in a two-semester sequence of Independent Study, SAST 1970 or under a relevant department course code
2. Designate a second reader by September 30 of the senior year.

Second readers should also confirm their willingness to serve as a reader by sending an email to the CCSA DUS.

3. Be in regular contact with the thesis advisor about the progress of the project.
4. Present their research to the CCSA community during their final semester.

For **mid-year graduating students**, the topic and primary reader must be identified and confirmed by mid-November of the junior year, and a second reader must be arranged and confirmed by January 30 of the senior year.

A complete penultimate draft of the thesis is due to both readers on April 1. A final draft that incorporates readers’ comments is due back to the readers on April 15 of the student’s senior year.

* This includes all people listed under the Faculty, Postdoctoral Associate, and Visiting Scholars (limited to those in residence at Brown) tabs on the CCSA website.
Statistics

The Bachelor of Science degree in Statistics is designed to provide foundations that include basic statistical concepts and methodologies, and to expose students to the role of statistical thinking and analysis in interdisciplinary research and in the public sphere. To ensure deep rigorous understanding of the foundations and main methods of analysis in statistics, the program is composed of three parts: a) foundations in mathematics and computing, combined with an introduction to statistical thinking and practice; b) four core courses on the fundamentals of statistical theory and data analysis; and c) more advanced material covering important areas of statistical methodology. A capstone project involving substantial data analysis or focused on methodology/theory is required. Students also have opportunities to acquire practical experience in study design, data management, and statistical analysis by working as undergraduate research assistants in projects in one of the participating academic departments or Research Centers at Brown.

The Concentration is based on several premises: that statistics is a scientific discipline in its own right, with specialized methodologies and body of knowledge; that it is essentially concerned with the art and science of data analysis; and that it is best taught in conjunction with specific, substantive applications. To this end, the Concentration is designed to provide foundations that include basic statistical concepts and methodologies, and to expose students to the role of statistical thinking and analysis in interdisciplinary research and in the public sphere. The Concentration prepares students for careers in industry and government, for graduate study in statistics or biostatistics and other sciences, as well as for professional study in law, medicine, business, or public administration. The undergraduate concentration guide is available here (https://www.brown.edu/academics/public-health/biostatistics/undergraduate-statistics-concentration/).

The Undergraduate Concentration in Statistics is administered by the Department of Biostatistics and leads to a Sc.B. degree. To ensure that only the required Calculus courses may be accepted with P/F grades. All other required courses must be taken for a grade.

The program requires thirteen one-semester courses. The required courses are as follows:

**LEVEL I: Foundations in Mathematics - Calculus**  
2
- MATH 0100 Introductory Calculus, Part I
- MATH 0180 Intermediate Calculus

**LEVEL I - Foundations in Mathematics - Linear Algebra**  
1
- MATH 0520 Linear Algebra

**Computing**  
1
- APMA 0160 Introduction to Scientific Computing
  or CSCI 0040 Introduction to Scientific Computing and Problem Solving

**Introduction to Statistical Thinking and Practice**  
1
- PHP 1501 Essentials of Data Analysis

With the approval of the Director of the Statistics Concentration, one of the following courses may serve as replacement:
- SOC 1100 Introductory Statistics for Social Research
- ECON 1620 Introduction to Econometrics

**LEVEL II - Core Courses in Theory and Data Analysis**  
2
- APMA 1650 Statistical Inference I
  or APMA 1655 Statistical Inference I
- APMA 1660 Statistical Inference II

**OR**
- MATH 1610 Probability
- MATH 1620 Mathematical Statistics

**Introduction to Biostatistics**  
1
- PHP 1510 Principles of Biostatistics and Data Analysis

**LEVEL III: Advanced Courses in Statistical Methods**  
2
- PHP 1560 Statistical Programming in R
  OR
- PHP 2560 Statistical Programming with R
  AND
- PHP 1511 Applied Regression Analysis
  OR
- PHP 2511 Applied Regression Analysis

**Capstone Project**  
1
- PHP 1970 Independent Study

**Electives in Social Science and Biostatistics (Students must choose 2)**  
2
- SOC 1120 Market and Social Surveys
- SOC 1340 Principles and Methods of Geographic Information Systems
- SOC 2230 Techniques of Demographic Analysis
- CSCI 1420 Machine Learning
- CSCI 1810 Computational Molecular Biology
- CSCI 1820 Algorithmic Foundations of Computational Biology
- CSCI 1951A Data Science
- PHP 0850 Fundamentals of Epidemiology
- PHP 2030 Clinical Trials Methodology
- PHP 2120 Introduction to Methods in Epidemiologic Research
- PHP 2200 Intermediate Methods in Epidemiologic Research
- PHP 2515 Fundamentals of Probability and Statistical Inference
- PHP 2520 Statistical Inference I
- PHP 2530 Bayesian Statistical Methods
- PHP 2550 Practical Data Analysis
- PHP 2580 Statistical Inference II
- PHP 2602 Analysis of Lifetime Data
- PHP 2601 Linear Models
- PHP 2604 Statistical Methods for Spatial Data
- PHP 2610 Causal Inference and Missing Data
- PHP 2620 Statistical Methods in Bioinformatics, I
- APMA 1070 Quantitative Models of Biological Systems
- APMA 1080 Inference in Genomics and Molecular Biology
- APMA 1200 Operations Research: Probabilistic Models
Theatre Arts and Performance Studies

The Department of Theatre Arts and Performance Studies (TAPS) is the intellectual and artistic center for the aesthetic, historical, literary, practical, and theoretical explorations of performance in global perspective – theatre, dance, speech, time-based art, and even performative “roles” in everyday life. The TAPS concentration offers three tracks with many points of overlap among them: Performance Studies, Theatre Arts, and Dance. Concentrators gain exposure to a broad spectrum of performance modes and methods – acting, directing, dance, and writing, and chose an avenue of focus among them. In addition, TAPS concentrators with an interest in socially engaged performance that tackles complex social issues may pursue the Engaged Scholars Program (https://www.brown.edu/academics/theatre-arts-performance-studies/undergraduate-program/engaged-scholars-program/). Everyone graduates having studied craft, gained familiarity with history, and investigated the role of performance arts in culture.

Students who declared their concentration prior to fall 2019 can find their concentration requirements here: https://bulletin.brown.edu/archive/2018-19/the-college/concentrations/taps/.

Theatre Arts Track

This concentration combines the study of dramatic literature, theatre history, performance theory, and studio work in the various theatre arts. All concentrators in Theatre Arts will gain practical experience through the study of acting and directing as well as in the technical production of plays, preparing students in the practical study of a cross-section of the vital aspects of theatre craft, including one class in either dance or speech. An essential aim of the concentration track is the engagement of students in performance procedures (acting, dancing, directing, choreography, design, playwriting, dramaturgy, etc.) in order to experience the inter-relationships among social contexts, dramatic texts and theatrical enactments. Along with practical study in craft, concentrators will graduate having studied theatre history and performance theory in global perspective. The study of theatre history provides a Theatre Arts concentrator with the necessary background to understand a variety of dramatic and theatrical forms. The study of performance theory enhances a student’s ability to ask fundamental questions about the role of theatre in social, political, cultural and cross-cultural arenas.

Students wishing to enroll as concentrators in Theatre Arts and Performance Studies and take the Theatre Arts track should see the undergraduate Theatre Arts track advisor, in order to discuss options that will best serve their interests.

Performance Studies Track

The Performance Studies track in the Theatre Arts and Performance Studies concentration offers a base for students interested in a variety of performance forms, performance media, or in intermedial art. A concentrator in this track will study multiple modes in which live performance articulates culture, negotiates difference, constructs identity, and transmits collective historical traditions and memories. Because Performance Studies is not primarily invested in one performance mode over another (such as theatre or dance), a concentrator will gain exposure to a broad spectrum of performance modes. Studying ritual, play, game, festival, spectacle and a broad spectrum of “performance behaviors” under the umbrella of Performance Studies, a concentrator will graduate having investigated the role of performance in culture, including performative acts in everyday life, political enactment, ritual behavior, aesthetic or representational practices, and social role or the performance...
of subjectivity. The history of aesthetic performance practices (such as the histories of theatre and/or dance) will be an important part of this track, serving to ground inquiry into the broader spectrum of performance study. Students will craft their electives on this track from a wide selection of courses both within the Department of Theatre Arts and Performance Studies and across the university. The study of performance behavior across mediums such as dance, theatre, ritual, and orature allows for geographic and historical flexibility as not all cultures parse theatre from dance, nor, historically, genres of religious or political ritual from genres of entertainment, play, or game. At least one of the ten required classes must show geographic or cultural breadth, and be approved as such by the undergraduate concentration advisor. Participation in practical classes in modes of performance is also required.

Students wishing to enroll as concentrators in Theatre Arts and Performance Studies and take the Performance Studies track should see the undergraduate Performance Studies track advisor, in order to discuss options that will best serve their interests.

TAPS 0700 Introduction to Theatre, Dance and Performance 1

Three of the following courses: 3
TAPS 1230 Global Theatre and Performance: Paleolithic to the Threshold of Modernity
TAPS 1240 Performance Historiography and Theatre History
TAPS 1250 Late Modern and Contemporary Theatre and Performance
TAPS 1280Y Issues in Performance Studies

Two primarily academic courses from within the Department with Performance Studies content to be selected with your advisor, such as (but not limited to): 2
TAPS 0210 Dancing the African Diaspora
TAPS 0350 Black Performance Theory
TAPS 1280N New Theories for a Baroque Stage
TAPS 1380 Mise en Scene
TAPS 1425 Queer Performance
TAPS 1630 Performativity and the Body: Staging Gender, Staging Race
TAPS 1640 Theatre and Conquest in Greater Mexico: From Cortes to NAFTA
TAPS 1690 Performance, Art, and Everyday Life
TAPS 2120 Revolution as a Work of Art

Two full-credit courses based in performance craft in either Dance, Acting, Directing, Playwriting, Speech, Design, Literary Arts, Visual Arts, Music, or Africana Studies approved by the concentration advisor. 2

Two additional courses in the academic study of performance and performance culture(s) from either within TAPS or throughout the University in consultation with the advisor. 2

Total Credits 10

Dance Track

The Dance track of the Theatre Arts and Performance Studies concentration engages students in the study of dance, movement, and other forms of kinesthetic performance. Emphasizing dance technique, choreography/composition, and theories and histories of global forms of dance practice, concentrators in this track will study how multiple global dance forms articulate culture, negotiate difference, construct identity, and transmit collective historical traditions. Concentrators will receive instruction in composition and technique, and engage with dance, theatre, and performance production within the department to understand dance within a network of performance practices.

TAPS 0700 Introduction to Theatre, Dance and Performance 1

Critical Topics and Global Perspectives - three courses. Students should work with their advisor to ensure their courses offer theoretical and geographic breadth. Courses could include, for example:
TAPS 0210 Dancing the African Diaspora
TAPS 1230 Global Theatre and Performance: Paleolithic to the Threshold of Modernity
TAPS 1240 Performance Historiography and Theatre History
TAPS 1250 Late Modern and Contemporary Theatre and Performance
TAPS 1281W Artists and Scientists as Partners
TAPS 1281Q Introduction to Critical Dance Studies
TAPS 1330 Dance History: The 20th Century
TAPS 1425 Queer Performance
TAPS 1630 Performativity and the Body: Staging Gender, Staging Race
MUSC 1971 Digital Media and Virtual Performance

Techniques of the Body - two courses selected in consultation with an advisor, such as the following: 2
TAPS 0310 Beginning Modern Dance
TAPS 0330 Mandé Dance, Music and Culture
TAPS 0930C The Actor’s Instrument: Stage Movement for Actors and Directors
TAPS 1000 Intermediate Dance
TAPS 1310 Advanced Modern Dance
TAPS 1340 Dance Styles
TAPS 1341 Introduction to Ballet

Directing/Compositional Strategies - two courses selected in consultation with an advisor from courses such as the following: 2
TAPS 0320 Dance Composition
TAPS 0360 Viewpoints Technique: The Moving Body in Relation to Time, Space, and Ensemble
TAPS 1281E Directing Theory and Practice
TAPS 1320 Choreography
TAPS 1350 & TAPS 1360 Dance Performance and Repertory and Dance Performance and Repertory
TAPS 1370 New Works/World Traditions

Design or Production - one course selected in consultation with an advisor from the following: 1
TAPS 0250 Introduction to Technical Theatre and Production
TAPS 0260 Stage Lighting
TAPS 1100 Stage Management
TAPS 1280F Introduction to Set Design
TAPS 1281A Director/Designer Collaborative Studio
TAPS 1281M Introduction to Costume Construction
TAPS 1300 Advanced Set Design

One additional TAPS elective 1

Total Credits 10

For all concentrators, regardless of track:

In cases where dual concentrations are declared, the Department allows two courses to be counted toward both concentrations.

Capstone

Each student will complete a capstone project by the second semester of the senior year. The purpose of this capstone is to synthesize the core tenets of theory and practice in our concentration learning objectives and to reflect on that synthesis. The following projects, completed in semesters 6, 7, and 8, qualify as a capstone:
Concentrators who are especially interested in making deeper connections between their curriculum and long-term engaged activities such as internships, public service, humanitarian and development work, and many other possible forms of community involvement might consider the Engaged Scholar Program (https://www.brown.edu/academics/urban-studies/curriculum/engaged-scholars-program/) in US. The program combines preparation, experience, and reflection to offer students opportunities to enhance the integration of academic learning and social engagement.

For a concentration, the program requires ten courses selected from four course groups:

### Introduction (choose one):

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>POLS 0220</td>
<td>City Politics</td>
</tr>
<tr>
<td>URBN 0210</td>
<td>The City: An Introduction to Urban Studies</td>
</tr>
<tr>
<td>URBN 0230</td>
<td>Urban Life in Providence: An Introduction</td>
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</tbody>
</table>

### Research Methods (choose one):

<table>
<thead>
<tr>
<th>Course Code</th>
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<td>APMA 0650</td>
<td>Essential Statistics</td>
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<td>Political Research Methods</td>
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### Core Courses (3 courses required, in at least 3 disciplines, such as American studies, anthropology, economics, education, English, history, history of art and architecture, political science, and sociology, as well as urban planning when staffing allows)

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<td>Introduction to Geographic Information Systems and Spatial Analysis</td>
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<td>ANTH 1236</td>
<td>Urban Life: Anthropology in and of the City</td>
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<td>ANTH 1255</td>
<td>Anthropology of Disasters</td>
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<td>The Other History of Modern Architecture</td>
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### Urban Studies

The Urban Studies program teaches students to analyze the city, urban life, and urbanization through a variety of disciplinary lenses. Students learn where cities come from, how they grow, thrive, and decline, how they are organized, and how to construct meaningful, inclusive, secure, and sustainable places. The curriculum examines how urban problems arise, how they have been previously addressed, and how to plan cities of the future. Concentrators enjoy the breadth of courses in American Studies, economics, history, literature, history of art and architecture, political science, sociology, and planning as well as provide in-depth courses integrating those perspectives. We introduce the fundamentals of Urban Studies scholarship as well as intense examination of an urban problem in focused seminars. These advanced seminars offer opportunities to write extensive and synthetic interdisciplinary analyses that serve as capstones to the concentration. The program’s 10-course curriculum provides sufficient flexibility to allow students to pursue specific urban interests or to take courses in urban focus areas of Built Environment; Humanities; Social Sciences; and Sustainable Urbanism. The Program insures that students master at least one basic research methodology and perform research or fieldwork projects, which may result in an honors thesis. Fieldwork training includes working with local agencies and nonprofit organizations on practical urban problems. Capstone projects entail original research papers in Urban Studies seminars; academically supervised video, artistic, or community service projects; and Honors Theses for eligible concentrators.
### Complementary Curriculum (Total of 2 courses required):

1. Any course from the Introductory or Core Curriculum options above not used to fulfill another requirement

2. OR Any of the following:

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<tr>
<td>AFRI 0600</td>
<td>Race, Gender, and Urban Politics</td>
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<tr>
<td>AFRI 0620</td>
<td>African-American Life in the City</td>
</tr>
<tr>
<td>AMST 1611A</td>
<td>Making America: Twentieth-Century U.S. Immigrant/Ethnic Literature</td>
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<tr>
<td>AMST 1903G</td>
<td>Oral History and Community Memory</td>
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<tr>
<td>AMST 1904M</td>
<td>Charles Chapin and the Urban Public Health Movement</td>
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<tr>
<td>ANTH 0450</td>
<td>Inequality, Sustainability, and Mobility in a Car-Clogged World</td>
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<td>ANTH 1301</td>
<td>Anthropology of Homelessness</td>
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<tr>
<td>ARCH 0317</td>
<td>Heritage in the Metropolis: Remembering and Preserving the Urban Past</td>
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<tr>
<td>ARCH 0400</td>
<td>City and Sanctuary in the Ancient World</td>
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<tr>
<td>ARCH 1150</td>
<td>Cities and Urban Space in the Ancient World</td>
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<tr>
<td>ARCH 1155</td>
<td>Cities, Colonies and Global Networks in the Western Mediterranean</td>
</tr>
<tr>
<td>ARCH 1200F</td>
<td>City and the Festival: Cult Practices and Architectural Production in the Ancient Near East</td>
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<tr>
<td>ARCH 1600</td>
<td>Archaeologies of the Near East</td>
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<tr>
<td>ARCH 1720</td>
<td>How Houses Build People</td>
</tr>
<tr>
<td>ARCH 1900</td>
<td>The Archaeology of College Hill</td>
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<tr>
<td>ECON 1370</td>
<td>Race and Inequality in the United States</td>
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<tr>
<td>EDUC 1100</td>
<td>Introduction to Qualitative Research Methods</td>
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<tr>
<td>EDUC 1150</td>
<td>Education, the Economy and School Reform</td>
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<td>EDUC 1430</td>
<td>Social Psychology of Race, Class, and Gender</td>
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<td>EDUC 1720</td>
<td>Urban Schools in Historical Perspective</td>
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<td>ENGL 1710I</td>
<td>Harlem Renaissance: The Politics of Culture</td>
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<td>ENGN 1930S</td>
<td>Land Use and Built Environment: An Entrepreneurial View</td>
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<td>ENVS 0520</td>
<td>Wild Literature in the Urban Landscape</td>
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<td>ENVS 1410</td>
<td>Environmental Law and Policy</td>
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<td>ENVS 1555</td>
<td>Urban Agriculture: The Importance of Localized Food Systems</td>
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<tr>
<td>HIAA 0550</td>
<td>Gold, Wool and Stone: Painters and Bankers in Renaissance Tuscany</td>
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<tr>
<td>HIAA 0560</td>
<td>Constructing the Eternal City: Popes and Pilgrims in Early Modern Rome</td>
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<tr>
<td>HIAA 1560C</td>
<td>Renaissance Venice and the Veneto</td>
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<tr>
<td>HIAA 1560G</td>
<td>Contemporary American Urbanism: City Design and Planning, 1945-2000</td>
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<tr>
<td>HIST 1140</td>
<td>Samurai and Merchants, Prostitutes and Priests: Japanese Urban Culture in the Early Modern Period</td>
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<td>HIST 1741</td>
<td>Capitalism, Land and Water: A World History: 1848 to the present</td>
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<td>HIST 1961B</td>
<td>Cities and Urban Culture in China</td>
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<td>HIST 1967R</td>
<td>History of Rio de Janeiro</td>
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<tr>
<td>HIST 1979J</td>
<td>London: 1750 to the Present</td>
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<td>HIST 1979L</td>
<td>Urban History of Latin America</td>
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<td>HIST 1980T</td>
<td>Modernity, Jews, and Urban Identities in Central Europe (JUDS 1718)</td>
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<td>IAPA 1700A</td>
<td>Program Evaluation</td>
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<td>IAPA 1803E</td>
<td>Social Entrepreneurship</td>
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<td>ITAL 1580</td>
<td>Word, Image and Power in Early Modern Italy</td>
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<td>JAPN 0910B</td>
<td>Japanese Cities: Tokyo and Kyoto</td>
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<td>JUDS 1718</td>
<td>Modernity, Jews, and Urban Identities in Central Europe</td>
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<td>POLS 1760</td>
<td>Infrastructure Policy</td>
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<td>POLS 1824D</td>
<td>Power and Prosperity in Urban America</td>
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<td>RUSS 1440</td>
<td>Imagining Moscow: Utopia and Urban Spaces in 20th-Century Russian Culture</td>
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<td>STS 1701Q</td>
<td>The Fate of the Coast</td>
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<td>American Heritage: Democracy, Inequality, and Public Policy</td>
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<td>SOC 1270</td>
<td>Race, Class, and Ethnicity in the Modern World</td>
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<td>SOC 1540</td>
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</tbody>
</table>
3. RISD courses approved by the Urban Studies Program each semester as applicable to the Urban Studies concentration.

4. Any course taken at another university in the US or abroad and approved by the Urban Studies Program each semester (2 maximum)

Total Credits 10

1 There are also other statistics courses offered by other departments (e.g., Applied Mathematics, Cognitive Sciences, and Psychology). On occasion, an alternative research skills course may be approved for a specific concentration.

2 The courses provide opportunities to undertake research or fieldwork projects and all qualify as ‘capstone’ experiences.

3 No more than two may be used to satisfy the requirements of this concentration. The RISD course is identified in the student's record at Brown by a RISD course code.

Off-Campus Courses: Some courses taken outside Brown (e.g., in study abroad programs) may be used for credit towards the concentration if the material covered directly corresponds to that taught in Brown courses, or is relevant to the complementary curriculum. Such courses will be approved each semester by the concentration advisor.

Honors

Candidates for Honors must have above average grades and shall apply for this distinction in writing to the Director of the Program by the middle of the second semester of their junior year. They shall include a cover letter with a brief statement of the intended research proposal as well as the name of the member of the Urban Studies faculty who would serve as their advisor and with whom they must work closely. Twelve courses are required for Honors concentrator, two in addition to the ten courses required for a standard program. During the Fall and Spring of the senior year, honors candidates must complete two additional courses beyond the ten courses required by the regular concentration: URBN 1971 Senior Honors Thesis I in Urban Studies (S/NC) and URBN 1972 Senior Honors Thesis II in Urban Studies (grade). The candidate's final thesis must be of outstanding quality, in order to qualify for honors.

Visual Art

The Visual Art concentration engages in artistic practice across a wide range of media: painting, sculpture, printmaking, drawing, photography, and digital imaging. Courses in art history combine with these to frame the direction of the concentrator's work and to develop his or her critical thinking skills. Students are encouraged to cultivate an informed and thoughtful individual perspective. Students in the Visual Arts department enjoy cutting-edge facilities and a knowledgeable faculty. These two resources inspire creativity and pleasure in our concentrators while they explore the discipline. Students acquire the intellectual and practical tools to make art as well as to interpret and critique the world of images. Students also have the opportunity to take courses at the neighboring Rhode Island School of Design. All Visual Art (VISA) courses are graded S/NC (https://www.brown.edu/academics/college/degree/policies/grade-options/).

Concentration Program Requirements

**Concentration Requirements:**

<table>
<thead>
<tr>
<th>VISA 0100</th>
<th>Studio Foundation (Prerequisite for all upper-level studio courses)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISA 0120</td>
<td>Foundation Media (This course is a prerequisite for upper-level Media courses such as New Genre and Video Art)</td>
<td>1</td>
</tr>
<tr>
<td>VISA 0130</td>
<td>Sculpture Foundation</td>
<td>1</td>
</tr>
<tr>
<td>VISA 0140</td>
<td>Photography Foundation</td>
<td>1</td>
</tr>
<tr>
<td>VISA 0150</td>
<td>Digital 2D Foundation</td>
<td>1</td>
</tr>
<tr>
<td>VISA 0160</td>
<td>Painting Foundation</td>
<td>1</td>
</tr>
</tbody>
</table>

5 additional upper level studio courses are required. A minimum of three elective studio courses must be taken in the Brown Visual Art Department

3 HIAA courses are required:

| HIAA 0010 | A Global History of Art and Architecture | 1 |
| HIAA 0801 | Art After '68 | 1 |
| or HIAA 0810 | 20th Century Sculpture | 1 |
| or HIAA 0870 | 20th Century British Art: Edwardian to Contemporary | 1 |

One additional History of Art and Architecture course.

Senior Thesis Exhibition: which does not carry academic credit, is required for graduation (usually presented during the seventh or eighth semester).

Total Credits 11

Honors

The project is a two-semester enterprise and counts as two courses taken for graduation credit VISA 1800C (Sem I) and VISA 1990 (Sem II) but will not count as two of the eleven courses needed for the visual art concentration. Students that are planning to complete their degree requirements in December must apply for honors by December 5 of the previous year.
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Helvetica was used instead of Arial.

The editor may contact Leepfrog for a draft with the correct fonts in place.