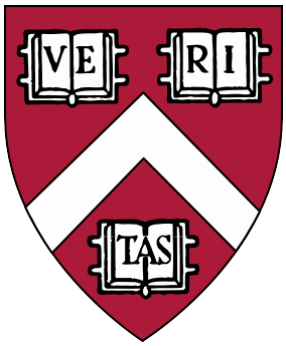
HARVARD
COLLEGE

Fields of Concentration

2024–2025

HARVARD
COLLEGE



FIELDS OF CONCENTRATION
Academic Year 2024–2025

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FIELDS OF CONCENTRATION

African and African American Studies

The Department of African and African American Studies brings together scholars and scholarship from many disciplines to explore the histories, societies, and cultures of African and African-descended people. The field of African and African American studies is not only interdisciplinary but also comparative and cross-cultural. Africans and people of African descent have developed cultural forms that have profoundly shaped the fine arts and popular culture in the Americas and all around the planet. Comparative and cross-cultural studies of Africa and its diaspora contribute enormously to our understanding of race and ethnicity, and ideas about race are among the central objects of study in the field of African and African American Studies. In addressing the ethical, social, and political consequences of racial thinking, the African and African American Studies faculty raise questions relevant to the experiences of all peoples.

The department offers two distinct courses of study: the African track and the African American track. African track concentrators come to the program with a variety of interests (for example, the environment, public health, music, ethnic relations, religion, politics, economic development, and literature). Components of the African track include study in the African Languages Program, required courses, electives, and the option of study abroad. The department offers seminars and lecture courses on an array of Africa-related topics. Concentrators in the African track are encouraged to take courses in a variety of departments, including History of Art and Architecture, Music, Economics, Government, History, Anthropology, Social Studies, Romance Languages and Literatures, and the Comparative Study of Religion. Courses offered at Harvard Divinity School, the Harvard Graduate School of Education, and the Harvard Kennedy School may also be available for concentration credit.

The African American track attracts students with an equally wide range of interests, and students pursue African American Studies for many reasons: First, African American music, literature, and visual arts are significant cultural achievements worthy of study in their own right. Second, African Americans have played a crucial role in the history of the United States; they participated in the American Revolution, the Civil War, Reconstruction, women's suffrage, and the New Deal, and they led the struggle for equality in the second half of the 20th century. Third, because American political life remains encumbered by racism and its historical legacy, a proper historical, sociological, and economic understanding of race relations continues to be essential for those who seek to make or evaluate public policy. Fourth, some of the social relations that have developed in countries such as the United States, Cuba, Jamaica, Haiti, and Brazil provide important examples of ethno-racial conflict, and through the study of them, it is possible to gain insight into what remains a problem across the globe.

Exploring African and African American cultures requires us to explore aspects of the many other cultures and peoples that have created the mosaic of the modern world. Thus, diaspora studies are integral to each track. In many parts of the Caribbean and Latin America, for example, religions and performance arts are influenced by traditional African belief systems and practices. The cultures of the African Atlantic diaspora have also developed in interactions with other peoples: the many Native American cultures; the Dutch, English, French, German, Irish, Italian, Polish, Portuguese, Russian, Scandinavian, Scottish, Spanish, and other European groups that came with colonists and immigrants; and the traditions that have come with immigrants from East and South Asia.

Students who graduate with a concentration in African and African American Studies go on to pursue advanced degrees in fields such as history, literature, political science, and sociology.

They also go on to work in a wide variety of careers in education, business, medicine, entertainment, law, public policy, and the arts and sciences.

LEARNING OBJECTIVES

Students who graduate with a concentration in African and African American Studies develop a powerful skill set of creative, analytical, integrative, and problem-solving perspectives that equip them for leadership in many fields.

REQUIREMENTS

African Studies Track
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. AFRAMER 11: Introduction to African Studies. Students should take this course by the end of their junior year. (Students who transfer into the concentration after their sophomore year will be permitted to substitute for AFRAMER 11 a course in African Studies they have already taken, but only if they can demonstrate to the Director of Undergraduate Studies that they have established a basic familiarity with the material covered in AFRAMER 11.)
    b. AFRAMER 10: Introduction to African American Studies. Students should take this course by the end of their junior year. (Students who transfer into the concentration after their sophomore year will be permitted to substitute for AFRAMER 10 a course in African and African American Studies they have already taken, but only if they can demonstrate to the Director of Undergraduate Studies that they have established a basic familiarity with the materials covered in AFRAMER 10.)
    c. Two courses of an African language. The language requirement is met by attaining a level of competence equivalent to two courses of African language study. Students who can show evidence at the beginning of their concentration that they have a level of competence equivalent to two courses of African language study will be required to substitute other courses offered in the department. Language courses taken outside of Harvard may be substituted upon approval by the Director of the African Language Program and the Director of Undergraduate Studies.
    d. A course in pre-20th century African history. (Students must select from a preapproved list of courses available on the department's website or petition the Director of Undergraduate Studies for a substitution.) A course in African history. (Students must select from a preapproved list of courses available on the department's website or petition the Director of Undergraduate Studies for a substitution.)
    e. Five courses in African Studies, with at least one in the social sciences and one in the humanities. (These courses need not be given in the department.) In selecting these courses, students should declare a focus. Some students will declare a disciplinary focus or more general focus in the humanities or social sciences; others will choose an area focus or thematic, methodological, or comparative focus (for example, comparative literary or historical analysis, or comparative economic and political development). These are not the only possibilities, but students are required to make a coherent case for the course of electives they choose.
2. *Tutorials:*
    a. Sophomore tutorial: AFRAMER 97: Race, Class, and Colonialism in Africa and the Americas. (Restricted to concentrators and others by permission of instructor.)

    b. Junior tutorial: AFRAMER 98A: An individual course tutorial that focuses on an African Studies topic.
3. *Other information:*
    a. Pass/fail: No course used for the concentration may be taken pass/fail, with the exception of AFRAMER 99.
    b. Students can take AFRAMER 11 and AFRAMER 97 in succeeding terms starting in their first year or sophomore year, and then proceed to do individual tutorials in the junior year. Nevertheless, the tutorial program is designed to allow great flexibility; students who declare late may take AFRAMER 97 concurrently with AFRAMER 11, for example. Concentrators may be permitted to substitute for AFRAMER 11 if they declare late.
    c. Study abroad: Students are encouraged to explore the options available for study in Africa, either during the regular academic year or the summer. It is recommended that students study abroad in the spring term of their junior year. In either case, they must get approval of their Plan of Study from the department's Director of Undergraduate Studies.

African Studies Track
Honors Eligibility Requirements: 12–14 courses (48–56 credits)

1. *Required courses:* Same as **Basic Requirements**.
2. *Tutorials:*
    a. Same as **Basic Requirements**.
    b. Senior year: One year of AFRAMER 99: Senior Thesis Workshop required.
3. *Thesis:* Required for eligibility for high and highest honors. A student who has not written a thesis but has attained a GPA of at least 3.9 in 12 concentration courses may be recommended for honors (but not high or highest honors).
4. *Other information:* Same as **Basic Requirements**.

African Studies Track
Joint Concentration Requirements: 8 courses, including thesis (32 credits)

1. *Required courses:*
    a. AFRAMER 11: Introduction to African Studies.
    b. A course in African history. (Students must select from a preapproved list of courses available on the department's website or petition the Director of Undergraduate Studies for a substitution.)
    c. Two courses of an African language. Students who intend to conduct thesis research in Africa are encouraged to continue African language instruction beyond the first year.
2. *Tutorials:*
    a. Sophomore tutorial: AFRAMER 97: Race, Class, and Colonialism in Africa and the Americas. (Restricted to concentrators and others by permission of instructor.)
    b. Junior tutorial: AFRAMER 98A or junior tutorial equivalent in primary concentration if African and African American Studies is the allied concentration.
    c. Senior year: One year of AFRAMER 99 required if African and African American Studies is the primary concentration. If African and African American Studies is the allied concentration, the student should register for the thesis tutorial in the primary concentration.
3. *Thesis:* Required. Thesis must be related to both fields. Both departments will participate in evaluating the thesis.
4. *Other information:* Same as **Basic Requirements**.

African Studies Track
Joint Concentration in History and African and African American Studies
Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Study of an African language (two courses).
    b. AFRAMER 11: Introduction to African Studies.
    c. One History research seminar focused on Africa and resulting in a 20-page research paper based on primary sources.
    d. Five courses in History and African and African American Studies, which must include:
        i. One U.S. or European history course.
        ii. One premodern history course.
        iii. Three courses in African/African American history (one must be a modern African history course).
2. *Tutorials:*
    a. Sophomore tutorial: HIST 97 and AFRAMER 97. (Restricted to concentrators and others by permission of instructor.)
    b. Junior tutorial: AFRAMER 98A.
    c. Senior thesis tutorial: HIST 99 or AFRAMER 99 (full year).
3. *Other information:*
    a. Two types of courses count automatically toward African and African American Studies/History joint concentration requirements:
        i. Courses listed in the course catalog's "History'' section and historical courses in the catalog's "African and African American Studies" section, as determined in consultation with the History Department's Director of Undergraduate Studies.
        ii. Courses taught in the General Education and/or First-Year Seminar programs by members of the History or African and African American Studies department faculty. Students wishing to count such courses toward their concentration requirements should consult the Undergraduate Office, as they may need to file a petition requiring approval by the Director of Undergraduate Studies. Students may also apply to do an independent study, or HIST 91R, with a member of the department; HIST 91R can be used to fulfill one of the elective course requirements.
    b. The joint concentration also regularly accepts credit from study abroad toward concentration requirements. With the exception of certain First-Year Seminars taught by History or African and African American Studies faculty (see above), courses taken on a pass/fail basis may not be counted for concentration credit.

African American Studies Track
Basic Requirements: 12 courses (48 credits)

1. *Required courses*:
    a. AFRAMER 10: Introduction to African American Studies. Students should take this course by the end of their junior year. (Students who transfer into the concentration after their sophomore year will be permitted to substitute for AFRAMER 10 a course in African and African American studies they have already taken, but only if they can demonstrate to the Director of Undergraduate Studies that they have established a basic familiarity with the materials covered in AFRAMER 10.)
    b. AFRAMER 11: Introduction to African Studies. Students should take this

course by the end of their junior year. (Students who transfer into the concentration after their sophomore year will be permitted to substitute for AFRAMER 11 a course in African studies they have already taken, but only if they can demonstrate to the Director of Undergraduate Studies that they have established a basic familiarity with the material covered in AFRAMER 11.)

c. A course in 18th- or 19th-century African American history that engages substantially with the history of slavery. (Students must select from a preapproved list of courses available on the department's website or petition the Director of Undergraduate Studies for a substitution.
d. Seven additional courses in African American or diaspora studies, at least one of which must be in the humanities and one in the social sciences. (These courses need not be given in the department.) Some students will declare a disciplinary focus or a more general focus in humanities or social sciences; others will choose an area of focus in African American or Afro-Caribbean cultures; still others will elect a thematic, methodological, or comparative focus (for example, comparative ethnic studies, comparative literary analysis, urban studies). These are not the only possibilities, but students should be prepared to make a coherent case for the course of electives they select.

2. *Tutorials*:
    a. Sophomore tutorial: AFRAMER 97: Race, Class, and Colonialism in Africa and the Americas. (Restricted to concentrators and others by permission of the instructor.)
    b. Junior tutorial: AFRAMER 98, an individual course tutorial that focuses on an African American Studies topic.
3. *Other information*:
    a. Pass/fail: No course used for the concentration may be taken pass/fail, with the exception of AFRAMER 99.
    b. Students can take AFRAMER 10 and AFRAMER 97 in succeeding terms starting in their first year or sophomore year, and then proceed to do individual tutorials in the junior year. Nevertheless, the tutorial program is designed to allow great flexibility; students who declare late may take AFRAMER 97 concurrently with AFRAMER 10, for example. Concentrators may be permitted to substitute for AFRAMER 10 if they declare late.

African American Studies Track
Honors Eligibility Requirements: 12–14 courses (48–56 credits)

1. *Required courses:* Same as **Basic Requirements**.
2. *Tutorials:*
    a. Same as **Basic Requirements**.
    b. Senior year: One year of AFRAMER 99: Senior Thesis Workshop required.
3. *Thesis:* Required for eligibility for high and highest honors. A student who has not written a thesis but has attained a GPA of at least 3.9 in 12 concentration courses may be recommended for honors (but not high or highest honors).
4. *Other information:* Same as **Basic Requirements**.

African American Studies Track
Joint Concentration (Honors Only) Requirements: 8 courses, including thesis (32 credits)

1. *Required courses:*
    a. AFRAMER 10: Introduction to African American Studies.
    b. A course in 18th- or 19th-century African American history that engages substantially with the history of slavery. (Students must select from a

preapproved list of courses available on the department's website or petition the Director of Undergraduate Studies for a substitution.)
    c. Two courses in African American or diaspora studies, one in the humanities and one in the social sciences.
2. *Tutorials:*
    a. Sophomore tutorial: AFRAMER 97: Race, Class, and Colonialism in Africa and the Americas. (Restricted to concentrators and others by permission of the instructor.)
    b. Junior tutorial: AFRAMER 98 or junior tutorial equivalent in primary concentration if African and African American Studies is the allied concentration.
    c. Senior year: One year of AFRAMER 99 is required if African and African American Studies is the primary concentration. If African and African American Studies is the allied concentration, the student should register for the thesis tutorial in the primary concentration.
3. *Thesis:* Required. Thesis must be related to both fields. Both departments will participate in evaluating the thesis.
4. *Other information:*
    a. Pass/fail: No course used for the concentration may be taken pass/fail, except for AFRAMER 99.
    b. Students can take AFRAMER 10 and AFRAMER 97 in succeeding terms starting in their first year or sophomore year, and then proceed to do individual tutorials in their junior year. Nevertheless, the tutorial program is designed to allow great flexibility; students who declare late may take AFRAMER 97 concurrently with AFRAMER 10, for example.
    c. Concentrators may be permitted to substitute for AFRAMER 10 if they declare late.

African American Studies Track
Joint Concentration in History and African and African American Studies
Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. AFRAMER 10: Introduction to African American Studies.
    b. Two courses in African American Studies: one in humanities, one in social sciences.
    c. One course in African American pre-20th-century history (if not available, consult the Director of Undergraduate Studies).
    d. One history research seminar (ideally focused on African American history) resulting in a research paper of at least 20 pages based on primary sources.
    e. Four courses in History and African and African American Studies. These courses must include:
        i. One premodern history course.
        ii. Three African/African American history courses, of which one must be a modern African history course.
2. *Tutorials:*
    a. Sophomore tutorials: HIST 97 and AFRAMER 97.
    b. Junior tutorial: AFRAMER 98A.
    c. Senior thesis tutorial: HIST 99 or AFRAMER 99 (full year).
3. *Other information:* Two types of courses count automatically toward African and African American Studies/History concentration requirements:
    a. Courses listed in the course catalog's "History" section and historical courses in the catalog's "African and African American Studies" section, as determined in consultation with the History Department's Director of Undergraduate Studies.

b. Courses taught in the General Education and/or First-Year Seminar programs by members of the History or African and African American Studies department faculty. Students wishing to count such courses toward their concentration requirements should consult the Undergraduate Office, as they may need to file a petition requiring approval by the Director of Undergraduate Studies. Students may also apply to do an independent study or HIST 91R with a member of the department; HIST 91R can be used to fulfill one of the elective course requirements.
c. The joint concentration also regularly accepts credit from study abroad toward concentration requirements. With the exception of certain First-Year Seminars taught by History or African and African American Studies faculty (see above), courses taken on pass/fail basis may not be counted for concentration credit.

ADVISING

Beginning in the sophomore year, concentrators will work directly with their individual advisors and with the Director of Undergraduate Studies to create a Plan of Study that meets their academic interests.

The department requires that students develop a focus as part of their declaration of the concentration. This Plan of Study should be mindful of disciplinary requirements and the option of study abroad yet be flexible enough to accommodate students in pursuit of their own specific intellectual interests. At the end of the sophomore year, students are asked to submit a one- to two-page Concentration Focus Statement describing the main area(s) of study they wish to explore. The Director of Undergraduate Studies will meet with students, if they request, to assist them in the formulation of the statement of concentration focus.

For up-to-date information on advising in African and African American Studies, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Franklin D. and Wendy F. Raines Library

The Franklin D. and Wendy F. Raines Library in the Department of African and African American Studies is located on the second floor of the Barker Center and contains a noncirculating collection of important books, academic and popular periodicals, and offprints, as well as an extensive audio and video collection. Past undergraduate theses are also available.

Committee on African Studies

Another important resource for African Studies concentrators is the Committee on African Studies, which offers summer travel grants to assist Harvard juniors with senior honors thesis research. Students should see the committee's website (http://africa.harvard.edu) for more information. The committee can also guide students to resources for teaching, research, and advisory work on Africa in several department centers and institutes at Harvard.

Office of International Education

Finally, Harvard's Office of International Education has approved study abroad in 11 African countries (https://oie.fas.harvard.edu/home). To plan their term in Africa, students should meet with the Director of the Office of International Programs.

HOW TO FIND OUT MORE

Students should consult the departmental website (http://aaas.fas.harvard.edu/), which includes information about concentration rules, the senior thesis, model programs, faculty

interests, and departmental resources. Additional information is available from the Assistant Director of Undergraduate Studies, Dr. Carla Martin (cdmartin@fas.harvard.edu), and the Graduate and Undergraduate Studies Coordinator, Keirsten Melbourne (keirsten_melbourne@fas.harvard.edu), at 617-384-7767. The department is located on the second floor of the Barker Center, 12 Quincy Street.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
African and African American Studies	10	11	6	6	4	7	3	1	2	10
African and African American Studies + another field	4	0	2	2	4	5	8	4	2	2
Another field + African and African American Studies	14	10	11	12	20	30	28	26	25	24

Anthropology

Anthropology brings global, comparative, and holistic views to the study of the human condition, exploring the enormous range of similarities and differences across time and space. It includes the study of how human behavior has evolved as well as how language, culture, and society have shaped and continue to shape the human experience.

The concentration in Anthropology aims to cultivate a critical understanding of this wide-ranging experience. To study the human condition is to confront the familiarity of the seemingly strange, and to interrogate the strangeness of that which seems familiar. What does this mean? At the very least, it means stepping back and seeing ourselves the way others might see us—a shift in perspective that is foundational to human empathy and humility. Anthropology also invites deeper analysis of behaviors that we might think we fully understand but that have histories and complexities that only reveal themselves to careful investigation. This is why we do long-term field research in local languages to understand social life in all its richness and depth. And finally, making the familiar strange demands an ethical and political accounting. It means not accepting the world as given. This might well be the heart of the discipline, its moral optimism: the conviction that things can be different and better—and that knowledge about the world should be oriented toward greater empathy, solidarity, and equality.

Through an insistence on the importance of context, anthropologists wrestle with the totality of intersections between human practices and behaviors, beliefs, culture, place, politics, identities, and more. Some develop this awareness of cultural and social context into an engaged participation in the contemporary world through politics, work in the public sector, global health policy, journalism, cultural heritage work, the law, advertising, or business. For others, the study of anthropology provides a foundation for graduate studies in anthropology or related fields.

At Harvard, the Anthropology Department is divided into two programs: Archaeology and Social Anthropology.

Archaeology investigates the past human condition primarily through the identification, recovery, and analysis of the material remains of ancient peoples in the field and in the laboratory. Goals of archaeology include understanding such developments as the origins of modern humans, the beginnings and spread of agriculture, and the rise and elaboration of complex societies, as well as the roles that archaeologically documented pasts play in the modern world.

Social Anthropology examines the social and cultural diversity of contemporary human experience, practice, and knowledge. Based on various research methods including ethnography, social anthropology provides a critical perspective for better understanding of everyday life in a globalized world, and the political, economic, and cultural interconnections within and among the societies of the world.

All students are strongly encouraged to take the opportunity to study and/or carry out research abroad and to gain a basic knowledge of both subfields (Archaeology and Social Anthropology). Beyond this, most students focus their studies within one of the two programs, meeting the concentration requirements set forward by the particular program concerned. Some students may choose to pursue a combined focus on both approaches, meeting reduced concentration requirements for both Social Anthropology and Archaeology.

Senior theses are generally supervised within a program, and the tutorials concentrate on problems of research within the subfields of each program. Anthropology concentrators may, however, take tutorials for credit in both programs if they so choose. Field and laboratory research are encouraged, although not required.

While specialization in either Social Anthropology or Archaeology is the most common pattern, the Anthropology Department also encourages interdisciplinary work across programs or between Anthropology and other disciplines. The Anthropology Department allows students to arrange joint concentrations with other Faculty of Arts and Sciences (FAS) departments when appropriate and possible. Such concentrations are restricted to honors candidates and culminate in an interdisciplinary senior thesis. A joint concentration involves an individualized, coherent plan of study approved by both of the departments involved. Harry Lewis, Gordon McKay Professor of Computer Science, best described the joint concentration: "A joint concentration is meant to be a program that integrates two fields and aims toward a research thesis bridging the areas. In other words, a joint concentration in X and Y is meant for people who have an interest in the intersection of X and Y, not just in both X and Y independently." The number of required Anthropology courses and basic program requirements may be reduced when declaring a joint concentration.

LEARNING OBJECTIVES

The study of anthropology prepares students to address global concerns through a contextualized study of society, culture, and civilization, and can lead to careers in global health and medicine, law, government, museums, education, the arts, cultural and environmental management, business and entrepreneurship, among other fields, not to mention academia.

REQUIREMENTS

Archaeology Track

Basic Requirements: 10 courses, including 2 tutorials (40 credits)

1. *Required courses*:
    a. One course in archaeological method and theory. Ordinarily met with GENED 1105 (fall term) or ANTHRO 1010 (prior to 2019).
    b. Five additional Archaeology courses, any level.
    c. One Social Anthropology course.
    d. One course related to human evolution. This course must be approved by the Director of Undergraduate Studies (DUS) or Assistant Director of Undergraduate Studies (ADUS).
2. *Tutorials:*
    a. Sophomore year: ANTHRO 97X: Sophomore Tutorial in Archaeology (spring term).
    b. Junior year: ANTHRO 98A: Junior Tutorial in Anthropology (fall term).
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*:
    a. *Pass/fail*: Two courses may be taken pass/fail and counted toward the concentration. All Anthropology tutorials are letter-graded.
    b. *Languages:* The department itself has no language requirement. However, the importance of modern languages for research in all branches of anthropology cannot be too highly stressed. Concentrators who expect to do work in anthropology beyond the A.B. degree are most strongly urged to develop their language skills as undergraduates.
    c. *Statistics/archaeological science:* Concentrators in combined Archaeology and

Social Anthropology are encouraged to take courses in statistics, archaeological science, and/or computer science (including geographic information systems [GIS]). Competence in handling quantitative data is extremely important in anthropological research, and such competence is best obtained through formal training in statistics and scientific methods.

d. *Study and research abroad:* Concentrators in Archaeology are encouraged to investigate the possibilities for studying and/or carrying out research abroad during the summer or during the academic year. If a student has received Harvard degree credit for courses taken in a Harvard-approved overseas studies program, that student may petition the DUS or ADUS for permission to count these courses toward the requirements of the Archaeology concentration. Ordinarily, up to two courses per semester may be counted for concentration credit.
e. *Field experience:* Concentrators are required to participate in a field experience. While field experience is not a course requirement, it may be completed by having an experience, training, or internship, including museum internships, for which there is not credit given.

Archaeology Track
Honors Eligibility (Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*:
    a. One course in archaeological method and theory. Ordinarily met with GENED 1105 (fall term).
    b. Four additional Archaeology courses, any level.
    c. Graduate-level research seminar (2000-level).
    d. One Social Anthropology course.
    e. One course related to human evolution. This course must be approved by the DUS or ADUS.
2. *Tutorials*:
    a. Sophomore year: Same as **Basic Requirements**.
    b. Junior year: In addition to ANTHRO 98A (fall term), Archaeology honors candidates are strongly encouraged to enroll in ANTHRO 98B, an individual junior tutorial, normally taken spring term, in which they carry out study and research directly related to the preparation of the senior thesis. Assignments may include a focused literature review, a grant proposal for summer research funding, etc.
    c. Senior year: ANTHRO 99 (a yearlong eight-credit course; letter-graded during the fall term and SAT/UNS during the spring term), culminating in the submission of a senior thesis and related poster, followed by an oral presentation of and examination on the thesis.
3. *Thesis*: Required, with oral examination.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**. Honors candidates usually carry out research for their senior theses during the summer between their junior and senior years.

NON-THESIS TRACK
Graduating seniors in Archaeology who are not thesis candidates and have taken a 2000-level course may be considered for a non-thesis honors recommendation of honors (but not high or highest honors), provided that their concentration grade-point averages calculated at the end of their next-to-last semester are among the highest 25 percent of non-thesis candidates in their graduating class.

Social Anthropology Track
Basic Requirements: 10 courses (40 credits)

1. *Required courses:*
    a. ANTHRO 1610: Ethnographic Research Methods (fall term).
    b. Four Social Anthropology courses, any level.
    c. Two courses in Anthropology, of which at least one must be an Archaeology course (any level).
    d. One related course: One additional course in Anthropology or in any social sciences field or advanced foreign language. Students may substitute a relevant course in humanities or science fields with approval from the DUS or ADUS.
2. *Tutorials*:
    a. Sophomore year: ANTHRO 97Z: Sophomore Tutorial in Social Anthropology (spring term).
    b. Junior year: ANTHRO 98A: Junior Tutorial in Anthropology (fall term).
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*:
    a. Pass/fail: One course may be taken pass/fail and counted for concentration credit. This will ordinarily be in the related course category. All Anthropology tutorials are letter-graded.
    b. Language: Not required but strongly encouraged.
    c. Study abroad: Concentrators are strongly encouraged to participate in study abroad or internship programs. If a student has received Harvard degree credit for courses taken in a Harvard-approved overseas studies program, that student may petition the DUS or ADUS for permission to count up to two courses per semester toward the requirements of the concentration.

Social Anthropology Track
Honors Eligibility (Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials*:
    a. Sophomore and junior years: Same as **Basic Requirements**.
    b. Junior year: In addition to ANTHRO 98A (fall term), Social Anthropology honors candidates are strongly encouraged to enroll in ANTHRO 98B, an individual junior tutorial, normally taken spring term, in which they carry out study and research related to the preparation of the senior thesis.
    c. Senior year: ANTHRO 99 (a yearlong eight-credit course; letter-graded during the fall term and SAT/UNS during the spring term), culminating in the submission of a senior thesis and an oral examination on that thesis.
3. *Thesis*: Required, with oral examination.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**. Honors candidates usually carry out research for their senior theses during the summer between their junior and senior years.

NON-THESIS TRACK
All graduating seniors in Social Anthropology who are not thesis candidates may be considered for a non-thesis honors recommendation of honors (but not high or highest honors), provided that their concentration grade-point averages calculated at the end of their next to-last semester are among the highest 25 percent of non-thesis candidates in their graduating class.

Combined Archaeology and Social Anthropology
Basic Requirements: 10 courses (40 credits)

1. *Required courses*:
    a. One course in archaeological method and theory. Ordinarily met with GENED 1105 (fall term) or ANTHRO 1010 (prior to 2019).
    b. ANTHRO 1610: Ethnographic Research Methods (fall term).
    c. One course in Archaeology.
    d. One course in Social Anthropology.
    e. One course in Archaeology or Social Anthropology.
    f. One course in Archaeology or Social Anthropology. Graduate research seminar (2000-level) encouraged, but not required.
    g. One related course: One additional course in Anthropology or a related discipline, human biology, or human evolution. This course must be approved by the DUS or ADUS.
2. *Tutorials*:
    a. Sophomore year: Both Archaeology and Social Anthropology sophomore tutorials (ANTHRO 97X and ANTHRO 97Z, two courses, spring term).
    b. Junior year: ANTHRO 98A: Junior Tutorial in Anthropology (fall term).
3. *Thesis*: Not required.
4. *General examination:* None.
5. *Other information:*
    a. Pass/fail: Same as **Basic Requirements** for each program.
    b. Languages: Same as **Basic Requirements** for each program.
    c. Statistics/archaeological science: Concentrators in combined Archaeology and Social Anthropology are encouraged to take courses in statistics, archaeological science, and/or computer science (including GIS). Competence in handling quantitative data is extremely important in anthropological research, and such competence is best obtained through formal training in statistics and scientific methods.
    d. Study abroad: Study abroad is encouraged. Consult the DUS or ADUS.

Combined Archaeology and Social Anthropology
Honors Eligibility (Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials*:
    a. Sophomore and junior years: Same as **Basic Requirements**.
    b. ANTHRO 99: Senior Tutorial (a yearlong eight-credit course; letter-graded during the fall term and SAT/UNS during the spring term), culminating in the submission of a senior thesis and an oral examination on that thesis.
3. *Thesis*: Required, with oral examination.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**. Prospective honors candidates are strongly encouraged to enroll in ANTHRO 98B (spring term). Honors candidates usually carry out research for their senior theses during the summer between their junior and senior years.

NON-THESIS TRACK
All graduating seniors in combined Archaeology and Social Anthropology who are not thesis candidates may be considered for a non-thesis honors recommendation of honors (but not high or highest honors), provided that their concentration grade-point averages calculated at the end of their next-to-last semester are among the highest 25 percent of non-thesis

candidates in their graduating class.

Anthropology
Joint Concentrations

The programs in Archaeology and Social Anthropology of the Department of Anthropology both encourage a joint concentration with any other department that permits a joint concentration. A joint concentration is meant to be a program that integrates two fields and aims toward a research thesis bridging the areas. The Anthropology part of the joint concentration can serve as either the primary or allied field. Consult the DUS or ADUS and the concentration advisor in the allied field for details.

Joint Concentration in Archaeology with a Field Outside of Anthropology
Requirements: 7 courses (28 credits)

1. *Required courses:* Seven courses are required for the Archaeology portion of the joint concentration:
    a. One course in archaeological method and theory. Ordinarily met with GENED 1105 (fall term) or ANTHRO 1010 (prior to 2019).
    b. ANTHRO 97X: Sophomore Tutorial in Archaeology (spring term).
    c. ANTHRO 98A: Junior Tutorial in Anthropology (fall term).
    d. Three additional Archaeology courses, any level.
    e. One additional Archaeology course: ordinarily a research seminar (2000-level) expected.
2. *Other information*:
    a. Because a joint concentration is an honors concentration, if Archaeology is the primary field, the following courses are also required: ANTHRO 99: Senior Tutorial (a yearlong eight-credit course: letter-graded during the fall term and SAT/UNS during the spring term), culminating in the submission of a senior thesis and an oral examination on that thesis.
    b. Prospective honors candidates are strongly encouraged to enroll in ANTHRO 98B (spring term). Honors candidates usually carry out research for their senior theses during the summer between their junior and senior years.
3. *Field experience:* Students who are working toward a joint concentration in Archaeology and another field are encouraged to participate in a field experience, but this will depend on the nature of the joint concentration. While this is not a course requirement, field experience may be completed by having an experience, training, or internship, including museum internships, for which there is not credit given.

Joint Concentration in Social Anthropology with a Field Outside of Anthropology
Requirements: 6 courses (24 credits)

1. *Required courses:* Six courses are required for the Social Anthropology portion of the joint concentration:
    a. ANTHRO 1610: Ethnographic Research Methods (fall term).
    b. ANTHRO 97A: Sophomore Tutorial (spring term).
    c. ANTHRO 98A: Junior Tutorial (fall term).
    d. Two Social Anthropology courses, any level.
    e. One additional course in Anthropology.
2. Because a joint concentration is an honors concentration, if Social Anthropology is the primary field, the following courses are also required:
    a. One Social Anthropology course, any level.
    b. One additional course in Anthropology.
    c. ANTHRO 99: Senior Tutorial (a yearlong eight-credit course).
3. *Other information*: Prospective honors candidates are strongly encouraged to enroll in

ANTHRO 98B (spring term). Honors candidates usually carry out research for their senior theses during the summer between their junior and senior years.

Joint Concentration in Human Evolutionary Biology (HEB) and Anthropology (Archaeology or Social Anthropology Track, or both)
Requirements: 16 courses (64 credits)

1. *Required courses*:
    a. Five Anthropology courses (in Social Anthropology or Archaeology or a mix of both), including one of either ANTHRO 1610 or GENED 1105 (or ANTHRO 1010 prior to 2019), and highly recommended ANTHRO 98B: Junior Tutorial.
    b. Sophomore tutorials: HEB 97 and ANTHRO 97X or ANTHRO 97Z.
    c. Junior tutorials/seminars: ANTHRO 98A and a HEB junior research seminar.
    d. Senior thesis tutorial: HEB 99 or ANTHRO 99 (full year).
    e. Five additional courses:
        i. LS 1B.
        ii. LS 1A, LPS A, or HEB course (depending on whether HEB is the primary or allied concentration).
        iii. One course in human evolution.
        iv. One course in anatomy/physiology or human/primate behavior.
        v. One HEB course.
2. *Other information*:
    a. Students should also note that a signed form is required from the DUS or ADUS in **both** departments.
    b. If a student's primary field is expected to be Anthropology, special permission is needed to enroll in HEB 97 during sophomore year.

Joint Concentration in History and Anthropology (Archaeology or Social Anthropology Track, or both)
Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Four Anthropology courses (in Social Anthropology or Archaeology or a mix of both), including one of either ANTHRO 1610 or GENED 1105 (or ANTHRO 1010 prior to 2019).
    b. Sophomore tutorials: HIST 97 and ANTHRO 97X or ANTHRO 97Z.
    c. Junior tutorials/seminars: ANTHRO 98A and a seminar in History resulting in a 20-page research paper using primary sources.
    d. Senior thesis tutorial: HIST 99 or ANTHRO 99 (full year).
    e. Four additional History courses:
        i. One Western history course.
        ii. One premodern history course.
        iii. One non-Western history course.
        iv. Another course in history.
2. *Other information:*
    a. Two types of courses count automatically toward Anthropology/History joint concentration requirements:
        i. Courses listed in the course catalog's "History" section and historical courses in the catalog's "Anthropology" section, as determined in consultation with the History DUS.
        ii. Courses taught in the General Education and/or First-Year Seminar programs by faculty members of the History or Anthropology departments. Students wishing to count such courses toward their concentration requirements should consult the Undergraduate Office, as

they may need to file a petition requiring approval by the Director of Undergraduate Studies. Students may also apply to do an independent study, or HIST 91R, with a member of the History Department; HIST 91R can be used to fulfill one of the elective course requirements.

b. The joint concentration also regularly accepts credit from study abroad toward concentration requirements. With the exception of certain First-Year Seminars taught by History or Anthropology faculty (see above), courses taken on pass/fail basis may not be counted for concentration credit.

ADVISING

Advising in the Department of Anthropology is carried out by the Director of Undergraduate Studies (DUS), the Assistant Director of Undergraduate Studies (ADUS), faculty, senior graduate students, and the Undergraduate Program Coordinator. The DUS has overall responsibility for the academic progress of undergraduates and, along with the ADUS, is available by appointment for advice on academic and administrative matters. The Undergraduate Program Coordinator also provides information on departmental and College requirements and on administrative matters, particularly to Social Anthropology students. Starting in the junior year and depending on their interests, undergraduates often begin to work more closely with individual faculty members, senior graduate students (especially in Social Anthropology), and members of the staff of the Peabody Museum of Archaeology and Ethnology (especially in Archaeology) within the tutorial system. Choice of a faculty advisor depends largely on the academic and research interests of the student.

RESOURCES

Peabody Museum of Archaeology and Ethnology

Founded in 1866, the Peabody Museum is among the oldest archaeological and ethnographic museums in the world and has one of the finest collections of human cultural history found anywhere.

Tozzer Library

Established in 1868, Tozzer Library is the oldest library in the United States devoted to anthropology. It contains more than 250,000 volumes, with a special emphasis on materials relating to the indigenous peoples of the Americas.

Archaeological Research Labs

The Mesoamerican Lab focuses on Mesoamerican archaeology, ethnology, epigraphy, and iconography. The Zooarchaeology Lab focuses on the research and analysis of animal remains that form archaeological sites. The Joint Use Lab provides facilities and equipment for materials analysis in archaeology and related disciplines.

Additional Resources

Anthropology's tradition of cross-cultural understanding and its multidisciplinary approach to the study of the human condition has fostered strong links to many other disciplines and research centers across Harvard University. Social anthropologists can be found in the Center for Middle Eastern Studies, the Asia Center, the Harvard-Yenching Institute, the Fairbank Center for East Asian Research, the Reischauer Institute of Japanese Studies, the South Asia Institute, the David Rockefeller Center for Latin American Studies, the Davis Center for Russian and Eurasian Studies, and the faculties of Medicine, Public Health, and Education, as well as in other departments of the Faculty of Arts and Sciences (FAS). There are archaeologists in the departments of Near Eastern Languages and Civilizations, Classics, and History of Art and Architecture, and there is a Standing Committee on Archaeology that includes individuals from across FAS who are practicing archaeologists or for whom use of the results of archaeological study are integral to their teaching and research. From time to

time, distinguished visiting scholars hold teaching appointments in the department. Harvard students have access to an exceptionally large number of professional anthropologists.

FIELDWORK

Fieldwork may be taken for credit through an approved university. Institute of Field Research archaeological field schools are preapproved by the Department of Anthropology. Although concentrators will register directly with the other university, they must first obtain permission from the Department of Anthropology at Harvard and apply for credit through the Office of International Education (https://oie.fas.harvard.edu). Upon completion of this work and receipt of the official transcript, the department will make a recommendation to the Office of International Education regarding the amount of concentration credit to be granted toward the A.B. degree.

HOW TO FIND OUT MORE

The department's website address is https://anthropology.fas.harvard.edu. The undergraduate office is Room 103B, Tozzer Anthropology Building, 21 Divinity Avenue (617-495-3814). To discuss Anthropology Department concentration requirements, contact the Director of Undergraduate Studies (DUS) or Assistant Director of Undergraduate Studies (ADUS). For general information, contact anthrouc@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Anthropology	60	53	43	45	46	44	24	27	34	35
Anthropology + another field	7	7	8	11	4	11	16	15	11	10
Another field + Anthropology	8	7	7	8	14	15	12	13	17	12

Applied Mathematics

Mathematical modeling is ubiquitous throughout the physical, biological, social, engineering, and management sciences. Mathematical scientists who identify themselves primarily as applied mathematicians develop, implement, and study mathematical, statistical, and computational techniques broadly applicable in various fields. Applied mathematicians bring mathematical modeling skills to bear on particular scientific problems. When phenomena are relatively simple, they use approximations to obtain insights and predictions. For more complicated systems, they could create conceptual frameworks grounded in quantitative reasoning.

In their methodological role, applied mathematicians may function temporarily as mathematicians, statisticians, or computer scientists; in their phenomenological role, they may function temporarily as physicists, chemists, biologists, economists, engineers, and the like. In both roles, they must possess relevant knowledge, technical mastery, and educated taste; clearly, this necessitates specialization. Avowed practitioners of mathematically oriented segments of other disciplines equally may function temporarily as applied mathematicians.

The range of activities carried on under the aegis of the principal professional organization in the field, the Society for Industrial and Applied Mathematics (SIAM), can serve as an operational definition of the scope of the discipline. Various SIAM publications are readily accessible to Harvard students, and student memberships are available. Ideally, over time, an applied mathematician demonstrates substantive involvement with both the mathematical and scientific aspects of their dual roles. In the long run, their contributions must be evaluated based on both methodological and phenomenological impact. Inside academia, their activities are usually carried out in collaboration with students or colleagues; outside academia, applied mathematicians often serve as parts of a multidisciplinary team tackling complex problems under time and resource constraints. In either context, a premium is placed on having an outstanding ability to communicate with fellow technical professionals.

Applied mathematics is inherently interdisciplinary—in motivation and in operation. This vision informs the design of the concentration. The Applied Mathematics concentration consists of a broad undergraduate education in the mathematical sciences, both in those subjects that have proved vital to an understanding of problems arising in other disciplines, and in some specific area where mathematical methods have been substantively applied.

The concentration requirements are flexible but structured and demanding. Individual academic programs should be arranged in consultation with an advisor and will be approved by the advisor and by the Co-Director of Undergraduate Studies. The concentration is overseen by an interdepartmental Committee on Undergraduate Studies in Applied Mathematics and administered by the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS).

Students select the concentration because they enjoy mathematical course work and are especially interested in the use of mathematics to solve real-world problems. Some want a deeper involvement with an area of application than may be provided within a mathematics, statistics, or computer science concentration. Others want a more mathematically oriented approach to an area of application than that which is normally provided within the corresponding concentration; mathematical economics is a prime example. Yet others want a special program not otherwise available, usually involving an area of application in which mathematical modeling is less common. Applied mathematics programs will typically involve a broader range of study within the mathematical sciences and a narrower range of study within

the area of application than alternate programs offered by neighboring concentrations. With a little forethought, it is ordinarily straightforward to change the chosen area of application or to transfer between this concentration and neighboring ones until the end of the sophomore year, and often beyond.

Some concentrators go on to graduate work or to employment in their area of application, or in applied mathematics. Others go on to professional schools in law, medicine, or business. Students interested in entering a Ph.D. program should plan to take more technical electives than the minimum required for concentration and should plan their program carefully with their advisor and with a Co-Director of Undergraduate Studies.

LEARNING OBJECTIVES

For concentrators, a core learning objective is building and demonstrating foundational knowledge in computation, probability, discrete and continuous mathematics through the successful completion of the foundation and breadth courses. In addition, through their course work, concentrators should gain facility and comfort in using approximation to simplify problems and gain insight. They should learn to communicate effectively with fellow technical professionals, and should be prepared, by their senior year, to tackle mathematical modeling problems in their area of application at the level of a senior thesis. Additionally, students can expect to be able to attain employment or, with appropriate planning, gain admission to graduate study in applied mathematics.

REQUIREMENTS

Prospective concentrators are encouraged to make early contact with concentration representatives. Students wishing to enter the concentration should review the concentration requirements, meet with a Co-Director of Undergraduate Studies to discuss their proposed program, and then submit a Plan of Study at http://studyplan.seas.harvard.edu/. Students should be aware that interdisciplinary and interdepartmental programs will usually be more demanding than conventional programs in an established discipline. Prerequisite or corequisite courses not included in the program of study may be needed to provide background or perspective.

In addition to the courses listed specifically below, more advanced courses may be approved by petition in the context of a particular program of study. In certain areas of application, undergraduates routinely take courses designated as primarily for graduate students. Recommendations or restrictions on course selection may flow from the choice of a particular area of application.

Total course requirements may be reduced from 15 to no less than 12, and the balance of foundation and breadth courses are dependent on placement in math courses. Such placement is granted based on an appropriate Advanced Placement examination, the Harvard Mathematics Placement Test, or an equivalent college-level course taken elsewhere, provided this bypass is validated by successful completion (honor grades) of more advanced courses. Students seeking placement based on college-level work done elsewhere must submit a petition to am-advising@seas.harvard.edu, supplemented by suitable supporting materials. Transfer students from other colleges will have their programs considered on a case-by-case basis in response to a petition documenting their previous preparation.

Applied Mathematics
Concentration Requirements: 14–15 courses (56–60 credits)

1. *Required courses:*
    a. Foundation: Two to five courses (see “Notes,” part d below) in calculus and

linear algebra:

i. MATH MA+MB or MATH QA+QB or MATH 1A.
ii. MATH 1B.
iii. APMTH 22B, MATH 21A, or MATH 22B.
iv. APMTH 22A, MATH 21B, or MATH 22A.

b. Breadth: Five to seven courses from the following categories. Students must take courses from at least five out of the eight categories listed below. Of those, students must take at least one course in Computation and one course in Probability and Statistics. In addition, students must take a course drawn from at least one "continuous" category (Differential Equations or Analysis) and one drawn from at least one "discrete" category (Algebra, Optimization, or Discrete Mathematics). Students must show evidence of satisfying prerequisites, as well as any recommended preparation, for a course to count toward the concentration.
    i. Computation:
        1. First course: APMTH 10, COMPSCI 32, or COMPSCI 50.
        2. Additional courses: APMTH 111, APMTH 205, APMTH 207, COMPSCI 51, COMPSCI 61, COMPSCI 109A, COMPSCI 109B, COMPSCI 181, COMPSCI 182, or MCB 112.
    ii. Probability and Statistics:
        1. First course: either STAT 110 or MATH 154, but not both.
        2. Additional courses: STAT 111, STAT 121, STAT 139.
    iii. Differential Equations: APMTH 105, APMTH 108, MATH110.
    iv. Analysis: APMTH 104, APMTH 201, MATH 112, MATH 113, MATH 114, MATH 115, MATH 118R.
    v. Algebra:
        1. Linear Algebra: APMTH 120, MATH 121.
        2. Abstract Algebra: MATH 122, MATH 123.
    vi. Optimization: APMTH 121, MATH 116.
    vii. Discrete Mathematics: APMTH 107, MATH 152, MATH 155R, COMPSCI120, COMPSCI 121, COMPSCI 124.
    viii. Modeling and approved electives: APMTH 50, APMTH 91R, APMTH 115, APMTH 216, ECON 985, or an approved advanced technical elective from outside of the student's application area.

c. Application: Five courses from an area of application in which mathematics has been substantively applied, selected to provide a coherent and cumulative introduction to mathematically oriented aspects of the field.

d. Notes:
    i. The number of required courses depends on the starting Math course.
        1. Students starting in MATH MA or MATH QA or MATH 1A: 15 courses.
            a. MATH MA or MATH QA (five Foundation, five Breadth, five Application).
            b. MATH 1A (four Foundation, six Breadth, five Application).
        2. Students starting in MATH 1B or higher: 14 courses.
            a. MATH 1B (three Foundation, six Breadth, five Application).
            b. MATH 21A or higher (two Foundation, seven Breadth, five Application).
            c. Note: Students starting in APMTH 22A, or MATH 21A may take MATH 101 in their first or sophomore year as a third Foundation course; these students are then required to take only six courses in the Breadth category. Students may count APMTH 50 only if it is taken before APMTH115.
        3. Students may take MATH 25AB, MATH 55AB in place of

APMTH 22AB, MATH 21AB, or MATH 22AB. In terms of preparing for future Applied Mathematics course work, these courses are appropriate for students who have previously taken multivariable calculus and linear algebra at the level of MATH 21AB.

ii. Honors: Recommendations for honors are based on the grade-point average of the final Plan of Study, the rigor of the overall record, and the satisfaction of the honors requirement. The honors requirement is automatically satisfied with a B- or higher grade in APMTH 115 and satisfactory grades in the APMTH 115 prerequisites. The second option is a modeling project, undertaken in APMTH 91R, in which a mathematical analysis of a problem is undertaken. Papers describing the project must be turned in to the concentration for evaluation by the end of the semester in which the APMTH 91R is completed.

iii. Recommendations for high or highest honors depend on the grade-point average in the courses included in the final Plan of Study, the rigor of the overall record, and the completion and evaluation of a senior thesis.

2. *Thesis:* Optional (see above under "Honors.").
3. *General examination*: None.
4. *Other information:*
    a. Pass/fail: All courses counted for concentration credit must be letter-graded.
    b. Plan of Study: Students entering the concentration must file an Applied Mathematics Plan of Study at https://studyplan.seas.harvard.edu. The program must be reviewed with the student's advisor and updated as necessary each term thereafter before the deadline. The Plan of Study is initially approved by the advisor and is subsequently approved by the Co-Directors of Undergraduate Studies.
    c. Joint concentration: Applied Mathematics may not be combined with any other field of concentration because of its intrinsically interdisciplinary nature; study of an area of application is already an essential part of the program.

ADVISING

The Co-Directors of Undergraduate Studies, Professor Steven Gortler, Dr. Sarah Iams, and Dr. Margo Levine (all reachable at am-advising@seas.harvard.edu), are responsible for student advising in Applied Mathematics. Subsequently, an advisor is assigned to each student. Special arrangements are made for students whose area of application is mathematical economics, in cooperation with the Economics Department. If an advisor becomes unavailable, the student is reassigned to a new advisor. Students may seek further advice from a Co-Director of Undergraduate Studies at any time. For up-to-date information on advising in Applied Mathematics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Applied Mathematics*	279	284	279	305	316	299	245	349	425	424

* Applied Mathematics does not participate in joint concentrations.

Art, Film, and Visual Studies

The concentration in Art, Film, and Visual Studies (AFVS) cultivates skills in the practice and the critical study of the visual arts. It includes photography, filmmaking, animation, new media genres, painting, drawing, printmaking, and sculpture, as well as film and visual studies, critical theory within the context of a liberal arts college.

Within AFVS, there are three different areas of focus: (1) studio arts, (2) film/video making, and (3) film and visual studies. Each has slightly different requirements. In studio arts and film/video, concentrators work toward a level of accomplishment in a chosen area of artistic production while also exploring a variety of other practices. In film and visual studies, concentrators pursue interdisciplinary approaches to the theory and history of images, space, art, and media.

Students who would like to concentrate in AFVS need to have taken at least one AFVS course in their proposed area of focus or be in the process of taking one in their sophomore year at the time of concentration declaration. In addition, students who would like to concentrate in AFVS are asked to have an advising conversation with a member of the department before the College's concentration declaration deadline. Students should email the AFVS Director of Undergraduate Studies (DUS) at AFVS-DUS@fas.harvard.edu or email Paula Soares, Manager of Academic Programs, at soares@fas.harvard.edu, for more information.

Upon graduation, concentrators in AFVS enter a wide variety of fields. Some pursue careers as artists or filmmakers while others go into media and communications. Among the graduate schools to which AFVS concentrators are admitted are schools of architecture, animation, art, film, and photography, as well as graduate schools of arts and sciences, medicine, and business.

LEARNING OBJECTIVES

In studio Art and Film/Video Production, concentrators work toward developing confidence and fluency in a chosen area of artistic production while also exploring a variety of other practices. In Film and Visual Studies, concentrators pursue interdisciplinary approaches to the theory and history of images, space, art, and media. In all areas, AFVS concentrators work closely with faculty, mostly in studios and in small seminars, to gain understanding through both study and practice.

REQUIREMENTS

Studio Arts or Film/Video Area
Concentration Requirements: 12 courses (48 credits)

1. Introductory studios/film or video production courses: At least two courses should be completed by the end of the sophomore year related to the student's area of focus. Introductory courses are typically numbered with two digits.
2. Intermediate studios/film or video production courses: At least two courses should be completed by the end of the junior year related to the student's area of focus. Intermediate courses are typically numbered with three digits. Historical and theoretical courses: At least two courses are required. These are seminar and lecture courses offered in AFVS that explore the history and theory of the moving image, contemporary art, the built environment, and critical studies. Appropriate courses offered in other departments can count toward the history and theory requirements

with prior AFVS department approval.
3. AFVS 97: Sophomore Tutorial: Required of all AFVS concentrators during their first full term in the concentration, ordinarily sophomore spring.
4. Electives within the concentration: Five additional courses in AFVS, two of which may be AFVS 99, the senior thesis or senior project tutorial. AFVS 99 is considered an elective and is not a required course. (Note: Students may petition to have an appropriate triple-digit course count as a second course, at the discretion of the DUS.)

Film and Visual Studies Area
Concentration Requirements: 12 courses (48 credits)

1. Introductory courses: Two courses comprising AFVS 70: The Art of Film and one other double-digit seminar or lecture course in film and visual studies offered within the department, or by Film and Visual Studies affiliate faculty, or a predetermined, relevant General Education course. Students may petition to count an appropriate triple-digit course toward this requirement, per the discretion of the DUS.
2. AFVS 97: Sophomore Tutorial: Required of all AFVS concentrators during their first full term in the concentration, ordinarily sophomore spring.
3. AFVS 98R: Junior Tutorial: Research-based writing workshop.
4. Advanced Film and Visual Studies courses: At least three advanced (100-level or above) seminars or lectures in film and visual studies. Advanced Film and Visual Studies seminars vary each year.
5. Electives: Three courses directly related to film and visual studies, including an AFVS film production or a studio course of the student's choosing. Offerings under this heading will include both film and visual studies classes offered in AFVS by regular, affiliate, and visiting faculty, as well as pertinent film studies classes offered in departments outside of AFVS with prior departmental approval.
6. Senior thesis or senior project: Students who write a thesis or senior project essay will enroll in AFVS 99, which constitutes two courses. Students are strongly encouraged to write a thesis or senior project essay, though it is not required. Students who choose not to write a thesis will instead take two additional advanced film and visual studies courses (these choices are subject to the approval of the Director of Undergraduate Studies). AFVS 99 is considered an elective and is not a required course. (Note**:** Students should consult with the Director of Undergraduate Studies or the Manager of Academic Programs to discuss which courses in other departments may count toward AFVS film and visual studies requirements.)

Art, Film, and Visual Studies
Information for All Areas

1. *Tutorials and supervised study:*
    a. AFVS 97: Sophomore Tutorial: Required of all AFVS concentrators during their first full term in the concentration, ordinarily sophomore spring.
    b. AFVS 99: Tutorial senior year. Senior projects/theses. AFVS 99 is presumed to be a yearlong, eight-credit course but may be divided if necessary. A thesis or senior project is not required. (Further information appears under "Thesis," below).
    c. AFVS 91R: Special Projects: In very rare instances, AFVS 91R is open to advanced students who wish to carry out a special project under supervision. Professional specialization is not the aim of this course. It is intended for specially qualified students who wish to extend work begun in a regular department course. Students wishing to enroll in AFVS 91R must find a member of the faculty to advise the project and must apply to the Director of Undergraduate Studies. (Note: All tutorials and special projects courses in

AFVS are letter-graded only. Application forms for all AFVS tutorials are available in the department office or from the department's website at https://afvs.fas.harvard.edu.)

2. *Thesis*: Qualified students may only undertake a thesis upon approval by the AFVS Honors Board.

   A thesis is required for all AFVS joint-concentrators; however, it is not required for those not pursuing a joint concentration. Concentrators in AFVS can be recommended for honors without the completion of a thesis or senior project. It is also possible to enroll in an AFVS 99 tutorial without doing a thesis. Like a thesis, senior projects are undertaken with a tutorial advisor but do not undergo some of the rigors associated with the thesis (including thesis reviews, reader evaluations, and the requirement of a finished body of work). A final body of work may or may not result from an AFVS 99 senior project.

   For further information on the differences between an AFVS 99 tutorial with thesis and an AFVS 99 tutorial without thesis, students should consult with the Director of Undergraduate Studies or the department's website at https://afvs.fas.harvard.edu.
3. *General examination:* None.
4. *Other information:*
   a. Related courses for concentration credit: Ordinarily, no more than two courses taken outside Art, Film, and Visual Studies may be counted.
      i. Concentrators and joint concentrators in all areas of the department who wish to receive concentration credit for any non-AFVS course (in the Faculty of Arts and Sciences, at one of Harvard's graduate schools, at MIT, or at the Harvard Summer School) must submit a course requirement substitution form, available on the AFVS website at https://afvs.fas.harvard.edu, even if the course is cross-listed. If the course is not cross-listed, a syllabus must accompany the petition. Syllabi are not required to accompany cross-listed course petitions.
      ii. Relevant courses in other departments may be counted for concentration credit, subject to the approval of the Director of Undergraduate Studies. Each year, a list of courses in other departments approved for concentration credit is published to the AFVS website.
   b. Joint concentrations: Students who are interested in pursuing a joint concentration in Art, Film, and Visual Studies and another concentration must meet with the Director of Undergraduate Studies to discuss this potential course of study.
   c. Pass/fail: Courses counting for concentration credit may not be taken pass/fail or SAT/UNS, except that one First-Year Seminar may be counted for elective concentration credit if taught by a department faculty member and consistent with AFVS Department offerings, and if the student has received a positive evaluation.
   d. Work done out of residence: A student wishing to count work done out of residence toward concentration requirements must have the plan for such work approved by the Director of Undergraduate Studies and the Office of International Education prior to undertaking it. No credit will be given for work done out of residence until this work, when completed, is evaluated by the faculty of the department. Ordinarily, no more than three courses taken out of residence will be counted for concentration credit. For information on programs recommended by the faculty of the department, students should visit the Office of International Education website at https://oie.fas.harvard.edu/.
   e. Honors: Ordinarily, no student whose overall grade-point average in the

concentration falls below a B will be recommended for honors. No concentrator in Art, Film, and Visual Studies is required to do a thesis to be eligible for an honors recommendation from the department.

ADVISING

Departmental academic advising is provided by the Director of Undergraduate Studies, who meets individually with concentrators to discuss course selection. Information and advice are also available throughout the year in the Carpenter Center from Paula Soares, Manager of Academic Programs, who is available on a walk-in basis during most regular office hours. Each new concentrator is assigned a faculty advisor and is required to meet with the advisor at least once prior to the start of each term to review their courses for the term. Students are reminded that they are each responsible for the fulfillment of concentration requirements and should regularly check on the current status of their progress.

RESOURCES

Carpenter Center for the Visual Arts

Aside from providing the space in which the Department of Art, Film, and Visual Studies holds many of its classes, the Carpenter Center for the Visual Arts, designed by world-renowned architect Le Corbusier, is the center for contemporary art and artists at Harvard University. Through exhibitions, new commissions, public events, publications, and residencies, the Carpenter Center is dedicated to artist-centered programming and to building a vibrant community around contemporary art. For more information, see https://carpenter.center/.

Studios

The department also holds classes in Sever Hall, where most of the film, video, and animation studio courses are conducted. Studios at 8 Linden Street are used by practicing artists and photographers, including members of the faculty and senior concentrators doing thesis work, when applicable.

Harvard Film Archive

A division of Harvard Library, the Harvard Film Archive (HFA) is dedicated to the collection, preservation, and exhibition of film. Throughout the year, the HFA presents an ongoing program of film screenings that students can attend free of charge. Through the Harvard Film Archive Student Cinematheque, students have the unique opportunity to engage with the HFA in a variety of ways.

HOW TO FIND OUT MORE

Further information about the concentration may be obtained from the Director of Undergraduate Studies, the AFVS faculty member who oversees the undergraduate program and works closely with concentrators and secondary field students at AFVS-DUS@fas.harvard.edu, or the Manager of Academic Programs, Paula Soares, at soares@fas.harvard.edu or 617-496-4469. The department has an extensive website providing a range of information on the faculty, courses, and the Carpenter Center lecture series, as well as the exhibition schedule. This site is available at https://afvs.fas.harvard.edu/.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Art, Film, and Visual Studies	37	53	56	59	53	48	28	43	46	51
Art, Film, and Visual Studies + another field	0	1	8	5	11	10	9	9	12	14
Another field + Art, Film, and Visual Studies	2	2	4	7	10	12	9	11	16	12

Astrophysics

The concentration in Astrophysics builds the foundation from which students may consider some of the deepest questions of the physical universe. What was the state and composition of the universe at the moment of the Big Bang? What is the nature of the force that currently dominates the expansion of the universe? How do space and time behave in the vicinity of the black hole? How do galaxies form, and how do stars and planets form within those galaxies? Are there habitable worlds other than our own?

The science of astrophysics involves the study of matter and radiation in the universe as understood through the laws of physics. Astronomical phenomena exhibit an extreme range of physical conditions, from superfluid neutrons in neutron stars, high-temperature nuclear reactions in supernovae, and strong gravitational fields near black holes, to the unique state of the universe during its earliest phases. Theoretical attempts to describe these and more familiar phenomena (such as stars and galaxies) have achieved a useful understanding in many cases. However, our overall knowledge of the universe is still woefully incomplete, and our contemporary physical knowledge is often stretched to its limits in attempting to understand physical conditions that cannot be reproduced in terrestrial laboratories.

The concentration in Astrophysics introduces students to a broad range of phenomena through a program of both observational and theoretical courses. This program builds from a foundation of modern physics to a general account of the known contents of the universe. ASTRON 16: Stellar and Planet Astronomy and ASTRON 17: Galactic and Extragalactic Astronomy provide a complete introductory survey to the major fields of astrophysics. The research tutorial, ASTRON 98, places students in close contact with the wide range of research activities at the Harvard-Smithsonian Center for Astrophysics. Undergraduates are strongly encouraged to pursue research projects (conducted under the mentorship of members of the faculty), which culminate in their junior papers and optional senior theses. Since the emphasis of astrophysics is on the explanation of phenomena in the universe in terms of physical theory, the initial stages of a concentration in Astrophysics closely resemble those of the Physics concentration, and the courses offered by the Department of Astronomy are readily accessible to any student with a good physics background. Our concentration offers avenues similar to Physics for future employment and research opportunities.

Astrophysics offers joint concentrations with other departments. In general, such concentrations involve meeting requirements for honors candidates in both fields. Joint concentrations combining Astrophysics with either Physics or with Earth and Planetary Sciences are particularly encouraged, but various other combinations are also possible. Students interested in joint concentrations are invited to contact the Director of Undergraduate Studies, Professor Charles Alcock, at calcock@cfa.harvard.edu or 617-495-7387.

LEARNING OBJECTIVES

The concentration in Astrophysics introduces students to a broad range of phenomena through a program of both observational and theoretical courses. This program builds from a foundation of modern physics to a general account of the known contents of the universe.

REQUIREMENTS

Astrophysics

Concentration Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. ASTRON 16 and ASTRON 17. Together, these two courses provide a complete introductory survey of astrophysics using single-variable calculus and first-year mechanics. These courses are not sequential and thus may be taken in either order.
    b. PHYSICS 15A, PHYSICS 15B, and PHYSICS 15C. Three courses. PHYSCI 12A and PHYSCI 12B may be substituted for PHYSICS 15A and PHYSICS 15B provided students follow with PHYSICS 15C. Qualified students may replace PHYSICS 15A with PHYSICS 16 or PHYSICS 19, to be followed by PHYSICS 15B and PHYSICS 15C.
    c. MATH 21A and MATH 21B. MATH 22A and MATH 22B, or APMTH 22A and APMTH 22B may be substituted for MATH 21A and MATH 21B. MATH MA, MATH MB, MATH 1A, and MATH 1B normally do not count toward concentration credit.
    d. ASTRON 98: Research Tutorial. One course. Generally taken in the spring semester of the junior year
    e. Two additional courses in astronomy. For this requirement, students may count one course out of ASTRON 1, ASTRON 2, ASTRON 5, a First-Year Seminar in astronomy, or a course offered in the Science of the Physical Universe category of the Program in General Education that focuses on astronomy for concentration credit, provided the course is completed prior to enrolling in other courses offered by the Department of Astronomy.
    f. Two additional courses in astronomy or related fields to complete the requirement of 12 courses. Related fields include all departmental courses offered in the departments of Physics, Earth and Planetary Sciences, Mathematics, and Applied Mathematics that count toward the respective concentration requirements. Appropriate courses in the Applied Physics, Computer Science, Chemistry, Engineering Sciences, Mathematics, and Statistics departments may be counted for concentration credit with permission from the Director of Undergraduate Studies.
2. *Tutorial:* Required. ASTRON 98. As noted above, generally taken in the spring semester of the junior year.
3. *Honors eligibility:* Students who wish to be considered for honors must satisfy requirements 1e and 1f, described above, by completing ASTRON 99 and/or courses at the 100-level or above. None of the courses satisfying 1e or 1f may be taken pass/fail. Courses that meet this requirement include:
    a. ASTRON 99, a yearlong eight-credit course leading to the senior thesis. The Department of Astronomy is located within the Harvard-Smithsonian Center for Astrophysics, one of the world's largest astrophysical research institutes. The Center for Astrophysics offers significant undergraduate research opportunities, which students are encouraged to pursue through the senior thesis.
    b. Any 100-level or 200-level course in astronomy.
    c. PHYSICS 143A, PHYSICS 143B, PHYSICS 151, PHYSICS 153, or PHYSICS 181.
    d. E-PSCI 133, E-PSCI 141, or E-PSCI 160.
    e. APMTH 104, APMTH 105, APMTH 111, or APMTH 115.
4. *Thesis:* Optional. See item 3, above.
5. *Joint concentrations*: Joint concentrations are permitted to enable students to pursue

study at the interface of Astrophysics and another field such as Physics or Earth and Planetary Sciences. Students must meet with the Director of Undergraduate Studies to develop a Plan of Study.

6. *General examination:* None.
7. *Other information:*
    a. Graduate study: Students considering graduate study should contact the Director of Undergraduate Studies to prepare a Plan of Study to meet this goal.
    b. Pass/fail: At most, one of the courses counted for concentration credit may be taken pass/fail.

ADVISING

Upon joining the concentration, students are assigned a faculty advisor; students continue with the same advisor throughout their three years, unless there is a particular reason for making a change. Students meet with their advisor at least once per term and at other times as needed.

For up-to-date information on advising in Astrophysics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The Department of Astronomy is located within the Harvard-Smithsonian Center for Astrophysics, which also contains the Smithsonian Astrophysical Observatory and Harvard College Observatory, at 60 Garden Street and 160 Concord Avenue, Cambridge. The Center for Astrophysics has a large staff of scientists and is among the largest institutions devoted to astronomy and astrophysics in the world. A very broad range of astrophysical research is conducted by the many scientists at the Center, in its divisions of Atomic and Molecular Physics; High Energy Astrophysics; Optical and Infrared Astronomy; Radio and Geoastronomy; Theoretical Astrophysics; and Solar, Stellar, and Planetary Sciences.

Scientists in these divisions encourage students to participate in their research. Full-time summer and part-time employment during the academic year are often available for Harvard undergraduates at the Center.

Students should contact the Director of Undergraduate Studies for more information.

Through the Center for Astrophysics, students may make use of a wide range of observational, experimental, and theoretical facilities. These include two 6.5-meter Magellan Telescopes in Chile; the Multiple-Mirror Telescope and the 1.5-m and 1.2-m reflecting telescopes of the Whipple Observatory on Mount Hopkins, Arizona; and the Submillimeter Array on Mauna Kea in Hawaii. In addition, students may participate in the analysis of data from a number of national and international observatories, including X-ray data from the Chandra X-ray Observatory, ultraviolet and optical data from the Hubble Space Telescope, solar data from SOHO, millimeter data from the Submillimeter Array and ALMA, radio data from the Very Large Array and the VLBI network, and infrared data from the Spitzer Space Telescope.

HOW TO FIND OUT MORE

The Director of Undergraduate Studies for the concentration is Professor Charles Alcock. His Observatory office is 60 Garden Street, MS-16, Center for Astrophysics, B-225 (617-495-7387); his email address is calcock@cfa.harvard.edu. A map showing the location of the Observatory complex can be found at the Center for Astrophysics website at https://www.cfa.harvard.edu. The Astronomy Department office is located at the same address in room P-243 (617-495-3753). Online information about the Astronomy Department

is available at the department's website at https://www.cfa.harvard.edu and https://astronomy.fas.harvard.edu/. Students interested in study abroad should contact the Director of Undergraduate Studies.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Astrophysics	10	6	2	5	7	8	4	8	16	19
Astrophysics + another field	12	18	17	11	5	11	7	11	14	18
Another field + Astrophysics	7	5	5	3	5	5	7	11	11	6

Biomedical Engineering

Biomedical engineering lies at the intersection of the physical and life sciences, incorporating principles from physics and chemistry to understand the operation of living systems. As in other engineering fields, the approach is highly quantitative: mathematical analysis and modeling are used to capture the function of systems from subcellular to organism scales. An education in biomedical engineering, and engineering more broadly, enables students to translate abstract hypotheses and scientific knowledge into working systems (for example, prosthetic devices, imaging systems, and biopharmaceuticals). This enables one to both test the understanding of basic principles and to further this knowledge, and it places this understanding in the broader context of societal needs.

In recognition of the pivotal importance of the life sciences and the technologies they inspire in our society, Harvard is committed to broadly educating engineers who will become leaders in the developing field of biomedical engineering. The objectives of this concentration include providing students a solid foundation in engineering, particularly as applied to the life sciences, within the setting of a liberal arts education. The concentration is flexibly structured for a diversity of educational and professional objectives. It enables the acquisition of a broad range of skills and attitudes drawn from the humanities, social sciences, and sciences—in addition to engineering, which enhance engineering knowledge, and which will contribute to future leadership and technical success.

The A.B. degree consists of 14 courses (56 credits). This degree prepares students for the practice of biomedical engineering and for graduate study in engineering and medicine, and it is excellent preparation for careers in other professions (business, law, etc.), as it provides an ideal framework for a well-rounded technical and scientific education. The curriculum is highly structured, with advanced courses building on the knowledge acquired in math, science, and introductory engineering science courses. Concentrators are encouraged to complete the common prerequisite course sequence in their first two years at Harvard. This sequence includes courses in math (MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B), life sciences and chemistry (LS 1A and LS 1B), physics (APPHY 50A and APPHY 50B; PHYSICS 15A and PHYSICS 15B or PHYSICS 16 and PHYSICS 15B, or PHYSCI 2 and PHYSCI 3 or PHYSCI 12A and PHYSCI 12B), and engineering sciences (ENG-SCI 53). Students are cautioned that it is more important to derive a solid understanding of these basic subjects than to complete them quickly without thorough knowledge; this material is extensively used in many subsequent courses. The Sophomore Forum provides an opportunity for students to become familiar with the range of engineering disciplines, to find research opportunities within the school, and to make industrial contacts in an informal setting.

The technologies that engineers create are changing at an amazing rate, but the fundamental tools of engineering that enable these advances remain more constant. The Biomedical Engineering curriculum emphasizes a solid background in the chemical and biological aspects of the biomedical engineering field, with ample opportunities to learn about state-of-the-art technologies. In particular, students will take courses in systems modeling (ENG-SCI 53 and BE 110) to better understand and mathematically model nonlinear, complex biological systems; thermodynamics (ENG-SCI 181, ENG-SCI 112) to appreciate the basic driving forces underlying biological and chemical systems; the fundamental processes of heat and mass transport (ENG-SCI 123) that often control the rates of system changes; and molecular to tissue-level engineering of biological systems (BE 121, BE 125, or ENG-SCI 221).

Through this course work students also gain experience in the engineering design process,

the engineering activity that requires creative synthesis as well as analysis.

LEARNING OBJECTIVES

The overarching intellectual goal of Biomedical Engineering is to apply quantitative engineering analysis to understand the operation of living systems and to design novel systems to satisfy unmet needs in medicine and industry. Specific objectives for students undertaking the A.B. in Biomedical Engineering include being able to:

- Utilize mathematical analysis and modeling to capture the function of systems from subcellular to organism scales.
- Understand and apply the fundamental engineering disciplines (thermodynamics, fluid mechanics, kinetics), sciences (physics, biology, chemistry), and mathematics (statistics, differential equations) to solve biomedical problems.
- Translate scientific knowledge into working systems (for example, prosthetic devices, imaging systems, and biopharmaceuticals).
- Gain depth of knowledge in the chemical, biological, materials, and engineering sciences aspects of bioengineering.

REQUIREMENTS

Biomedical Engineering
Concentration Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Mathematics: MATH 21A and 21B; MATH 22A and 22B; or MATH 23A and 23B.
    b. Physics: APPHY 50A and APPHY 50B; PHYSCI 2 and PHYSCI 3 or PHYSCI 12A and PHYSCI 12B; or PHYSICS 15A and PHYSICS 15B, or PHYSICS 16 and PHYSICS 15B.
    c. Statistics: APMTH 101 or STAT 111.
    d. Organic chemistry: CHEM 17 or CHEM 20.
    e. Cell biology and genetics: LPS A or LS 1A, and LS 1B.
    f. Engineering sciences (five courses): ENG-SCI 53, BE 110, and ENG-SCI 123; and one of the following: ENG-SCI 181, ENG-SCI 112; and one of the following: BE 121, BE 124, BE 125, BE 128, BE 129, BE 130, BE 131, BE 191, ENG-SCI 221, ENG-SCI 227.
    g. Approved elective (one course): BE 121, BE 124, BE 125, BE 128, BE 129, BE 130, BE 131, BE 191, ENG-SCI 120, ENG-SCI 157, ENG-SCI 221, ENG-SCI 227, CHEM 27, CHEM 30, or CHEM 160; COMPSI 50; AM 10; CS 32; MCB 60, MCB 80, or OEB 53, or 100- or 200-level engineering courses by prior approval. ENG-SCI 91R cannot count as an elective.
2. *Sophomore Forum*: Sophomore year. Non-credit. Spring term.
3. *Thesis*: Required for recommendations of high honors and highest honors, and for joint concentrators.
4. *General examination*: None.
5. *Other information:*
    a. By prior petition and approval, other advanced undergraduate or graduate courses, as well as courses at MIT, can be used to satisfy general requirements and specialization requirements and electives. Petitions will only be considered for courses that possess technical content at a level similar to other upper-level engineering courses at the John A. Paulson School of Engineering and Applied Sciences (SEAS).
    b. Pass/fail and SAT/UNS: All courses for concentration credit must be letter-graded.

c. Plan of Study: Concentrators are required to file an approved departmental Plan of Study and to keep their plan up to date in subsequent years. Plan of Study forms may be obtained from the Office of Academic Programs (Science and Engineering Complex at 150 Western Avenue, 1.101) or from the School of Engineering and Applied Sciences (SEAS) website at https://seas.harvard.edu/bioengineering/undergraduate-program/concentration-information/concentration-requirements.
d. Independent project: Students are required to have a substantial research experience in order to deepen their understanding of at least one aspect of the biomedical engineering field and to develop hands-on experience in the scientific method and/or technology development. This experience typically is fulfilled through a summer project resulting in a significant written report; alternatively, ENG-SCI 91R or ENG-SCI 100HF may be used to fulfill this requirement.
e. Joint concentrations: Biomedical Engineering participates in joint concentrations. The requirements for joint concentrators are the same as for sole concentrators; in addition, a joint concentrator is required to write an interdisciplinary thesis that combines the two fields. This thesis is required regardless of whether Biomedical Engineering is the primary or allied concentration.
f. Any exceptions to these policies must be approved via written petition.

ADVISING

Students interested in concentrating in Biomedical Engineering should discuss their plans with the Director of Undergraduate Studies or the Associate Director of Undergraduate Studies, Dr. Linsey Moyer, reachable at lmoyer@seas.harvard.edu, 617-496-2840; or the Academic Programs Administrator, Sarah Colgan, reachable at scolgan@seas.harvard.edu.

Each undergraduate who elects to concentrate in Biomedical Engineering is assigned a faculty advisor. If students do not request a change in advisor, they have the same advisor until they graduate. Each student is reassigned to another faculty member should the student's original faculty advisor be on leave. It is expected that students will discuss their Plan of Study and progress with their Director or Associate Director of Undergraduate Studies at the beginning of each term. Students may also seek advice from their faculty advisor, the Director or Associate Director of Undergraduate Studies, or the Academic Programs Administrator at any time.

For up-to-date information on advising in Biomedical Engineering, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Further information is available from the Academic Programs Administrator in the School of Engineering and Applied Sciences Office of Academic Programs, Science and Engineering Complex, 150 Western Avenue, 1.101 (617-495-2833).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Biomedical Engineering	52	59	35	33	31	40	23	41	39	43
Biomedical Engineering + another field	0	2	2	4	4	4	4	9	10	6
Another field + Biomedical Engineering	2	1	0	3	1	0	1	3	1	3

Chemical and Physical Biology

The Chemical and Physical Biology (CPB) concentration provides students with a broad foundation in the physical and life sciences. This concentration is designed for students interested in applying quantitative tools, physical concepts, and chemical principles to the study of biology.

Remarkable progress in the past decades has revealed the atomic structure of proteins, enzymes, and genes; the nature of the genetic code; and how genes can be turned on or off in response to the demands of the environment. As our understanding of fundamental biological processes has increased, so has our appreciation that the focus on information transfer through nucleic acids provides an inadequate basis for understanding living systems. The activities of proteins are regulated by post-translational modifications—chemical changes in protein structure—and are affected by small signaling molecules. Dissecting metabolic pathways and reconstructing cellular networks requires supplementing the traditional arsenal of molecular, genetic, biochemical, and cell biological techniques with advances in chemical and physical methods that make it possible to characterize the state of a biological system under a given set of conditions. Chemical and physical biology provides a link between classical approaches to studying biology and the chemical tools and physical methods required to understand dynamic changes in complex biological systems.

Students who are interested in understanding living systems in detail will require considerable proficiency in mathematics and physics as well as a broad background in both chemistry and biology. In its emphasis on quantitative, physical, and chemical tools, this concentration represents a significant departure from traditional undergraduate programs of study in the biological and life sciences. Our goal is to provide the next generation of life scientists with the background needed to make new advances in the quantitative understanding of living systems. The CPB concentration is intended primarily for students considering careers in research.

All students are required to participate in a non-credit tutorial program. Tutorials for students in both Chemical and Physical Biology and Molecular and Cellular Biology are offered by the Board of Tutors in Biochemical Sciences, which was established in 1926. Tutors hold a Ph.D. and/or an M.D. degree, and they meet with their students, singly or in small groups, about twice a month to discuss topics tailored largely to individual interests and needs. Tutorial sessions typically consist of readings selected from the primary literature or relevant texts. Mentoring on career choices, the research experience, and other academic issues is a logical extension of the tutorial.

All students are required to obtain a minimum of one term of laboratory research experience. This requirement may be fulfilled through a project lab course, a term of laboratory research (CPB 91), or research for a senior thesis (CPB 99A and CPB 99B).

A thesis based on laboratory research is required to be eligible for honors in the Chemical and Physical Biology concentration. Students are encouraged to begin thesis research in a laboratory no later than the start of their junior year.

LEARNING OBJECTIVES

Specific objectives for students concentrating in Chemical and Physical Biology include being able to:

- Tackle biological problems using an integrated approach involving physical, chemical,

quantitative, and computational skills.
- Apply the scientific method to solve problems, both in and out of the lab.
- Critically review scientific literature and evidence.

REQUIREMENTS

Chemical and Physical Biology
Basic Requirements: 16 courses (64 credits)

1. *Required courses*:
    a. Foundational (two courses): LS 1A (or LPS A) and LS 1B, or LS 50A and LS 50B, or equivalent.
    b. Biology (two courses): MCB 60 and one additional course selected from MCB 63, MCB 64, MCB 65, MCB 66, MCB 68, or MCB 80.
    c. Chemistry (two courses): One course in general or inorganic chemistry (chosen from PHYSCI 1, PHYSCI 11, or equivalent; CHEM 10, CHEM 40, or CHEM 160; or a suitable equivalent) and one course in physical chemistry (chosen from CHEM 60, MCB 65 or MCB 199, CHEM161, or a suitable equivalent).
    d. Organic chemistry (two courses): CHEM 20 and CHEM 30, or CHEM 17 and CHEM 27, or equivalent.
    e. Mathematics (two courses): Two out of the three categories of linear algebra and/or differential equations (Math 19A, Math 21B, APMTH 22A); statistics (STAT 100, STAT 102, STAT 110); and computer science (CS 50, AM 10, CS 32)
    f. Physics (two courses): One course in mechanics (chosen from PHYSICS 16 or PHYSICS 15A, PHYSCI 2 or PHYSCI 12A, or APPHY 50A), and one course in electricity and magnetism (chosen from PHYSICS 15B, PHYSCI 3 or PHYSCI 12B, or APPHY 50B). Three upper-level courses in the natural sciences, engineering, and/or mathematics. Courses that meet this requirement include any 100-level course in chemistry, molecular and cellular biology, or physics. Students are encouraged to consult concentration advisors when selecting upper-level courses.
    g. Computational requirement: at least one concentration course must include substantial computational content like PS12; Physics 15; APMTH 10; COMPSCI 50 or COMPSCI 109; APMTH 111, APMTH 115, or APMTH 126; MCB 111, MCB 112, MCB 131, or MCB 199; or a class approved by the concentration advisors.
    h. Students who do not write a thesis based on laboratory research (see item 3 under **Honors Eligibility Requirements**) must take one upper-level project lab course (such as LS 100 or CHEM 100R) or enroll in one term of CPB 91.
    i. Note: The courses listed here are examples of commonly taken courses by CPB concentrators to fulfill the respective requirements. Students may fulfill requirements using other courses not listed here after consultation with the concentration advisors.
2. *Tutorial*: The tutorial program is an important component of the concentration. It provides a mechanism for students to engage in mentorship relationships with the Molecular and Cellular Biology (MCB) faculty and members of the Board of Tutors in Biochemical Sciences. The goals of the tutorial are to (1) provide opportunities for discussions about science and its role in the larger community, (2) provide students with the foundation to apply their education and the scientific method to life outside of the classroom and Harvard, and (3) advise and inform students on curricular and preprofessional choices. The tutorial is a non-credit program that spans the whole length of time the student is part of the concentration. A handout that describes the history, goals, and format of the tutorial program is available online at https://lifesciences.fas.harvard.edu/files/lifesci/files/boft_handout.pdf.

Chemical and Physical Biology
Honors Eligibility Requirements: 16 courses (64 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorial*: Same as **Basic Requirements**.
3. *Thesis*: A thesis based on independent laboratory research is required for honors eligibility. Students should therefore enroll in two terms of CPB 99, one of which counts toward the upper-level course requirement (see item 1g in **Basic Requirements**, above).

Chemical and Physical Biology
Joint Concentrations

Students wishing to pursue a joint concentration with CPB must fulfill the basic requirements and complete a senior thesis that is at the intersection of the two fields of study. While a variety of joint concentrations are possible, quantitative fields such as statistics and computer science may be particularly appropriate. Owing to the significant overlap in requirements, a joint concentration in MCB, including Chemical and Physical Biology, with any of the other life science concentrations (Neuroscience, Molecular and Cellular Biology, Human Developmental and Regenerative Biology, Integrative Biology, Human Evolutionary Biology, Biomedical Engineering, Chemistry, Psychology [Life Science track]) is not allowed.

Joint concentrations are evaluated and approved on a case-by-case basis. The policies and process for evaluation, approval, and advising for a joint concentration with CPB are as follows:

1. Potential joint concentrators begin the process by declaring on my.harvard. This facilitates advising and concentration requirement oversight by both potential concentrations. To finish the CPB joint declaration process, potential joint concentrators must submit a petition form and receive approval no later than March 15 of their junior year. Early submission of the petition is preferred. Potential joint concentrators are required to meet with their CPB concentration advisor to map out the joint study plan and discuss potential thesis topics prior to petition submission. (Note: CPB course requirements are unaffected whether CPB is the primary or the allied concentration.) The Head Tutors, in collaboration with the concentration advisors, will review the petitions for a joint concentration and respond with a decision and feedback within a month from the time of submission. Students whose petitions are denied can address the comments in the feedback and resubmit by the final deadline of March 15. The petition process is intended to give students sufficient time to develop and submit their full thesis proposals during the month of July preceding their senior year.
2. A joint concentration degree will not be awarded if any thesis or course work requirement is not met.
3. CPB limits double-counting for a joint concentration to two courses. This also applies to a CPB joint concentration with concentrations that allow more courses to double-count, regardless of whether CPB is the primary or the allied concentration.
4. The student is responsible for mediating communications with the two concentrations to obtain approval of the thesis proposal and to establish a plan for evaluation of the joint thesis by both concentrations.
5. Joint concentrators are required to discuss their progress at the start of each semester by meeting with advisors from both concentrations.

ADVISING

Dr. Dominic Mao and Dr. Monique Brewster are available to concentrators and pre-concentrators to provide guidance on course selection, laboratory research, and the fulfillment of concentration requirements. For up-to-date information on advising in our program, students may see the Advising Programs Office website at https://advising.college.harvard.edu/academic-planning-for-students/concentrations-and-secondaries/

RESOURCES

A tutorial reference library housed in the CPB Undergraduate Office (95 Sherman Fairchild building, 7 Divinity Avenue) contains books and hard copies of past senior theses, and thesis titles from 2011–present can also be viewed at https://www.mcb.harvard.edu/undergraduate/molecular-and-cellular-biology-mcb/research-and-thesis/?course-button=pastthesisandprizewinners). Three rooms in the upper level of the graduate office are used by concentrators for tutorial meetings and as study spaces.

HOW TO FIND OUT MORE

The concentration advisors are the primary contacts for advice on course selection, petitions concerning joint concentrations, and laboratory research. The Co-Head Tutors for the Chemical and Physical Biology concentration are Professors Adam Cohen and Doeke Hekstra, and the concentration advisors are Dr. Dominic Mao (dominicmao@fas.harvard.edu, 617-496-1206) and Dr. Monique Brewster (mbrewster@g.harvard.edu, 617-496-6136). Students should visit https://www.mcb.harvard.edu/undergraduate/chemical-and-physical-biology/or contact the concentration advisors for more information.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Chemical and Physical Biology	43	42	50	45	39	40	49	49	41	31
Chemical and Physical Biology + another field	0	0	0	1	2	4	5	7	12	9
Another field + Chemical and Physical Biology	0	1	1	1	2	1	1	1	1	1

Chemistry

Chemistry is the science of the structure, properties, and reactions of matter. It is both a basic science, fundamental to an understanding of the world we live in, and a practical science with an enormous number and variety of important applications. Knowledge of chemistry is fundamental to an understanding of biology and biochemistry—and of certain aspects of geology, astronomy, physics, and engineering.

The most important motivation for a concentration in Chemistry is an intrinsic interest in the subject. Career opportunities in chemistry include the areas of basic research, applied research and development, biotechnology, chemical analysis, manufacturing, and marketing. In addition, a degree in chemistry can be an excellent background for careers in many related fields, including law, medicine, business, environmental science, and other areas of science. Because of the diversity of interests of prospective Chemistry concentrators, the Department of Chemistry and Chemical Biology has designed a very flexible program of requirements, which allows each student to select an area of emphasis.

Courses in organic, physical, and inorganic chemistry, as well as courses in chemical biology and biochemistry, are offered. A few of these courses include required laboratory work, and special laboratory courses are available to advanced students in each area. The department encourages all concentrators to participate in research. Concentrators may elect to pursue an individual research project with one of the research groups of the department. Each research group consists of advanced undergraduates, graduate students, postdoctoral fellows, and a faculty member. In addition, concentrators can enroll in the junior tutorial, CHEM 98R, in which the student joins a research group under the supervision of a faculty member. Often this work is continued throughout the senior year as CHEM 99R. Here, the student becomes associated with current research in a particular area either by reading and studying recommended advanced material in that area or by undertaking an individual research project. Such projects often result in publications.

All of the courses in the department are open to properly prepared undergraduates, and most upper-level courses include some undergraduates. The more advanced courses are designed to be related closely to active areas of research in chemistry. Current research activity is further stressed in the numerous seminars and colloquia in organic, physical, biophysical, and inorganic chemistry as well as in chemical biology, materials, energy, and climate. Some seminars are held jointly with other departments at Harvard as well as at MIT. Most research groups have meetings and informal seminars at which topics of interest are discussed.

In addition to a balanced program of at least eight courses (32 credits) in chemistry, concentrators are able to take courses in physics, biology, biochemistry, engineering, computer science, and mathematics as part of their concentration requirements. Because of the sequence of prerequisites for chemistry courses, the department strongly recommends some work in mathematics as well as chemistry in the first year. First-year students contemplating this program are urged to consult the Director of Undergraduate Studies of the Chemistry concentration while planning their work for the first year.

LEARNING OBJECTIVES

Students graduating with a degree in chemistry will gain skills in a range of areas from reading scientific papers to conducting experiments safely and ethically to learning how to identify and propose solutions to problems that are novel and important. Because research is a foundation for the study of chemistry, we believe that all students in the concentration should participate in an authentic research experience by the end of their senior year.

REQUIREMENTS

Chemistry

Basic Requirements: 12–14 courses (48–56 credits)

1. *Required courses:* 12 to 14 courses required, including at least eight courses in chemistry (see item 5a):
    a. General chemistry: One course: CHEM 10; or two courses, one being LPS A or LS 1A, and the other being PHYSCI 10 or PHYSCI 11; or satisfactory placement out of the requirement.
    b. Inorganic chemistry. One course: CHEM 40, or equivalent.
    c. Organic chemistry: Two courses: CHEM 20 and CHEM 30, or CHEM 17 and CHEM 27, or equivalent.
    d. Physical chemistry: Two courses: Chosen from CHEM 160 or equivalent; and CHEM 60, CHEM 161, CHEM 163, or equivalent.
    e. Advanced laboratory: One course: CHEM 100R, CHEM 135, CHEM 145, or CHEM 165. Laboratory work performed in CHEM 91R, CHEM 98R, or CHEM 99R may not be counted in fulfillment of the advanced laboratory requirement.
    f. Chemistry with a strong biological orientation: One course: LS 1A, LPS A, or CHEM 27 or CHEM 170, or MCB 60, MCB 63, MCB 64, MCB 65, or equivalent. (LS 1A and LPS A may count for both this requirement and item 1a above; CHEM 27 may count for this requirement and item 1c above.)
    g. Mathematics: At least one course: MATH 21A or equivalent (for example, MATH 19A, APMTH 21A, MATH 22A, MATH 23A, etc.). MATH 21B is strongly recommended.
    h. Physics: At least two courses: PHYSCI 2, PHYSCI 3, PHYSCI 12A, or PHYSCI 12B; APPHY 50A, APPHY 50B; or the 15A (16), 15B, 15C sequence. PHYSICS 15A and PHYSICS 15B alone do not constitute a complete overview of general physics. Any two courses from the 15A (16), 15B, 15C sequence fulfills the physics requirement.
    i. Additional courses as needed to meet the total of 12 in chemistry or in related fields (13 courses needed if the student places into MATH 1B; 14 courses needed if the student must take MATH 1A).
2. *Tutorials:*
    a. Sophomore year: CHEM 91R, optional. Well-prepared sophomores (or first-year students) who are accepted for laboratory research work may register for CHEM 91R, graded SAT/UNS only.
    b. Junior year: CHEM 98R, optional. Junior concentrators who are accepted for **laboratory research work** may register for CHEM 98R, graded SAT/UNS only. Junior concentrators who are interested in research are encouraged to contact their advisors at chemistrydus@fas.harvard.edu concerning the research program.
    c. Senior year: CHEM 99R, optional. Senior concentrators who are accepted for **laboratory research work** may register for CHEM 99R, graded SAT/UNS only. Senior concentrators who are interested in research are encouraged to contact their advisors at chemistrydus@fas.harvard.edu concerning the research program.
    d. Students enrolling in CHEM 91R, CHEM 98R, and CHEM 99R must register the name of their research mentor at the Chemistry Undergraduate Studies Office (chemistryDUS@fas.harvard.edu) before enrolling in these courses. Chem 91R, 98R, and 99R are repeatable.
3. *General examination:* None.
4. *Thesis:* Not required.

5. *Other information:*
    a. Related fields, in the present context, include departmental courses in Physics and Mathematics, Applied Physics and Applied Mathematics, and upper-level departmental courses in Biology, Biochemistry, and Earth and Planetary Sciences that carry a chemistry prerequisite. Chemistry courses include many Biochemistry courses.
    b. Pass/fail: Two courses counted for concentration credit may be taken pass/fail. This does not include SAT/UNS grades given in CHEM 91R, CHEM 98R, or CHEM 99R.

Chemistry
Honors Eligibility Requirements: 14–16 courses (56–64 credits)

1. *Required courses:* 14 courses required, including at least eight courses in chemistry (see item 5a above).
    a. Same as **Basic Requirements**.
    b. Two additional courses in chemistry, biochemistry, or at a suitably advanced level in a related field. Courses that meet this requirement include:
        i. MCB 60, MCB 63, MCB 64, MCB 65.
        ii. Other courses significantly related to chemistry may also be accepted on petition to the department.
        iii. PHYSICS 15C, PHYSICS 143A, PHYSICS 143B, PHYSICS 151, PHYSICS 153, PHYSICS 181.
        iv. APMTH, STAT, CS courses.
        v. MATH MA, MATH MB, MATH 1A, MATH 1B MATH 19B, MATH 21B, etc.
        vi. LS 1B, LS 50A, LS 50B.
    c. At least four courses in Chemistry numbered 100 or higher. Students should consult with the Chemistry Undergraduate Studies Office for a complete list of courses offered by other departments (for example, MCB 176, MCB 178, EPS 133, ENG-SCI 135, ENG-SCI 164) that can be used to satisfy this requirement.
2. *Tutorials:*
    a. Sophomore year: Same as **Basic Requirements**.
    b. Junior year: Same as **Basic Requirements**.
    c. Senior year: Same as **Basic Requirements**.
3. *General examination:* None.
4. *Thesis:* Optional. Students enrolled in CHEM 99R have the option of writing a thesis.
5. *Other information:* Same as **Basic Requirements**.

Chemistry
Joint Concentrations
Many students have successfully pursued a joint concentration with Chemistry in a number of different fields from all academic divisions. Interested students are encouraged to meet with the Director of Undergraduate Studies to discuss joint options.

ADVISING
The Director of Undergraduate Studies serves as faculty advisor for all concentrators until they join research groups, usually through the CHEM 98R tutorial, or otherwise establish a working relationship with another faculty member who agrees to serve as co-faculty advisor. Either the Director of Undergraduate Studies or another faculty advisor may release the advising hold or advise on concentration matters. Students interested in concentrating in

Chemistry should discuss their Plan of Study with the Director of Undergraduate Studies. For up-to-date information on advising in Chemistry, students should see the Advising Programs Office website at https://advising.college.harvard.edu/academic-planning-for-students/concentrations-and-secondaries/.

HOW TO FIND OUT MORE

Further information is available at Chemistry Undergraduate Studies in Chemistry, Science Center 114, chemistryDUS@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Chemistry	92	95	80	65	57	67	58	66	80	89
Chemistry + another field	4	4	5	8	8	15	15	18	15	8
Another field + Chemistry	1	1	1	1	0	0	0	2	2	2

Chemistry and Physics

Physics and chemistry are intellectual neighbors, sharing a large and somewhat arbitrary boundary. Scientists in this exciting boundary area study many of the same systems. They use many of the same experimental and theoretical tools. The concentration in Chemistry and Physics is supervised by a committee comprising members of the departments of Physics and of Chemistry and Chemical Biology and is administered through the office of the Director of Undergraduate Studies in the Physics Department. As the name suggests, the concentration has been established to serve students wishing to explore this boundary who need to develop a strong foundation in both physics and chemistry.

Because of the need to cover a wide range of material in considerable depth, only an honors-eligible program is available in this concentration.

The requirements of the Chemistry and Physics concentration are designed to provide a solid foundation for further study in either or both of these two closely related sciences. Concentrators have gone on to graduate work and careers in chemistry, physics, and other quantitative fields. The concentration is also often chosen by students whose career goals lie in medicine. In addition, the intellectual disciplines involved provide a suitable background for careers in many different professions.

Because the requirements of the concentration lie between those of Chemistry and Physics, it is possible that a given set of courses could satisfy the requirements of one of those concentrations as well as those of the concentration in Chemistry and Physics. By the same token, a transfer to or from one of these concentrations, even as late as the junior year, normally causes little difficulty.

The concentration is structured to assure that all concentrators are introduced to the core subjects of chemistry (organic, inorganic, and physical); physics (mechanics, electromagnetism, waves, and quantum theory); and mathematics. Beyond this core, students take additional courses in chemistry, physics, or related sciences, according to their personal interests and objectives.

Tutorial or individual study and research are optional and may be undertaken within the framework of PHYSICS 90R or PHYSICS 91R, or CHEM 91R, CHEM 98R, or CHEM 99R.

LEARNING OBJECTIVES

Learning a physical science has never been about memorizing a collection of facts from lectures. That is particularly true today because “facts,” true and false, are as close as students’ cell phones. Our learning objective is to give students the problem-solving skills to ask and answer quantitative questions for themselves. In their problem sets and labs they learn the power of mathematical metaphor applied to the physical world.

REQUIREMENTS

Chemistry and Physics
Concentration Requirements: 13 courses (52 credits)

1. *Required courses*:
    a. General chemistry: One course: CHEM 10. Or two courses, one being LPS A or LS 1A, and the other being PHYSCI 10 or PHYSCI 11; or satisfactory placement out of the requirement.
    b. Inorganic chemistry: CHEM 40, CHEM 154, CHEM 155, or equivalent.

c. Organic chemistry: CHEM 20 and CHEM 30, or CHEM 17 and CHEM 27. (CHEM 20 and CHEM 30 are strongly recommended, but CHEM 17 and CHEM 27 may be a preferred alternative, particularly for students preparing for medical school.)
d. Physical chemistry or statistical mechanics: CHEM 60 or one of CHEM 161, PHYSICS 181, or ENG-SCI 181. One of the statistical mechanics courses is strongly recommended.
e. Mechanics, electromagnetism, and waves: PHYSICS 15A (or PHYSICS 16 or PHYSICS 19), PHYSICS 15B, and PHYSICS 15C. Students may also take PHYSCI 12A and PHYSICS 12B or APPHY 50A and APPHY 50B in place of PHYSICS 15A and PHYSICS 15B. These students should contact the Director or Associate Director of Undergraduate Studies, who will work with them to develop a coherent program.
f. Quantum mechanics: PHYSICS 143A or CHEM 160.
g. Mathematics: Two courses: Two courses at the level of MATH 21A/B or above. While not required, taking one or more additional mathematics course is strongly recommended. Students should consider especially PHYSICS 106; APMTH 104 or MATH 113; APMTH 105 or MATH 110; APMTH 115; and STAT 110. Students planning to go into research should consider taking a course in computer science and/or numerical analysis.
h. Additional courses from the list below, to complete the requirement of 13 courses. It is strongly recommended that one course be a laboratory course. In all cases, the student must take at least four physics courses and four chemistry courses.
    i. A course of independent research from the following: CHEM 91R, CHEM 98R, CHEM 99R, or PHYSICS 90R.
    ii. Any 100- or 200-level chemistry course.
    iii. Any 100- or 200-level physics or applied physics course.
    iv. Any 100- or 200-level math or applied math course.
    v. Any intermediate- or advanced-level course in science, engineering sciences, or computer science with significant direct application to chemistry or physics. These courses should be approved in advance by the Director or Associate Director of Undergraduate Studies. (No approval is needed for the “related” or “counting as physics” courses listed in the requirements for the Physics concentration.) To fulfill particular needs, a concentrator, with the advisor’s consent, may petition the committee to use other intermediate- or advanced-level science courses for this requirement.
    vi. One course from MATH 1A and MATH 1B, LS 1A, and PHYSCI 1 may count toward the requirement of 13 courses.

2. *Tutorials*: Optional. Admission to tutorials requires prior approval by the Director of Undergraduate Studies of the Department of Chemistry and Chemical Biology.
    a. Junior year: CHEM 98R.
    b. Senior year: CHEM 99R.
3. *Thesis*: Optional.
4. *General examination*: None.
5. *Other information*:
    a. Satisfactory grades (C- or better) are required in PHYSICS 15A, PHYSICS 15B, and PHYSICS 15C (or higher-level substitutions).
    b. Pass/fail: Two courses counted for concentration may be taken pass/fail, but not PHYSICS 15A, PHYSICS 15B, PHYSICS 15C, PHYSICS 16, or PHYSICS 19.
    c. Substitutions: Students can substitute a more advanced course for one or more of the required elementary courses on the same topics, provided they have the

written permission of the Director or Associate Director of Undergraduate Studies. However, the total number of concentration courses taken during the student's college career (including study abroad or transfer credits) must be at least 13. Students who substitute more advanced courses for PHYSICS 15A and/or PHYSICS 15B and/or PHYSICS 15C must complete the lab component of these courses on a pass/fail basis. See the Associate Director of Undergraduate Studies for further information.

d. Individual study and research courses: PHYSICS 90R/91R and CHEM91R/98R/99R are optional.
e. Applied physics and engineering science courses listed in the requirements for the Physics concentration as "counting as physics" for Physics concentrators are also counted as physics courses in the Chemistry and Physics concentration.

ADVISING

Students interested in concentrating in Chemistry and Physics should discuss their Plan of Study with the Associate Director of Undergraduate Studies. When a student's Plan of Study is approved, each undergraduate who elects to concentrate in the field is assigned a faculty advisor from either the Physics or Chemistry department. If students do not request a change in advisor, they have the same advisor until they graduate. It is expected that students will discuss their programs and review their progress with faculty advisors at the beginning of each term. Students are told to seek advice at any time, and they can meet with their advisors at regularly scheduled office hours or by making an appointment.

Students may also seek advice from the Director or Associate Director of Undergraduate Studies at any time (DUS@physics.harvard.edu).

For up-to-date information on advising in Chemistry and Physics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The resources and facilities available to this concentration are essentially those of the Chemistry and Physics departments combined; the descriptions of those concentrations should be consulted for further information.

HOW TO FIND OUT MORE

The pamphlet *The SPS Guide to Physics and Related Fields*, available from the Associate Director of Undergraduate Studies in Lyman 238, provides useful information about the opportunities for the study of physics and physics-related areas at Harvard. Much of this information is also relevant to the concentration in Chemistry and Physics.

Advice and personal consultation concerning the concentration can be obtained from the Director or Associate Director of Undergraduate Studies. Students should also seek advice from the Director of Undergraduate Studies in Chemistry.

Official acceptance into the concentration program is made only through the office of the Associate Director of Undergraduate Studies, who must approve the Plan of Study.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Chemistry and Physics	23	29	27	37	27	30	18	23	24	22
Chemistry and Physics + another field	4	5	1	2	3	6	4	7	12	7
Another field + Chemistry and Physics	2	2	1	1	0	1	1	1	2	2

Classics

Classics as an intellectual discipline embraces the study of ancient Greece and Rome, two civilizations whose legacy has played a major role in shaping our modern world. The Greeks and Romans produced literature and philosophy of enduring power and impact; they created art and architecture that live on today; they made discoveries in science and math that anticipated the principles and theorems rediscovered in the Renaissance; they grappled with problems of economics and governance that continue to challenge us. In short, the ancient Greek and Roman worlds provide the modern student with a laboratory of the human condition. Hence, the Department of the Classics encourages its students to explore the whole range of Greco-Roman civilization from the Bronze Age through Byzantium and medieval Europe to modern Greece, and also to examine critically its various receptions, including those in contemporary America.

To study classics at Harvard, no prior knowledge of an ancient language is required. Students may either start ancient Greek, modern Greek, and/or Latin from scratch or build upon prior knowledge by taking more-advanced courses. Two concentration options are offered within the department: (1) Classical Languages and Literatures, for students wishing to emphasize the study of Greek and Latin literature in the original languages, and (2) Classical Civilizations, for those primarily interested in exploring ancient Greek and Roman cultures through an archaeological, historical, or philosophical lens.

Classics is essentially interdisciplinary, combining the study of language, linguistics, and literature; archaeology, art, and architecture; history; philosophy, science, and medicine; and myth and religion. Hence, in addition to its dedicated joint concentration in Ancient History (Greek and Roman), which is offered in conjunction with History, the department welcomes joint concentrators combining Classics with a large number of allied fields.

As well as requirements in Greek and/or Latin, all concentrators take at least one of the department's introductory courses on the ancient Greek and Roman worlds (CLS-STDY 97A and CLS-STDY 97B); in the junior year they choose one of a suite of small-group tutorials in advanced research methods (CLASSIC 98); and in their senior year, all Classics concentrators have the option of writing a thesis under faculty supervision (CLASSIC 99, mandatory for joint concentrators). Beyond these requirements, students have a wide range of courses to choose from, including many courses in translation. Furthermore, courses from related departments are regularly cross-listed with Classics, so that students can craft the concentration to accommodate their individual interests.

Classics concentrators have at their disposal the resources of the Herbert Weir Smyth Classical Library, and they are encouraged to conduct primary research on ancient artifacts, coins, manuscripts, and papyri in the unparalleled collections of Houghton Library and the Harvard Art Museums. During the summer, students are given the chance to complement their experience in the classroom by undertaking an internship at one of Harvard's classical institutes in Washington, D.C. (the Center for Hellenic Studies and Dumbarton Oaks); participating in an archaeological dig; learning to speak Latin in Rome or to speak Greek in Athens; taking summer courses in Italy or Greece; or traveling to Europe (or elsewhere) to learn one of the modern languages that are fundamental for classical scholarship— typically French, German, or Italian.

By acquiring the skills necessary to analyze and interpret the remains of Greek and Roman culture, students learn to make sense of material that is both dauntingly complex and disconcertingly fragmentary. The effort of trying to understand the thoughts and actions of

people who are separated from us by a gulf of two millennia teaches our students to test their assumptions in every human situation. The challenge of finding out about an aspect of Greco-Roman civilization for which no substantial evidence appears to survive develops resourcefulness and flexibility—research skills that can be transferred to any walk of life. Concentrators in Classics learn to think rigorously and to express themselves precisely in both speech and writing. They go on to excel in fields as varied as business, diplomacy, education, finance, journalism, law, and medicine. In short, training in classics is applicable to everything.

LEARNING OBJECTIVES

Classics concentrators gain familiarity with Latin or Greek (or both) and with the art, literature, philosophy, and history of the ancient Greek and Roman worlds, as well as their subsequent receptions and appropriations. Students develop a deep and critical understanding of key aspects of these civilizations' cultural legacies and the ways in which they have shaped the modern world. In doing so, concentrators learn how to handle complex evidence across different media and how to form persuasive and sophisticated arguments, both in writing and in oral presentations.

REQUIREMENTS

Classical Languages and Literatures Track
Basic Requirements: 12 courses (48 credits)

1. Two courses providing a broad introduction to classical civilization, normally CLS-STDY 97A and CLS-STDY 97B.
2. Six courses in Greek and/or Latin, at least two of which must be numbered 100 or above, and at least one of which must be a capstone course selected from the following list: GREEK 112A, GREEK 112B, GREEK 175, LATIN 112A, LATIN 112B, LATIN 175 (or equivalent in the case of Byzantine/Modern Greek and Medieval Latin). Note: Introductory language courses are intended to be taken sequentially. Students may not earn concentration credit for completion of a course sequentially prior to one in which they have already earned a passing grade.
3. One semester of CLASSIC 98, a small-group tutorial, is required of all concentrators in the junior year. The tutorial emphasizes the development of research skills through a close examination of a topic in Greek and Roman literature and/or Greco-Roman civilization.
4. Three additional courses from among those listed under "Classics" in the course search in courses.my.harvard.edu, including cross-listed courses and either HUMAN 10A or HUMAN 10B. Other courses may be counted with approval of the Director of Undergraduate Studies.
5. Note: Two courses counted for concentration may be taken pass/fail or, in the case of approved First-Year Seminars, SAT/UNS. CLASSIC 98 and the course used to fulfill the capstone requirement (GREEK 112A, GREEK 112B, GREEK 175, LATIN 112A, LATIN 112B, LATIN 175, or equivalent in the case of Byzantine/Modern Greek and Medieval Latin) must be taken for a letter grade.
6. Honors: In addition to the basic requirements set out above, all concentrators in Classical Languages and Literatures who wish to be considered for honors must write a senior thesis by completing two semesters of the senior tutorial, CLASSIC 99. The thesis must be submitted to the department office on or before the Friday preceding spring recess. The length of the thesis should be determined by the student and the thesis advisor but should not ordinarily exceed 60 pages of text.

Joint Concentration in Classical Languages and Literatures and Allied Field
Requirements: 7 courses (28 credits) in Classics

1. CLS-STDY 97A or 97B.
2. CLASSIC 98.
3. Four courses in Greek and/or Latin, at least two of which must be at the 100-level or above, and at least one of which must be a capstone course selected from the following list: GREEK 112A, GREEK 112B, GREEK 175, LATIN 112A, LATIN 112B, LATIN 175 (or equivalent in the case of Byzantine/Modern Greek and Medieval Latin). Note: Introductory language courses are intended to be taken sequentially. Students may not earn concentration credit for completion of a course sequentially prior to one in which they have already earned a passing grade.
4. One additional course from among those listed under “Classics” in the course search in my.harvard.edu, including cross-listed courses and either HUMAN 10A or HUMAN 10B. Other courses may be counted with approval of the Director of Undergraduate Studies.
5. Note: One course counted for the joint concentration in Classics may be taken Pass/Fail or, in the case of approved First-Year Seminars, SAT/UNSAT. CLASSIC 98 and the course used to fulfil the capstone requirement (GREEK 112A, GREEK 112B, GREEK 175, LATIN 112A, LATIN 112B, LATIN 175, or equivalent in the case of Byzantine/Modern Greek and Medieval Latin) must be taken for a letter grade.
6. Additional course work as required by the allied field.
7. Honors: Thesis required. Two semesters of either CLASSIC 99 or the equivalent in the allied field, as appropriate.

Classical Civilizations Track
Basic Requirements: 12 courses (48 credits)

1. Two courses providing a broad introduction to classical civilization, normally CLS-STDY 97A and CLS-STDY 97B.
2. Four courses in Greek and/or Latin. Note: Introductory language courses are intended to be taken sequentially. Students may not earn concentration credit for completion of a course sequentially prior to one in which they have already earned a passing grade.
3. One semester of CLASSIC 98, a small-group tutorial, is required of all concentrators in the junior year. The tutorial emphasizes the development of research skills through a close examination of a topic in Greek and Roman literature and/or Greco-Roman civilization.
4. CLS-STDY 112, a multidisciplinary and problem-based in-depth survey of a region of the ancient Mediterranean world, to be taken at any stage in the concentration, provided that both CLS-STDY 97A and CLS-STDY 97B have been completed or the second of these is being taken concurrently.
5. Four additional courses from among those listed under “Classics” in the course search in my.harvard.edu, including cross-listed courses and either HUMAN 10A or HUMAN 10B. Other courses may be counted with approval of the Director of Undergraduate Studies.
6. Note: Two courses counted for the concentration may be taken pass/fail or, in the case of approved First-Year Seminars, SAT/UNS. CLASSIC 98 and CLS-STDY 112 must be taken for a letter grade.
7. Honors: In addition to the basic requirements set out above, all concentrators in Classical Civilizations who wish to be considered for honors must write a senior thesis by completing two semesters of the senior tutorial, CLASSIC 99. The thesis must be submitted to the department office on or before the Friday preceding the spring recess. The length of the thesis should be determined by the student and the thesis advisor but should not ordinarily exceed 60 pages of text.

Joint Concentration in Classical Civilizations and Allied Field
Requirements: 7 courses (28 credits) in Classics

1. CLS-STDY 97A or 97B.
2. CLASSIC 98.
3. Two courses in Greek and/or Latin. Note: Introductory language courses are intended to be taken sequentially. Students may not earn concentration credit for completion of a course sequentially prior to one in which they have already earned a passing grade.
4. CLS-STDY 112, a multidisciplinary and problem-based in-depth survey of a region of the ancient Mediterranean world, to be taken at any stage in the concentration, provided either CLS-STDY 97A or CLS-STDY 97B has been completed or is being taken concurrently.
5. Two additional courses from among those listed under "Classics" in the course search in my.harvard.edu, including cross-listed courses and either HUMAN 10A or HUMAN 10B. Other courses may be counted with approval of the Director of Undergraduate Studies.
6. Note: One course counted for the joint concentration in Classics may be taken Pass/Fail or, in the case of approved First-Year Seminars, SAT/UNSAT. CLASSIC 98 and CLS-STDY 112 must be taken for a letter grade.
7. Additional course work as required by the allied field.
8. Honors: Thesis required. Two semesters of either CLASSIC 99 or the equivalent in the allied field, as appropriate.

Joint Concentration in Ancient History (Greek and Roman)
Requirements: 14 courses (56 credits)

1. Four courses in Ancient Greek and/or Latin.
2. HIST 97. HIST 97 is offered in the spring term only; if combining with CLS-STDY 97B (on Rome), also offered in the spring, students may choose either to take both during their sophomore spring, or to take one in the sophomore spring and the other in the junior spring.
3. CLS-STDY 97A or 97B
4. CLASSIC 98. Must be completed by the end of the junior spring, in preparation for the senior thesis.
5. CLS-STDY 112.
6. One non-Western history course.
7. One modern history course.
8. Two additional electives within Ancient History. Two types of courses count toward Ancient History (Greek and Roman) concentration requirements:
    a. Courses listed in the course catalog's "History" section and "Classics" section, including cross-listed courses.
    b. Courses taught in the General Education and/or First-Year Seminar programs by full members of the departments of History or Classics faculty. Students wishing to count such courses toward their concentration requirements should request approval from the relevant Director of Undergraduate Studies. Students may also apply to do an independent study, HIST 91R or CLASSIC 93R, with a member of the relevant department; HIST 91R/CLASSIC 93R can be used to fulfill one of the elective course requirements.
9. Note: One of the four history courses should be a seminar that results in a research paper of at least 20 pages that involves primary source research and that is completed before the end of the junior year.
10. Senior thesis (two courses): either HIST 99 or CLASSIC 99. Students may select either seminar.

11. Honors: Students who complete the thesis will be eligible for honors; the department in which the student chooses to take the senior tutorial will be responsible for making the final determination of honors.

ADVISING

During each semester, concentrators meet with the Director of Undergraduate Studies and Undergraduate Program Coordinator to discuss their Plan of Study and their progress through the concentration. In addition, junior and senior members of the department are available throughout the year to offer advice on particular academic matters as the need arises.

For up-to-date information on advising in Classics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The Smyth Classical Library, on the top floor of Widener Library, is open to all concentrators in the department. It contains an extensive and up-to-date collection of Greek and Latin authors, principal commentaries, works of reference, corpora of inscriptions, and major books on classical archaeology, history, literature, and philosophy. The library is locked at all times because there is no regular attendant. Key-card access will be granted to any concentrator upon request. Items from the McDaniel Collection of antiquities illustrating Greek and Roman life, together with an extensive collection of ancient coins, are housed in the Harvard Art Museums. The antiquities are available for study by qualified students.

HOW TO FIND OUT MORE

For further information about the concentration, contact the Director of Undergraduate Studies at classicsDUS@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Classics	37	24	26	25	23	24	15	18	20	25
Classics + another field	6	6	9	7	11	10	7	11	8	11
Another field + Classics	6	4	5	9	9	11	13	10	10	13

Comparative Literature

The undergraduate program in Comparative Literature is an honors concentration rooted in the multilingual study of literature across cultures, media, and disciplines. Working in more than one national literature in the original language, our students investigate critically and creatively the interconnections among literatures, cultures, and media to explore the human experience in a comparative and interdisciplinary context.

Comp Lit students make connections and comparisons in unexpected places and think nimbly across linguistic, cultural, and disciplinary borders and boundaries. The flexible nature of the program allows concentrators to develop an individualized program of study based on their particular languages and interests. Many students focus their interests on multilingual literary topics, such as world literature, translation studies, and comparative arts. But many also extend a broadly comparative methodology to use literature and other media to examine topics beyond the strictly literary. They build programs of study around medical humanities, game studies, refugee studies, and urban studies, to name a few recent program fields. Additionally, student work often marries critical theory and thinking with critical and creative media practice. Comp Lit students are makers as well as critics, producers of cultural artifacts as well as cultural interpreters.

Comp Lit students work with any number of languages; Hindi, French, Spanish, Chinese, Arabic, Hebrew, Yiddish, Latin, and ASL are some current examples. We welcome work in any foreign language in which a student has an interest. In cases where a student does not have the necessary linguistic competence to undertake literary study, we are happy to help make arrangements toward fluency.

In consultation with the Director of Undergraduate Studies (DUS) and the student's academic advisor, undergraduate concentrators develop an individually tailored and carefully structured program of study that brings together their particular interests and languages and allows them to take courses in a variety of departments across the humanities and beyond. Central to each student's curriculum is the tutorial program. The one-semester sophomore tutorial seminar introduces students to various disciplinary methodologies and forms of literary and cultural analysis. The junior tutorial offers students the rare opportunity to design their own reading course in which they work one-on-one with a tutor and ultimately develop their junior essay project. (Students may opt out of the junior tutorial in order to take additional courses in a non-English language or in Comparative Literature; see details in the concentration requirements outlined below.) The senior tutorial is also an individual course of study, largely devoted to the research and writing of the senior thesis, which is required of all students. All tutorials are reading and writing intensive and form the core around which a student develops a larger program of study. For more information about students' junior essays and senior thesis projects, students should see the "Undergraduate Concentration" link on our website, www.complit.fas.harvard.edu.

Comp Lit students pursue a variety of professional endeavors after graduation. They hold significant positions in academic, literary, and creative professions—as professors and teachers; writers of fiction and nonfiction, editors, and cultural critics; filmmakers, screenwriters, showrunners, and actors; and theater and dance company directors. But they also pursue professional fulfillment as doctors, lawyers, therapists, entrepreneurs, business leaders, rabbis, architects, and landscape designers, to name just a few. For a list of our alumni, students should consult the "Lit Alumni" link on our website, https://complit.fas.harvard.edu.

In order to help students determine whether they can meet their academic and intellectual goals in our department, we ask interested students to submit a "Declaring Comparative Literature" form at least one week before the official concentration declaration date. Students are encouraged to meet with the Director of Undergraduate Studies to learn more about the concentration.

LEARNING OBJECTIVES

Comp Lit graduates leave the department as active, culturally fluent citizens who have lifelong critical and creative thinking skills that allow them to make a difference in, and make meaning of, an increasingly complex global world, whatever their professional path.

REQUIREMENTS

Comparative Literature
Concentration Requirements: 14 courses (56 credits)

1. *Required courses*:
    a. COMPLIT 97: Sophomore Tutorial; COMPLIT 98A and 98B or tutorial alternative (see "Tutorials" below); COMPLIT 99A and 99B (see "Tutorials" below).
    b. Three courses from among the courses listed under "Comparative Literature." Each of these courses must be passed with a grade of B- or above.
    c. Three courses in one or more non-English literature(s), each passed with a grade of B- or above. Note: A student may petition the DUS to take one non-English course at the advanced language level for concentration credit in this category.
    d. Three courses drawn from a variety of related departments. These may include, but are not limited to, additional courses in Comparative Literature; English literature; non-English or classical literatures or folklore and mythology (including additional courses in the literature[s] chosen above); Philosophy; Art, Film, and Visual Studies; Study of Women, Gender, and Sexuality; and Linguistics. Students may also choose to use this requirement to pursue study of another non-English language. Students should consult with the DUS to determine whether a specific course will count for concentration credit in this category.
2. *Tutorials*:
    a. Sophomore year: COMPLIT 97. A grade of B- or above is required.
    b. Junior year: COMPLIT 98A and 98B. Graded SAT/UNS. A grade of SAT in both semesters is required in order to continue on to COMPLIT 99A and 99B. Alternatively, junior concentrators in Comparative Literature can petition to substitute one or two courses in place of the junior tutorial. These courses must be from the Comparative Literature departmental listings or courses that support non-English language learning at any level. Students must petition the DUS by the end of the second semester of sophomore year.
    c. Senior year: COMPLIT 99A and COMPLIT 99B (the writing of the senior thesis). Graded SAT/UNS. In order for a student to receive a grade of SAT for the first semester of senior tutorial, one chapter of the thesis must be submitted by the end of the semester in which the thesis work is begun.
3. *Essay:* A junior essay of 20–25 pages (5,000–6,250 words) is required of all students enrolled in the junior year tutorial. Students who do not enroll in the junior tutorial must, make arrangements to complete a junior essay in consultation with the DUS.
4. *Thesis:* A senior thesis of 45–70 pages (11,250–17,500 words) is required of all concentrators in the senior year.
5. *Oral examination*: A 75-minute oral examination at the end of the senior year is required of all primary concentrators and includes a thesis defense, an intellectual autobiography, and an examination in a number of topics and texts determined by the student. The examination committee consists of three members and ideally includes the student's

junior tutor and one reader of the senior thesis.

6. *Study abroad*: Comparative Literature encourages study abroad for one semester of the junior year. Students who study abroad take only one term of junior tutorial, although they must still complete the junior essay and 14 total concentration courses.

Comparative Literature
Joint Concentrations

Many students have successfully pursued a joint concentration with Comparative Literature in many fields, including in the departments of Philosophy; Computer Science; Linguistics; Near Eastern Languages and Civilizations; Art, Film, and Visual Studies; Religion; Chemistry; and Physics.. Each joint concentration is tailored specifically to a student's particular interests and to whether Comp Lit is the primary or allied field, but a joint concentration ordinarily allows for a reduction in the concentration requirements listed above. Courses indicated under "Required Courses" above (specifically item 1d) may be drawn entirely from the other department, and the junior essay and the senior thesis should incorporate both fields of study.

Interested students are encouraged to meet with the DUS to discuss joint options.

ADVISING

Each Comparative Literature concentrator is assigned a tutor who also functions as the student's advisor. In the sophomore year, this tutor is assigned by the DUS, but in following years a student may request a tutor from among the faculty members of the Department of Comparative Literature and the Tutorial Board, or the student will be assigned a tutor (generally a member of the Tutorial Board) by the DUS according to the student's interests. Generally, this tutor changes from year to year as the student's program and interests change. In certain cases, however, a student may request the same tutor for more than one year.

The department offers a variety of courses that might be of interest to first-year students and first-semester sophomores, but it has no specific course that is a prerequisite. Students who are interested in the program might wish to take any of the 100-level courses listed in Comparative Literature in the course search in my.harvard.edu. Students interested in comparative literature might also wish to take a language course in their language of choice if they wish to improve their non-English language competency.

For up-to-date information on advising in Comparative Literature, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Students interested in learning more about Comparative Literature should contact Dr. Sandra Naddaff by email (snaddaff@fas.harvard.edu) or should make an appointment to see her during office hours. For detailed information about office hours and to sign up for an appointment visit https://complit.fas.harvard.edu/people/naddaff-sandra/

For general information, contact Dr. Sandra Naddaff, Director of Undergraduate Studies, or Ms. Isaure Mignotte, Comparative Literature Program Coordinator, at Dana Palmer House, at 617-495-4186.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Comparative Literature	26	27	15	21	16	20	10	13	12	15
Comparative Literature + another field	4	2	5	5	7	10	6	12	6	5
Another field + Comparative Literature	3	3	3	5	6	8	4	5	5	4

Computer Science

Harvard's Computer Science (CS) concentration aims to guide students through the beautiful, dynamic, creative, and versatile discipline of computer science. Our requirements expose students to the most important and elegant results in computer science and empower students to use CS to improve the world. The requirements guide students from course to course to facilitate learning and mastery while allowing significant flexibility in course choice.

Computer science is about tools and technology, and also about understanding and engaging with the world. From swarms of insects to elementary particles, rational agents in a market, and neurons in a brain, the computational viewpoint has proven a fruitful way to understand natural, social, and engineered systems. Correspondingly, the Computer Science concentration has strong ties not just to engineering, but also to economics, law, biology, physics, statistics, mathematics, linguistics, and more. Because information technology affects every aspect of society, graduates with computer science degrees have access to a huge variety of careers, including engineering, teaching, medicine, law, basic science, entertainment, and management.

The Computer Science concentration requires basic grounding in mathematics, basic software programming, computational formal reasoning (the ability to reason rigorously about computation), larger-scale systems development, and the design and evaluation of computational systems that interact with the world at large, including natural and social systems. Academic computer science extends far beyond programming (though it does include programming); it provides students with a foundational understanding of the strengths and limitations of information and computation. This perspective is practically important—it helps students quickly adapt to new computational systems and approaches. It has also been increasingly revealed to be a beautiful way to understand the world.

LEARNING OBJECTIVES

Students who graduate with a concentration in Computer Science will be able to design and code correct solutions to problems; design and reason about algorithms; and develop and analyze the ways computation interacts with other systems.

REQUIREMENTS

Students who declared the concentration prior to 2021–22 should consult the relevant archived version of the student handbook and contact the department for further information.

Computer Science
Basic Requirements: 11–14 courses (44–56 credits)

1. *Required courses:*
    a. Mathematical preparation (two to five courses**,** see Note on Mathematical preparation in item 1c below):
        i. Precalculus and single-variable calculus: Either MATH MA, MATH MB, and MATH 1B, or MATH 1A and MATH 1B. Students may place out of some or all of this requirement depending on their starting mathematics course.
        ii. Linear algebra: One course in linear algebra. Satisfied by APMTH 22A, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, or a more advanced course.
        iii. Probability*:* One course in probability. Satisfied by STAT 110, ENG-

SCI150, MATH 154, or a more advanced course.
    iv. Math courses satisfy these requirements only if taken for a letter grade.
b. Computer Science core (nine courses): Nine courses from an approved list on the concentration's website. This list contains Computer Science courses and some courses in related fields. These courses must, taken together, satisfy the following "tag" requirements. The concentration website has a list of tags and the corresponding courses. A tag requirement is satisfied or partially satisfied by a Plan of Study containing a corresponding course. Each course on a Plan of Study may satisfy zero, one, two, or more tag requirements. Example Plans of Study satisfying these requirements can be found on the concentration website. While some courses can satisfy multiple tags, students still need to take nine Computer Science core courses.
    i. Programming 1 and Programming 2 tags (two courses in the Computer Science core): Two courses on software construction and good software engineering practices. The requirement is satisfied by either one course tagged Programming 1 and one tagged Programming 2, or by two courses tagged Programming 2.
    ii. Formal Reasoning tag (three courses in the Computer Science core): Three courses on formal reasoning about computer science, including at least:
        1. Discrete Mathematics tag (one course in the Computer Science core): One course with significant discrete math content. Students may skip this requirement with approval from the Directors of Undergraduate Studies; see the Computer Science website for more information.
        2. Computational Limitations tag (one course in the Computer Science core): One course covering topics in computability and complexity.
        3. Algorithms tag (one course in the Computer Science core): One course covering topics in algorithms.
    iii. Systems tag (one course in the Computer Science core): One course containing significant computer system development.
    iv. Computation and the World tag (one course in the Computer Science core): One course on interactions between computation and the world (for example, concerning informational, natural, human, or social systems).
    v. Advanced Computer Science tag (four courses in the Computer Science core): Four sufficiently advanced Harvard Computer Science courses, roughly corresponding to all CS courses numbered 100 and above. (See the concentration website for the full list.)
c. Note on mathematical preparation: The total number of required courses for the concentration depends on the starting Mathematics course (see "Required Courses" above). If appropriate for a student's background, a student may skip one or more courses in the MATH MA/MB/1A/1B series.
    i. Students starting in MATH MA: 14 courses (five courses to complete the mathematics requirements).
    ii. Students starting in MATH 1A: 13 courses (four courses to complete the mathematics requirements).
    iii. Students starting in MATH 1B: 12 courses (three courses to complete the mathematics requirements).
    iv. Students starting in MATH 21B or similar: 11 courses (two courses to complete the mathematics requirements).
2. *Tutorial:* Optional. Available as COMPSCI 91R. This course is repeatable but may be taken at most twice for academic credit, and only one semester of COMPSCI 91R may

be counted toward concentration requirements as a Computer Science core course. Students wishing to enroll in COMPSCI 91R must file a project proposal to be signed by the student and the faculty supervisor and approved by the Directors of Undergraduate Studies. The project proposal form can be found on the Computer Science website.

3. *Thesis:* None.
4. *General examination:* None
5. *Other information:*
    a. Approved courses: With the approval of the Directors of Undergraduate Studies, other courses may be used to satisfy requirements. If a course is cross-listed with another department, it meets the same requirements for the concentration as the COMPSCI-numbered course. In general, a course may be substituted with a more advanced version on the same or similar topic. Students must secure advance approval for course substitutions by filing a Plan of Study to be approved by the Directors of Undergraduate Studies. The Plan of Study form and a description of the process to submit the form can be found on the Computer Science website.
    b. Course preparation order: COMPSCI 1 and COMPSCI 10 cannot be taken for concentration credit after more advanced courses. COMPSCI 32 and COMPSCI 50 cannot both be taken for credit. COMPSCI 32 and COMPSCI 50 cannot ordinarily be taken for concentration credit after more advanced programming courses, including COMPSCI 51, COMPSCI 61, and other courses for which COMPSCI 50 is a prerequisite. At most, one of COMPSCI 20, MATH 101, and MATH 152 may not be taken for concentration credit, and none of them may ordinarily be taken for concentration credit after more advanced formal reasoning course work (for example, COMPSCI 1200, COMPSCI 1210, COMPSCI 1240, etc.).
    c. *Pass/fail and SAT/UNS:* No more than two of the courses used to satisfy the Computer Science core requirements may be taken pass/fail or SAT/UNS. Of the tag requirements, courses taken pass/fail or SAT/UNS can be used only for the Programming 1 and Advanced Computer Science tags. For instance, if taken pass/fail, COMPSCI 1240 would not satisfy the Formal Reasoning or Algorithms tags.
    d. Reduction of requirements for prior work: Except for MATH MA, MATH MB/MATH 1A, and MATH 1B, there is no reduction in concentration requirements for prior work.
    e. Plan of Study: Concentrators must file a Plan of Study showing how they intend to satisfy these degree requirements, and they must keep their Plan of Study up to date until their program is complete. If the plan is acceptable, the student will be notified that it has been approved. To petition for an exception to any rule, the student should file a new Plan of Study and notify the Directors of Undergraduate Studies of the rationale for any exceptional conditions. Approval of a Plan of Study is the student's guarantee that a given set of courses will satisfy degree requirements. The Plan of Study form and a description of the process to submit the form can be found on the Computer Science website.

Computer Science
Honors Requirements: 13–16 courses (52–64 credits)

1. *Required courses:* A student's Plan of Study for honors in the Computer Science concentration must satisfy each of the requirements below. Courses are allowed to satisfy multiple requirements, but a student's Plan of Study must still comprise 13 to 16 courses in total.

a. Mathematical preparation (two to five courses): Same as **Basic Requirements**.
b. Computer Science core (11 courses): Eleven courses from an approved list on the concentration's website. This is the same list as for the basic requirements, but two more courses are required. These courses, taken together, must satisfy the following tag requirements.
    i. Programming 1 and Programming 2 tags (two courses in the Computer Science core): Same as **Basic Requirements**.
    ii. Formal Reasoning tag (three courses in the Computer Science core): Same as **Basic Requirements**, but requiring Intermediate Algorithms rather than Algorithms, as follows.
        1. Discrete Mathematics tag (one course in the Computer Science core; may be skipped with approval of the Directors of Undergraduate Studies): Same as **Basic Requirements**.
        2. Computational Limitations tag (one course in the Computer Science core): Same as **Basic Requirements**.
        3. Intermediate Algorithms tag (one course in the Computer Science core): One course covering basic and intermediate topics in algorithms. Replaces the Algorithms tag from the **Basic Requirements**.
    iii. Systems tag (one course in the Computer Science core): Same as **Basic Requirements**.
    iv. Computation and the World tag (one course in the Computer Science core): Same as **Basic Requirements**.
    v. Artificial Intelligence tag (one course in the Computer Science core): One course covering topics in artificial intelligence. (Most such courses will simultaneously satisfy the Computation and the World tag.)
    vi. Advanced Computer Science tag (five courses in the Computer Science core): Five sufficiently advanced Harvard Computer Science courses (one more than the **Basic Requirements**).

2. *Tutorial:* Same as **Basic Requirements**.
3. *Thesis:* Optional but encouraged. See honors requirements on the Computer Science website at https://csadvising.seas.harvard.edu/concentration/degrees/. Students writing theses are often enrolled in COMPSCI 91R. This course is repeatable but may be taken at most twice for academic credit, and only one semester of COMPSCI 91R may be counted toward concentration requirements as a Computer Science core course. Students wishing to enroll in COMPSCI 91R must file a project proposal to be signed by the student and the faculty supervisor and approved by the Directors of Undergraduate Studies. The project proposal form can be found on the Computer Science website.
4. *General examination:* Same as **Basic Requirements**.
5. *Other information:* Same as **Basic Requirements**.

Computer Science
Joint Concentration Requirements: 10–13 courses (40–52 credits)

Joint concentrations with certain other fields are possible. This option is intended for students who have interests in the intersection of two fields, not simply in the two fields independently; for example, a combined concentration in Computer Science and Linguistics might be appropriate for a student with a special interest in computational linguistics. Course requirements are the same as the **Basic Requirements**, with three exceptions: only eight (instead of nine) Computer Science core courses are required, COMPSCI 91R may be used to satisfy an Advanced Computer Science requirement, and a thesis that combines the two fields is required. Note that courses satisfying Computer Science requirements may also be

double-counted toward the requirements of the other field.

Joint concentrations are not “double majors.” Joint concentrators should be interested in the overlap between two fields, not simply in both fields. A thesis in the intersection of the fields is required for joint concentrators; the thesis will be read by both concentrations. The student is typically awarded the minimum honors recommended by the two concentrations separately. These requirements, including the thesis requirement, are the same whether Computer Science is the primary field or the allied field of the joint concentration.

Students interested in combined programs should consult the Directors of Undergraduate Studies at an early date and should work carefully with both concentrations to ensure all deadlines and requirements of the two concentrations are met. Students with separate interests in more than one field should consider pursuing a secondary field rather than a joint concentration or simply using some of their electives to study one of the fields. We advise all of our joint concentrators to make sure that they satisfy the non-joint requirements for at least one concentration in case they are unable to complete a thesis.

Computer Science
Mind Brain Behavior (MBB) Track
Requirements: 13–16 courses (52–64 credits)

Students interested in addressing questions of neuroscience and cognition from the perspective of computer science may pursue a special program of study affiliated with the University-wide Mind Brain Behavior Initiative that allows them to participate in a variety of related activities. (Similar programs are available through the History and Science, Human Evolutionary Biology, Linguistics, Neuroscience/Neurobiology, Philosophy, and Psychology concentrations.) Requirements for this honors-only program are based on those of the Computer Science requirements for honors eligibility, as explained below:

1. *Required courses:*
    a. Mathematical preparation (two to five courses): Same as **Honors Requirements**.
    b. Computer Science core (eight courses): Same as **Honors Requirements**, with the following exceptions:
        i. Eight courses, rather than 11 courses, are required.
        ii. Four advanced computer science courses: Four sufficiently advanced Harvard Computer Science courses, rather than five courses, are required. In addition, one COMPSCI 91R course may be used to satisfy this requirement.
    c. Mind Brain Behavior courses (three courses):
        i. MCB 80/NEURO 80: Neurobiology of Behavior.
        ii. An approved course in an MBB-related field outside Computer Science.
        iii. An approved MBB junior tutorial.
2. *Tutorial*: Same as **Honors Requirements**.
3. *Thesis*: A computationally oriented thesis on a Mind Brain Behavior–related topic is required. Students pursuing thesis research may want to enroll in COMPSCI 91R.
4. *General examination*: None.
5. *Other information:* Same as **Honors Requirements**.
6. *Note*: Students pursuing the Mind Brain Behavior track are assigned an advisor in the field and are expected to participate in the University-wide Mind Brain Behavior research milieu, including a non-credit senior year seminar for Mind Brain Behavior thesis writers. To participate in the MBB track, students must both complete the Computer Science concentration Plan of Study and register at the beginning of every academic year on the MBB website at http://mbb.harvard.edu. Interested

students should contact the Computer Science liaison to the MBB program, at cs-mbb@g.harvard.edu.

ADVISING

Students interested in concentrating in Computer Science are urged to consult the Directors of Undergraduate Studies or the Assistant Director of Undergraduate Studies early and often for advice on placement in courses and selection among courses. The Directors and the Assistant Director of Undergraduate Studies are happy to talk with first-year students and sophomores about their Plan of Study and to answer questions.

When a student enters the concentration midway through the sophomore year, the Directors of Undergraduate Studies and Assistant Director of Undergraduate Studies assign a professor to serve as the student's faculty advisor. Every effort is made to match the student's special interests to the expertise of the advisor. Students should consult with their advisors regularly, certainly at course registration. When a faculty advisor is on leave, the student is assigned to a new advisor. Students desiring a change of advisor for any reason should contact the Directors of Undergraduate Studies and Assistant Director of Undergraduate Studies. These faculty members are also available to discuss problems or questions of any kind with students in the concentration.

For up-to-date information on advising in Computer Science, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Students interested in Computer Science are invited to join the Computer Science mailing list, which carries announcements regarding new courses, colloquia, job and internship opportunities, and a variety of get-togethers for the Harvard Computer Science community. Information about other community resources can be found on the Computer Science website at http://www.seas.harvard.edu/computer-science.

For further information, students should consult the Directors of Undergraduate Studies and Assistant Director of Undergraduate Studies at cs-dus@seas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Computer Science	263	306	363	394	385	407	279	390	467	496
Computer Science + another field	32	42	47	59	84	95	80	114	126	124
Another field + Computer Science	21	24	25	41	51	53	41	58	63	58

Earth and Planetary Sciences

Harvard offers outstanding opportunities for students who wish to pursue studies in Earth and planetary sciences. Research and course work in the Earth and Planetary Sciences (EPS) Department encompass a broad range of science disciplines, technology, and applications to environmental and economic endeavors. These studies involve students in the development and application of new tools and technologies, state-of-the-art computational modeling of a wide range of Earth planetary processes, and fieldwork in remote and challenging settings.

These are intellectually exciting times for Earth and planetary sciences—unprecedented in their importance to contemporary society. Our environment is increasingly subject to stresses placed upon it. As never before, we have an imperative to better understand the consequences of human activities for the Earth's atmosphere, the oceans, the solid Earth, and the organisms that live on it. Exploring, extracting, and conserving natural resources are vital to the global political economy. We must mitigate the ill effects of earthquakes, landslides, volcanic eruptions, and climate change by learning to predict and forecast their time and place. Moreover, new technologies, data sets, and computational capacity are allowing us to better understand the functioning of Earth systems and the interplay between tectonics, climate, and life.

The department trains students rigorously in the basic sciences, typically in the same foundational courses as students in Astrophysics, Chemistry, Engineering Sciences, and Physics. These foundational courses are followed by upper-level courses that focus on disciplines within Earth and planetary sciences. In the EPS Department, students may focus on atmospheric and ocean science, energy and climate, environmental geoscience, geobiology, geochemistry, geology, planetary sciences, and solid earth geophysics.

To facilitate and reinforce our interdisciplinary vision, primary concentrators are required to take at least one course in each of the three major subdisciplines in the department: Atmosphere(s) and Oceans; Earth History and Geobiology; and Geology, Geophysics, and Planetary Science. Moreover, all students are encouraged to participate in department-sponsored field experiences. Many students complete their studies with a senior thesis that affords them the opportunity to do original research under the guidance of department faculty.

Career opportunities in Earth and planetary sciences are diverse, spanning the private, government, and academic sectors. Government service includes research and administration at NASA, the National Oceanographic and Atmospheric Agency, the U.S. Geological Survey, the Environmental Protection Agency, and many other agencies and departments. Earth scientists work in and direct several oil and mineral exploration and production companies. Many opportunities continue to grow for entrepreneurs who build companies specializing in resources, natural hazards, waste repositories, cleanup, and environmental impacts.

There are also abundant opportunities in the academic world for those continuing onto graduate degrees; in addition to scientific career paths, an undergraduate degree in Earth and Planetary Sciences provides an excellent background for continuing study in law, business, and medicine. The research environment of the department is an unparalleled resource for undergraduate education. Concentrators may work with faculty and graduate students on major research projects as a research or field assistant, in the context of course work, or as part of an undergraduate research project. Class sizes are small, and student-professor contact is frequent and informal. Each graduating senior becomes personally acquainted with numerous faculty members in the department. Writing a senior thesis, which may be based on

field, laboratory, or theoretical research, provides students with the opportunity to explore beyond the elementary level in one or more of the subspecialties within Earth and Planetary Sciences.

LEARNING OBJECTIVES

Because the Earth's natural systems are interconnected, the training of Earth and planetary scientists broadly spans the boundaries between biology, chemistry, engineering, physics, mathematics, and the Earth sciences themselves, and provides a broad intellectual foundation that is beyond what is typically possible in a "pure" science program.

REQUIREMENTS

Earth and Planetary Sciences
Concentration Requirements: 14 courses (56 credits)

1. *Required courses*:
    a. E-PSCI courses (six courses): At least one course at the 50- or 100-level sampling all three subdisciplines: Atmosphere(s) and Oceans; Earth History and Geobiology; and Geology, Geophysics, and Planetary Science.
        i. A minimum of two foundational courses from either EPS-ESE 6, E-PSCI 10, or GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, and GENED 1167, and all 50-level E-PSCI courses. Note: No more than one of these courses can be from EPS-ESE 6, E-PSCI 10, or GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, and GENED 1167.
        ii. Four additional courses in E-PSCI, at least three of which must be numbered 99 or above.
    b. Basic science requirements (6 courses):
        i. Physics (one course): PHYSCI 12A, PHYSICS 15A, PHYSICS 16, or PHYSICS 19.
        ii. Chemistry (one course): PHYSCI 11.
        iii. Higher-level physics or chemistry (one course): PHYSCI 12B, PHYSICS 15B, PHYSICS 15C, CHEM 17, CHEM 20, CHEM 40, or CHEM 60.
        iv. Mathematics (two courses): MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B, or APMTH 22A and APMTH 22B.
        v. Data analysis, statistics, and computation (one course): E-PSCI 100, E-PSCI 102, APMTH 111, APMTH 120, CS 109A, STAT 109, STAT 110, or STAT 111.
    c. Additional courses (one to two courses) in E-PSCI or selected courses in related fields to complete the requirement of at least 14 courses.
2. *Honors eligibility*: E-PSCI 99A and E-PSCI 99B: Senior Thesis Tutorial. Students ordinarily complete two terms of E-PSCI 99 (A and B) to be eligible for honors. E-PSCI 99B must be taken for a letter grade. E-PSCI 99B will count toward concentration credit as one of the four additionally required E-PSCI courses noted under "Required Courses" above. Midyear poster and final oral presentations of the thesis are required.
3. *Tutorial*: Required, non-credit.
4. *Thesis*: Optional; required for departmental (English) honors.
5. *General examination*: None.
6. *Substitutions*: Advanced placement may be used to allow students to complete higher-level courses noted under "Required Courses" above; but a minimum of one physics, one chemistry, and two mathematics courses must be completed to satisfy

concentration requirements. Students interested in substituting a course in place of the above requirements should consult their EPS concentration advisor and submit a petition to the Academic Programs Manager.

7. *Other information*:
    a. None of the courses required for concentrators may be taken pass/fail, and C- is normally the minimum acceptable grade.
    b. Students must complete the two foundational courses by the end of their first year in the concentration (ordinarily no later than the first semester of their junior year).
    c. Students are strongly encouraged to consult with a faculty advisor during their first year to plan appropriate choices for course work in physics, chemistry, and mathematics.
    d. Related fields include selected departmental courses offered in Applied Mathematics, Astronomy, Chemistry, Computer Science, Engineering Sciences, Environmental Science and Public Policy, Mathematics, Organismic and Evolutionary Biology, Physics, and Statistics, which count toward the respective concentration requirements upon approval of the Undergraduate Curriculum Committee. Students must petition to count related field courses for concentration credit prior to enrollment in the course. Courses offered through the General Education program are not admissible for the related field requirement, except as noted above under “Required Courses.”
    e. MATH MA, MATH 1A, MATH 1B, LS 1A, and LS 1B normally do not count toward concentration credit.
    f. Thematic plan of study: Students must discuss and develop their individual Plan of Study with their concentration advisor. Students are strongly encouraged to focus their departmental course work in a thematic subfield (atmospheric and ocean science, energy and climate, environmental geoscience, geobiology, geochemistry, geology, planetary sciences, or solid earth geophysics).
    g. Summer school and study abroad: Courses from study abroad, Harvard Summer School, or other Harvard Schools may count toward concentration credit if approved by the Undergraduate Curriculum Committee prior to the student’s enrollment in these courses. Students must petition for such credit by contacting the Academic Programs Manager.
    h. First-Year Seminars: First-Year Seminars ordinarily do not count for concentration credit because they are SAT/UNS courses.
    i. Field trips: An important aspect of the EPS concentration is participation in field trips and/or summer and January field camps, supported by the department.

Earth and Planetary Sciences
Joint Concentration Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. E-PSCI courses (five courses):
        i. A minimum of two foundational courses from either EPS-ESE 6, E-PSCI 10, or GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, and GENED 1167, and all 50-level EPS courses. Note: No more than one of these from EPS-ESE 6, E-PSCI 10, or GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, and GENED 1167.
        ii. Three additional courses in E-PSCI, at least two of which must be numbered 99 or above.
    b. Basic science requirements (six courses):
        i. Physics (one course): PHYSCI 12A, PHYSICS 15A, PHYSICS 16, or

PHYSICS 19.
   ii. Chemistry (one course): PHYSCI 11.
   iii. Higher-level physics or chemistry (one course): PHYSCI 12B, PHYSICS 15B, PHYSICS 15C, CHEM 17, CHEM 20, CHEM 40, or CHEM 60.
   iv. Mathematics (two courses): MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B, or APMTH 22A and APMTH 22B.
   v. Data analysis, statistics, and computation (one course): E-PSCI 100, E-PSCI 102, APMTH 111, APMTH 120, CS 109A, STAT 109, STAT 110, or STAT 111.
2. *Honors eligibility*: E-PSCI 99A and E-PSCI 99B: Senior Thesis Tutorial, or similar course in the student's other concentration. Students must complete at least one term as part of the joint concentration. E-PSCI 99B must be taken for a letter grade. E-PSCI 99B will count toward concentration credit under "Required Courses" above. Midyear poster and final oral presentations of the thesis are required.
3. *Tutorial*: Required, non-credit.
4. *Thesis*: Required. An EPS faculty member must serve as a thesis reader.
5. *General examination*: None.
6. *Substitutions*: Advanced placement may be used to allow students to complete higher-level courses under "Required Courses" above; but a minimum of one physics, one chemistry, and two mathematics courses must be completed to satisfy concentration requirements. Students interested in substituting a course in place of the above requirements should consult their EPS concentration advisor and submit a petition to the Academic Programs Manager.
7. *Other information*: Same as **Concentration Requirements**.

ADVISING

At the start of the concentration's first term, each student is assigned a faculty advisor. Students normally continue with the same advisor throughout their concentration, although advisors may be changed upon student request. For students writing a thesis, the senior thesis advisor will also act as an additional concentration advisor. Students should meet individually with the Academic Programs Manager at least once each term to discuss course selections and other academic matters. Students may also seek advice from the Head Tutors at any time.

RESOURCES

The Department of Earth and Planetary Sciences is housed partly in Hoffman Laboratory, which is directly connected with department classrooms and offices in the Geological Museum on Oxford Street. Some of the atmospheric sciences are housed in Pierce Hall, just across Oxford Street from Hoffman Laboratory. Biological oceanography and paleontology are housed in the Geological Museum, with direct connection through the museum to parts of the department in Hoffman Laboratory.

HOW TO FIND OUT MORE

Additional information may be obtained from the Academic Programs Manager, from the Head Tutors, or on our website at http://www.eps.harvard.edu/.

The Co-Head Tutors are Professor Roger Fu, Geo Museum 204B (617-384-6991, rogerfu@fas.harvard.edu) and Professor Ann Pearson, Geo Museum 362 (617-384-8392, apearson@eps.harvard.edu). The Academic Programs Manager is Campbell Halligan, Hoffman Labs 402 (617-384-9760, campbellhalligan@fas.harvard.edu).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Earth and Planetary Sciences	18	18	21	20	16	11	7	8	16	15
Earth and Planetary Sciences + another field	5	4	5	4	5	7	3	4	7	3
Another field + Earth and Planetary Sciences	5	5	2	1	1	3	3	3	4	3

East Asian Studies

To study East Asia is to be exposed to diverse forms of political activity and social relations, religious traditions of great depth, philosophical schools with enduring insights, and literatures of tremendous range and power. Concentrators in East Asian Studies (EAS) develop an expertise in the region and gain a critical understanding of the human experience in East Asia and its diaspora. The program gives students the freedom, advising support, and infrastructure to study East Asia as a whole and to pursue specialized study of one or more societies from any disciplinary vantage point. Our students' interests range from topics in sociology, government, and economics to art, literature, culture, and new media.
East Asian Studies is an interdisciplinary concentration that welcomes students interested in the humanities and/or the social sciences.

LEARNING OBJECTIVES

A concentrator in East Asian Studies develops skills in a language, participates in the tutorial program, and selects from a rich offering of lecture courses and seminars. The concentration aims to examine East Asian cultures by foregrounding texts and voices from the region, past and present. Language study is therefore an important component of the program both for the practical benefits of proficiency for course work and future careers, and as one of the most meaningful ways to expand one's intellectual horizons and challenge preexisting world views. Students take language courses on campus and through Harvard's numerous study abroad opportunities in Asia. The concentration also accommodates students with different levels of time to devote to language learning and specialization through our individual tracks (see https://eas.fas.harvard.edu/ways-concentrate).

The tutorial program in East Asian Studies begins with EASTD 97 (normally taken in the sophomore year, but open to all years), which explores topics and concepts essential to studying the region and introduces methodologies and tools for critical thinking. By covering East Asia as a whole, the course provides a valuable comparative and interregional perspective. EASTD 98 and other eligible courses are junior tutorials in which students work closely with faculty to write a substantial research paper in their area of interest. Junior tutorials pave the way for EASTD 99AB, a seminar taken the entire senior year that allows students time to research, write, and receive feedback on senior theses.

The concentration offers a broad range of possibilities for students interested in the social sciences or the humanities. EAS facilitates course work in social sciences, incorporating approaches to modern East Asia drawn from political science, sociology, anthropology, economics, and psychology. Students with an interest in the humanities can choose to study modern and premodern East Asia from the perspectives of history, literature, art history, cultural studies, religion, philosophy, and folklore. EAS faculty are drawn from the departments of East Asian Languages and Civilizations, Anthropology, Economics, Government, History, History of Art and Architecture, and Sociology, and from Harvard Business School, Harvard Law School, Harvard Divinity School, and Harvard Kennedy School. The sophomore tutorial introduces a variety of perspectives from the humanities and the social sciences and offers concentrators a forum to interact with Harvard's East Asia faculty. At the end of the sophomore year, students typically decide on a disciplinary or area focus or choose a comparative perspective (involving one or more than one area or discipline) in consultation with the Director of Undergraduate Studies and their assigned faculty advisor. Juniors take an EASTD 98 offering or an approved course to serve as their junior tutorial and may choose to spend the summer in East Asia doing research or internships. Honors candidates usually spend the senior year researching and writing the honors thesis.

The East Asian Studies concentration welcomes joint concentrators. Primary concentrators in another field who are interested in language study take six courses of language, the sophomore tutorial, and two area courses. Those interested in area studies take the sophomore tutorial and five additional courses on East Asia. Students should consult the East Asian Studies office (eas@fas.harvard.edu) or visit the EAS website (https://eas.fas.harvard.edu/) for detailed requirements.

East Asian Studies alumni go on to pursue successful careers in a variety of fields. To hear their stories, visit https://eas.fas.harvard.edu/alumni. Join the EAS listserv by visiting https://web.lists.fas.harvard.edu/mailman/lists/easconcpro-list.lists.fas.harvard.edu to keep up with concentration announcements and opportunities.

REQUIREMENTS

East Asian Studies
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. Language: At least four, and no more than six, courses in Chinese, Japanese, Korean, Mongolian, Tibetan, Uyghur/Chaghatay, or Vietnamese; or an approved combination of courses involving two East Asian languages. The aim of the language requirement is a minimum level of competence equivalent to four courses of language study; thus, it may be possible for the requirement to be satisfied in part by work done or experience gained elsewhere than in formal course work at Harvard. However, students who are allowed by petition to the DUS to take fewer than four courses of language due to previous training or knowledge are required to substitute other courses. No more than six courses of language may be counted for concentration credit.
    b. Tutorials: Two courses of tutorial or courses designated as equivalents.
    c. Area courses: Four to six non-language courses (area courses) in East Asian or related subjects, selected from the EAS-eligible course list (found at https://eas.fas.harvard.edu/area-courses) or another course approved by the Director of Undergraduate Studies. One of these courses must be a historical survey course. (For more information on survey courses, students should visit https://eas.fas.harvard.edu/historical-survey-courses). It is recommended that at least two area courses be upper-level seminars. The number of courses required depends on the number of East Asian language courses that a student chooses (for example, a student who chooses to count six courses of language requires four additional area courses, and a student who chooses to count four language courses requires six area courses).
2. *Tutorials*:
    a. EASTD 97AB: Sophomore Tutorial. May be taken in first, sophomore, or junior year. For more information on the Sophomore Tutorial, students should visit https://eas.fas.harvard.edu/sophomore-tutorial.
    b. EASTD 98: Junior Tutorial. With permission of the Director of Undergraduate Studies, an approved replacement course may be substituted for EASTD 98. For more information on the Junior Tutorial, students should visit https://eas.fas.harvard.edu/junior-tutorials.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: With the exception of East Asian Languages and Civilizations (EALC) First-Year Seminars, courses counted for concentration credit may not be taken pass/fail, except by special petition. The sophomore tutorial may not be taken pass/fail. General Education classes on East Asia can be counted for both College

General Education requirements and concentration credit. Content courses taught in an East Asian language can count toward the language or area course requirement. A content course taught in an East Asian language may also count as a junior tutorial replacement course with the written permission of the Director of Undergraduate Studies.

East Asian Studies
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Language: Four to six courses in Chinese, Japanese, Korean, Mongolian, Tibetan, Uyghur/Chaghatay, or Vietnamese, or an approved combination of courses involving two East Asian languages (see **Basic Requirements** under "Required Courses," above).
    b. Tutorials: Four courses of tutorial or courses designated as equivalents. See note 2 above in **Basic Requirements** for more information.
    c. Three to five courses selected from among East Asian or related subjects (see item 1c of **Basic Requirements**), including language courses beyond **Basic Requirements**. The number of courses required depends on the number of East Asian language courses that a student chooses (for example, a student who chooses to count six courses of language requires three additional area courses, and a student who chooses to count four language courses requires five area courses). One of the area courses must be a historical survey course. Students should visit https://eas.fas.harvard.edu/historical-survey-courses for more information.
2. *Tutorials*: Same as **Basic Requirements**, plus, during the senior year: EASTD 99 (two terms). Preparation of thesis. Letter-graded. The senior tutorial consists of weekly meetings with the graduate student advisor and regular (usually biweekly) meetings with the faculty advisor. There are also periodic meetings with other seniors writing theses. EASTD 99 counts toward course requirements. For more information on EASTD 99, students should visit https://eas.fas.harvard.edu/senior-tutorial.
3. *Thesis*: Required of all honors candidates.
4. *General examination*: None.
5. *Other information*: With the exception of EALC First-Year Seminars, courses counted for concentration credit may not be taken pass/fail, except by special petition. The sophomore tutorial may not be taken pass/fail. General Education classes on East Asia can be counted for both College General Education requirements and concentration credit. Content courses taught in an East Asian language can count toward the language or area course requirement. A content course taught in an East Asian language may also count as a junior tutorial replacement course with the written permission of the Director of Undergraduate Studies.

Joint Concentration in East Asian History
Requirements: 14 courses (56 credits)

Students whose interest in East Asia is primarily historical in character should consider concentrating in East Asian History. East Asian History is a joint honors concentration co-sponsored by the History Department and the East Asian Studies concentration. It treats neither History nor East Asian Studies as a primary or secondary concentration but aims to take advantage of the strengths of both concentrations. The goal of the program is to introduce students to the craft of historical study—the ways historians make sense of the past, and the skills of historical analysis, writing, and research—as well as to promote a critical understanding of the historical experience of East Asian societies. In addition to in-depth language study and substantial course work in the history of East Asia, students enrolling in

this concentration will do one-half of their tutorial work in the History Department and the other half in the East Asian Studies concentration. HIST 97 introduces students to the analysis of historical writing in various genres, while EASTD 97 introduces the history, literature, and intellectual traditions of China, Japan, and Korea. By taking a history research seminar in the sophomore or junior year, students are introduced to methods of historical research and writing and have the opportunity to conduct in-depth research projects. In the senior year, joint concentrators write an honors thesis, an original work in some aspect of East Asian history. All East Asian History joint concentrators are required to take 14 courses, including either EASTD 99 or History 99, the senior thesis tutorial.

1. *Required courses:*
    a. East Asian language courses (four courses): Four courses of study of an East Asian language.
    b. Additional course work (eight courses):
        i. HIST 97 and EASTD 97. Both 97 tutorials are offered in the spring term only; students may choose to take both during their sophomore spring, or to take one in the sophomore spring and the other in the junior spring.
        ii. One seminar focused on East Asian history. Must be completed by the end of the junior spring, in preparation for the senior thesis.
        iii. One course in Western history.
        iv. One course in premodern East Asian history.
        v. One course in modern East Asian history.
        vi. Two additional electives in East Asian history.
2. *Senior thesis:* Required. Two courses. Students who wish to pursue a joint concentration in East Asian History must write a senior thesis, which also requires enrollment in one of two yearlong senior thesis seminars: either HIST 99 or EASTD 99. Students may select either seminar. They are also required to participate in the East Asian Studies Thesis Colloquium in February.
3. *Other information:*
    a. Two types of courses count automatically toward East Asian History concentration requirements:
        i. Courses listed in the course catalog's "History" section (especially 1600-level courses) and "East Asian Languages and Civilizations" section (especially under "East Asian Studies" as well as "Japanese History," "Chinese History," and "Korean History"), including cross-listed courses.
        ii. Courses taught in the General Education and/or First-Year Seminar programs by full members of the faculty of the History or East Asian Studies departments. Students wishing to count such courses toward their concentration requirements should consult the Undergraduate Office, as they may need to file a petition requiring approval by the Director of Undergraduate Studies. Students may also apply to do an independent study, or HIST 91R, with a member of the department; History 91R can be used to fulfill one of the six elective course requirements.
    b. The joint concentration also regularly accepts credit from study abroad toward concentration requirements. With the exception of certain First-Year Seminars taught by History or East Asian Studies faculty (see above), courses taken on a pass/fail basis may not be counted for concentration credit.

EAS also offers a Joint Concentration: Language Track (more information at https://eas.fas.harvard.edu/joint-concentration-eas-secondary) and Joint Concentration: Area

Track (more information at https://eas.fas.harvard.edu/joint-concentration-eas-secondary-area-track), as well as a Secondary Field option (more information at https://eas.fas.harvard.edu/secondary-field). Students should visit the respective links to our website to learn more about these tracks. EAS also offers a double concentration track for students seeking in-depth pursuit of two concentrations that do not substantially overlap (more information at https://eas.fas.harvard.edu/double-concentration). Students should not hesitate to reach out to the EAS Coordinator for more information on the concentration.

Gateway Courses

- Language courses: Students are encouraged to begin language study in their first semester, if possible. Offerings include Chinese, Japanese, Korean, and Vietnamese, as well as Manchu, Mongolian, Uyghur, and Chaghatay.
- EASTD 97: Introduction to the Study of East Asia: Issues and Methods. Normally taken in the sophomore year, but open to all. Taught every spring semester.
- EASTD 140: Major Religious Texts of East Asia.
- EASTD 153: Buddhism, Japanese Arts and Culture
- EASTD 170: Medicine and the Self in China and the West.
- EAFM 111: East Asian Media Studies.
- FRSEMR 71D: Zen and the Art of Living.
- GENED 1049: East Asian Cinema.
- GENED 1091: Classical Chinese Ethical and Political Theory.
- GENED 1100: The Two Koreas in the Modern World.
- HIST 1023: Japan in Asia and the World.
- CHNSLIT 114: Introduction to Premodern Chinese Literature.
- CHNSLIT 134: Strange Tales: The Supernatural in Chinese Literature
- JAPNLIT 162: Girl Culture, Media, and Japan
- JAPNLIT 170: Traditional Japanese Literature.
- KORLIT 134: Korean Literature in Translation.

For a more complete listing of courses eligible for EAS concentration credit, visit https://eas.fas.harvard.edu/area-courses.

ADVISING

All concentrators meet individually with one of the Assistant Directors of Undergraduate Studies (ADUS) or the Undergraduate Program Coordinator prior to the beginning of course registration period. At other times, students are welcome to drop in during office hours, ask questions via email, or schedule Zoom meetings with the Director of Undergraduate Studies, Assistant Directors of Undergraduate Studies, or EAS Coordinator as often as is desired or necessary. By the end of the sophomore year, newly declared concentrators will be assigned a faculty advisor from among East Asian Languages and Civilizations or affiliated faculty in a field relevant to their interest. Concentrators are encouraged to make appointments to meet or speak with their faculty advisor about their research interests and goals as often as desired.

The East Asian Studies website advising page is https://eas.fas.harvard.edu/advising.

RESOURCES

Students of East Asia at Harvard, in whatever program, benefit from a number of unique and valuable resources. Among these are the magnificent collections of the Harvard-Yenching Library—the Chinese collection is perhaps the most comprehensive in the world, while those on Japan and Korea are also imposing. The Harvard-Yenching Institute, in addition to its support of the library, operates programs that bring younger East Asian scholars and graduate students to Harvard. The Asia Center, Fairbank Center for Chinese Studies, Korea Institute,

and the Reischauer Institute of Japanese Studies also have a number of scholars on East Asia in residence annually, and sponsor workshops and other enriching activities.

Harvard, moreover, sponsors certain study programs abroad, and the existence of these and other opportunities has led to an increasing number of students spending one of their undergraduate semesters, years, or summers in East Asia. Visit the EAS website (https://eas.fas.harvard.edu/study-abroad) to learn more. Additionally, along with limited departmental grants to help EAS concentrators conduct research travel abroad, the EAS resources page contains helpful links to many other sources of funding from Harvard departments and centers, and beyond. Visit https://eas.fas.harvard.edu/resources and click "Financial Support" to explore all the options.

HOW TO FIND OUT MORE

First-year students or sophomores interested in concentrating in East Asian Studies should contact the Director of Undergraduate Studies, Shigehisa Kuriyama, or the EAS Coordinator, Naia Poyer. They are also welcome to schedule a meeting with the Assistant Director of Undergraduate Studies (ADUS) for first-years and sophomores. Contact info for the ADUSes can be found at https://eas.fas.harvard.edu/advising. Students can also stop by the EAS office at 9 Kirkland Place during in-person hours, come to the office hours of the Director of Undergraduate Studies and the Assistant Directors of Undergraduate Studies, or set up appointments with any of the advising team. More information can be obtained by emailing eas@fas.harvard.edu, or visiting https://eas.fas.harvard.edu/advising.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
East Asian Studies	29	22	22	18	13	12	9	10	19	24
East Asian Studies + another field	7	5	3	1	5	4	0	3	2	2
Another field + East Asian Studies	16	10	9	13	15	19	8	14	21	22

Economics

Economics is a social science that covers a broad subject matter in seeking to understand the social world. An economic analysis begins from the premise that individuals have goals and that they pursue those goals as best they can. Economics studies the behavior of social systems—such as markets, corporations, legislatures, and families—as the outcome of interactions through institutions between goal-directed individuals. Ultimately, economists make recommendations that they believe will make people better off.

Traditionally, economics has focused on understanding prices, competitive markets, and the interactions between markets. While topics such as monopolies and antitrust, income inequality, economic growth, and the business cycle continue to be important areas of inquiry, the subject matter of economics has broadened. Today, economists address a remarkable variety of social science questions. Will school vouchers improve the quality of education? Do politicians manipulate the business cycle? What sort of legal regime best promotes economic development? Does religiosity affect economic growth? What can be done about grade inflation? Why do people procrastinate in saving for retirement—or in doing their homework?

Economics today is a scientific discipline. Bringing their particular perspective to social science questions, economists formulate theories and collect evidence to test these theories against alternative ideas. Doing economic research involves asking questions about the social world and addressing those questions with data and models, employing mathematical and statistical tools whenever possible to aid the analysis.

An undergraduate education in economics focuses on learning to analyze the world in terms of trade-offs and incentives—that is, to think like an economist. Students concentrating in economics begin, ordinarily, in their first year with ECON 10A and ECON 10B, the introductory courses in economics. Because marginal conditions hold a central place among economists' analytical tools, prospective economics concentrators are required to complete math at the level of MATH 1A. Students who have already met this requirement may choose to continue their study of mathematics in order to prepare for courses that assume familiarity with more advanced topics in mathematics or for graduate study in economics. Students hoping to graduate with honors must complete additional math courses; see the specific requirements below. First-year students are also encouraged to take the required introductory statistics course. The ability to interpret quantitative data and to understand statistical arguments is essential to understanding the economy. Students who have not completed this requirement their first year are advised to fulfill it their sophomore year.

Concentrators ordinarily take four or five economics courses in their sophomore year. Two courses make up the intermediate theory sequence: one of ECON 1010A or ECON 1011A (Intermediate Microeconomics) and one of ECON 1010B or ECON 1011B (Intermediate Macroeconomics). These courses teach the analytical tools that economists use. The 1011 courses assume a more advanced background in mathematics than the 1010 courses. The third course often taken in the sophomore year is ECON 970, the sophomore tutorial, which is taught in small, discussion-oriented classes. However, concentrators are welcome to take the sophomore tutorial in their junior year. The sophomore tutorial is an intensive experience aimed at helping concentrators understand the nature of economics research, discuss economic arguments both orally and in writing, and start to carry out their own research. Finally, students are advised to fulfill the econometrics requirement (ECON 1123 or ECON 1126) in the sophomore year. This course helps students get the most out of their sophomore tutorials as they use the tools learned in econometrics. Beyond these foundational courses, all concentrators are required to take three additional elective courses in the Economics

Department. Students can pursue honors either by writing a senior thesis or taking the non-thesis Advanced Course Track (ACT); see the specific requirements below. Honors candidates must also take the economics honors exam in the spring of their senior year.

In recent years, approximately 25 percent of economics concentrators have chosen to write a senior thesis. Senior thesis topics often spring from a question of interest first raised in an economics elective course. Students are therefore strongly advised to take courses before their senior year in areas in which they might want to write their theses.

Undergraduates are welcome in graduate courses and often do well in them. Because coverage of the professional literature is a primary objective of such courses, these courses are generally demanding and time-consuming for undergraduates.

A detailed description of the Economics Department and its requirements can be found on the Economics Undergraduate Program website. In particular, economics-interested undergraduates are encouraged to reach out to an Economics advisor at https://economics.harvard.edu/advising and to explore the handbook *Undergraduate Economics at Harvard: A Guide for Concentrators,* available at https://economics.harvard.edu/concentrator-guide.

LEARNING OBJECTIVES

The Harvard Economics Department aims to teach undergraduate students the basic principles of economics, to introduce them to various subfields within economics, and to give them a foundation in understanding and carrying out economics research.

REQUIREMENTS

Economics
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. ECON 10A and ECON 10B (Principles of Economics). Students with an Economics AP score of 5, an A-level grade of A, or an IB score of 7, may choose to skip either/both parts of ECON 10. However, they must replace each semester of ECON 10 that is skipped with one elective course in economics. Students should meet with a concentration advisor for details.
    b. MATH 1A (or placement into MATH 1B or higher on the Harvard Math Placement Exam; or an AP Calculus AB or BC score of 5; or an AB subscore of 5). Students who place out of this course do not need to replace it with an additional course.
    c. ECON 970: Sophomore Tutorial.
    d. STAT 100, STAT 102, STAT 104, STAT 109, or STAT 110; or ECON 20; or APMTH 101; or MATH 18B/MATH 19B or MATH 154. Note: The first eligible statistics course on a student's transcript will be the one counted for the Economics concentration.
    e. ECON 1010A or ECON 1011A (Intermediate Microeconomics).
    f. ECON 1010B or ECON 1011B (Intermediate Macroeconomics).
    g. ECON 1123 or ECON 1126 (Econometrics).
    h. Three additional courses in economics that include:
        i. One course that satisfies the writing requirement (see "Other Information," item 5a, below).
        ii. One course that has ECON 1010A, ECON 1010B, ECON 1011A, or ECON 1011B as a prerequisite.
        iii. Note: Some courses can be used to satisfy both the writing and

prerequisite requirements simultaneously. However, a total of three economics courses must still be taken.

2. *Tutorial:* ECON 970: Sophomore Tutorial is required. Letter-graded.
3. *Thesis*: None required for the Basic track.
4. *General examination*: None required for the Basic track.
5. *Other information*:
    a. Writing requirement: A list of courses that satisfy the writing requirement is available from the Undergraduate Office at https://economics.harvard.edu/courses-tutorials-and-seminars.
    b. Pass/fail: Concentrators may take up to two courses pass/fail, except for (1) those courses used to fulfill items 1a–1g of the required courses, (2) tutorials, and (3) courses used to meet the writing requirement in item 1h. A study abroad course used toward the concentration counts toward the pass/fail maximum.
    c. Joint concentrations: The Economics Department does not participate in joint concentrations.
    d. Theory requirement: Concentrators must demonstrate their command of the basic tools of economic analysis by receiving a grade of B- or higher in both ECON 1010A/ECON 1011A and ECON 1010B/ECON 1011B. Students who receive below a B- in ECON 1010A/ECON 1011A must either register for ECON 975A or take an approved extra Economics elective with ECON 1010A/ECON 1011A as a prerequisite. Those who receive below a B- in ECON 1010B/ECON 1011B must register for ECON 975B or take an approved extra Economics elective with ECON 1010B/ECON 1011B as a prerequisite. The ECON 975AB courses involve retaking the corresponding intermediate theory course. In all cases, students must receive a grade of B- or higher in the makeup course. Concentrators will not receive a degree in Economics until this requirement is met. ECON 975AB does not satisfy any Economics electives required in item 1h; however, it will it be factored into the Economics GPA of students pursuing honors.

Concentrators may take either one approved Harvard Summer School class listed on the Economics Summer School webpage (https://economics.harvard.edu/summer-school) or one approved study abroad course or one approved cross-registered course at MIT to meet a course requirement for the concentration. Courses from study abroad and at MIT are approved at the department's discretion as outlined on the Department Study Abroad webpage at https://economics.harvard.edu/study-abroad.

Economics
Honors Eligibility Requirements: 15 courses (60 credits)

1. *Required courses*: Same as **Basic Requirements**, plus:
    a. MATH 1B and one of MATH 18A, MATH 21A, APMTH 21A, or a higher-level calculus course. Students who choose to skip MATH 1B do not need to replace it with an additional course.
    b. For Thesis Track Honors: ECON 985 (two terms) or ECON 990 (two terms) and completion of a thesis.
    c. For Advanced Course Track (ACT) Honors: Two additional Economics elective courses, which must include an additional writing requirement and an additional theory prerequisite. Details are presented in item 5a of this section below.
2. *Tutorials* (letter-graded): Same as **Basic Requirements**, plus thesis tutorial. As discussed in 1b above, Thesis Track Honors candidates must enroll in ECON 985 (two terms) or ECON 990 (two terms) during their final two terms. ECON 990 is generally

for off-cycle students who are graduating in the fall term.

3. *Thesis*: Required for a recommendation for high or highest honors in field. See item 5a of this section below.
4. *General examination*: In the spring term of their senior year, all Economics honors candidates must take a general examination covering microeconomics, macroeconomics, and econometrics. Concentrators whose final semester will be in the fall must take the general examination in the prior spring.
5. *Other information*: Same as **Basic Requirements**, plus, to be considered for an honors recommendation in Economics, a student has two options:
    a. Thesis Track: To be considered for a high or highest honors recommendation in Economics, a student must complete a thesis in addition to the requirements specified above.
    b. Advanced Course Track: To be considered for an honors recommendation in Economics, a student can pursue the ACT, which is the non-thesis honors option. The requirements are discussed above. As stated in item 1c, two additional courses in Economics are required (beyond the three courses and requirements in item 1h in **Basic Requirements**). Within this total of five courses, the student must have at least two courses that have ECON 1010A, ECON 1010B, ECON 1011A, or ECON 1011B as a prerequisite and at least two courses that satisfy the writing requirement.
6. A document explaining the Economics Department honors calculations is available on the department honors webpage at https://economics.harvard.edu/honors-program.

ADVISING

Students interested in Economics are encouraged to visit the Economics Undergraduate Advising Office, located on the first floor of Littauer Center, for information and advice about Economics courses, the Economics concentration, and their economics interests more broadly. The office is headed by the Director of Undergraduate Studies, five Ph.D. economists who serve as concentration advisors, and the Undergraduate Program Coordinator. Concentration advisors are available in the Economics Undergraduate Advising Office (Littauer 109–116) on a walk-in basis, from 10 a.m. to 4 p.m., Monday through Friday, during the semester; they are happy to talk to students about any questions or concerns.

Concentration advisors can lift advising holds, approve concentration declaration forms, approve add/drop requests, and advise/approve courses for concentrators from study abroad. More importantly, they can explain department requirements, discuss students' academic and research interests, offer advice on course choices, and discuss future plans, such as job possibilities or graduate or professional school.

Each concentrator has an assigned advisor based on their residential House. Students will hear from their concentration advisor periodically to inform them of office hours, important deadlines, meetings, and requirements. Students may, at any time, contact their concentration advisor for help or for information. Students are also welcome to seek advice from any of the advisors during advising office hours.

For up-to-date information on Economics advising, students should see the Economics Advising webpage at https://economics.harvard.edu/advising.

STUDY ABROAD

The Economics Department supports study abroad for a term or an academic year. It is generally recommended for students to study abroad during their junior year. Students may earn Economics concentration credit for up to one course (four credits) taken while abroad.

After choosing a university and obtaining College approval for planned courses from the Office of International Education, students should visit their concentration advisor during office hours (or contact them via email) and provide copies of course syllabi. The advisor will grant credit toward fulfilling Economics concentration requirements for appropriate courses (although some students choose not to fulfill Economics concentration requirements while abroad). To count for concentration credit, a course must be primarily economic in content and methodology and roughly equivalent in difficulty to a Harvard Economics Department course. Courses with an intermediate theory prerequisite may count toward the theory prerequisite requirement. Students who write a paper longer than 15 pages for a course can submit the graded paper to their concentration advisor, who may grant writing requirement credit for the course if the paper has substantial economic content. Details are available on the Economics Study Abroad webpage at https://economics.harvard.edu/study-abroad.

HOW TO FIND OUT MORE

There is an abundance of information on the Economics Department website at https://economics.harvard.edu/undergraduate. To declare an Economics concentration, students must (1) submit their declaration on my.harvard and then (2) bring a completed copy of the Economics Declaration and Plan of Study form to a concentration advisor for approval. A detailed description of the Economics Department and its requirements can be found in the handbook *Undergraduate Economics at Harvard: A Guide for Concentrators*, available online at https://economics.harvard.edu/concentrator-guide.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Economics*	623	665	662	660	636	612	483	660	761	831
Another field + Economics	1	0	0	0	0	0	0	0	0	0

* Economics does not participate in joint concentrations.

Electrical Engineering

Electrical Engineering has long played a critical role in undergirding the innovation that has improved quality of life, supported economic growth, and addressed societal problems. Its emergence as a separate field of study in the late 19th century paralleled, and was responsive to, the large-scale introduction of telegraphy and electrical lighting. Electrical engineering has continued to play a pivotal role in power and energy distribution, communications, and computation, even as the power-carrying channels have evolved from heavy metal cables to nanowires or optical fibers, the networks of communications have evolved from wires to wireless to neurons, and electrical switches have evolved from vacuum tubes to transistors to carbon nanotubes. The essential technologies that join us all together—mobile phones, laptops, wireless communications, downloaded videos, light-emitting diodes, electronic displays, the electrical power grid, and ATM transactions—are all evidence of the impact and continual innovation of electrical engineering.

Electrical Engineering is a broadly diverse field that encompasses, for example, controls, communications, signal processing, circuit design, computer engineering, and electronic and photonic devices. This concentration requires a foundational group of five courses including ENG-SCI 150, ENG-SCI 152, ENG-SCI 155, ENG-SCI 156, and COMPSCI 141. It also requires completion of a minimum of three electrical engineering electives and two additional engineering electives.

The objectives of the Electrical Engineering program are to provide students a solid foundation in electrical engineering within the setting of a liberal arts college for preparation for a diverse range of careers in industry and government, or for advanced work in engineering, business, law, or medicine. It enables the acquisition of a broad range of skills and attitudes drawn from the humanities, social sciences, and sciences in addition to engineering, which enhances engineering knowledge and contributes to future leadership and technical success.

The S.B. degree program requires a minimum of 20 courses (80 credits). The curriculum is structured with advanced courses building on the knowledge acquired in math, science, and introductory engineering science courses. Concentrators are strongly encouraged to complete the common prerequisite course sequence in their first two years at Harvard. This sequence includes math (through MATH 1A and MATH 1B; plus MATH 21A and MATH 21B, MATH 22A and MATH 22B, and MATH 23A and MATH 23B), physics (through PHYSCI 12A and PHYSCI 12B, PHYSICS 15A and PHYSICS 15B, or APPHY 50A and APPHY 50B), and COMPSCI 50. Students are cautioned that it is more important to derive a solid understanding of these basic subjects than to complete them quickly without thorough knowledge; this material is used extensively in many subsequent courses. If in doubt, it may be wise to enroll in the MATH 1 sequence rather than proceed to MATH 21A or MATH 23A with marginal preparation.

The S.B. programs in Electrical Engineering and Engineering Sciences share many course requirements, and there is some flexibility in moving between these programs. To get an early sample of engineering course work, entering students are invited to enroll in ESE 6: Environmental Science and Engineering, ENG-SCI 50: Electrical Engineering, ENG-SCI 51: Mechanical Engineering, and ENG- SCI 53: Biomedical Engineering. These introductory courses have minimal prerequisites and have been very popular with prospective engineering concentrators. ENG-SCI 50 and ENG-SCI 51 have extensive hands-on laboratory sections.

LEARNING OBJECTIVES

Upon graduation, students in the Electrical Engineering concentration should demonstrate the

following student outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

REQUIREMENTS

Electrical Engineering
Concentration Requirements: 20 courses (80 credits)

1. *Required courses:*
    a. Mathematics/probability and statistics/applied mathematics (four courses):
        i. MATH 1A and MATH 1B; MATH 21A and MATH 21B; MATH 22A and MATH 22B; or MATH 23A and MATH 23B.
        ii. Probability and statistics (one course): ENG-SCI 150.
        iii. Applied mathematics (one course): At least one of APMTH 104–108, or APMTH 120 (if starting in MATH 21A, MATH 22A, or MATH 23A).
    b. Physics (two courses): APPHY 50A, PHYSCI 12A, or PHYSICS 15A or PHYSICS 16; and APPHY 50B, PHYSCI 12B, or PHYSICS 15B. Appropriate advanced-level physics courses may also fulfill this requirement (students should consult with advisors at the John A. Paulson School of Engineering and Applied Sciences [SEAS]).
    c. Introductory science (two courses): LS 1A or LPS A; PHYSCI 1 or PHYSCI 11; CHEM 10; PHYSICS 15C, PHYSICS 19, PHYSICS 125; ASTRO 16, ASTRO 17; and other relevant introductory science courses (students should consult with SEAS advisors).
    d. Computer science (one course): COMPSCI 32, COMPSCI 50, COMPSCI 51, or COMPSCI 61.
    e. Engineering design (two courses*)*: ENG-SCI 96 or ENG-SCI 105HFR (four credits); and ENG-SCI 100HF (see item 3 below). ENG-SCI 96 or ENG-SCI 105HFR must be taken in junior year, prior to ENG-SCI 100HF.
    f. Required Electrical Engineering Core (four courses*)*: ENG-SCI 152, ENG-SCI 155, ENG-SCI 156, and COMPSCI 141.
    g. Electrical engineering electives (three courses):
        i. ENG-SCI 50, ENG-SCI 143, ENG-SCI 151, ENG-SCI 153, ENG-SCI 154, ENG-SCI 157, ENG-SCI 158, ENG-SCI 159, ENG-SCI 170, ENG-SCI 173, ENG-SCI 175, ENG-SCI 176, ENG-SCI 177.
        ii. APPHY 195.
        iii. COMPSCI 61, COMPSCI 128, COMPSCI 143, COMPSCI 144R, COMPSCI 146, COMPSCI 148, COMPSCI 184, COMPSCI 189,

COMPSCI 249R.

iv. BE 128, BE 129, BE 130, BE 131.

v. Notes: (1) Not more than two from ENG-SCI 50, COMPSCI 61, ENG-SCI 170, and (2) by prior approval, advanced-level Engineering Science courses relevant to electrical engineering and advanced-level MIT courses in electrical engineering may be taken.

h. Engineering electives (two courses): ENG-SCI 51, ENG-SCI 53, ENG-SCI 111, ENG-SCI 115, ENG-SCI 120, ENG-SCI 121, ENG-SCI 123, ENG-SCI 125, ENG-SCI 181, ENG-SCI 190, ESE 6, ESE 160, ESE 166, COMPSCI 51.

2. *Note*: ABET accreditation requires that all students complete at least eight courses in math and science and 12 courses in engineering topics. Students who start in MATH MA will need to take 22 courses, and students who start in MATH 1A will need to take 21 in order to fulfill the degree requirements. ENG-SCI 150 counts as a course in math. Given the number and complexity of the requirements, students interested in pursuing Electrical Engineering should consult with the Associate Director of Undergraduate Studies or Director of Undergraduate Studies about their Plan of Study as early as possible.
3. *Tutorial*: Required. ENG-SCI 100HF.
4. *Thesis*: Required. An individual engineering design project is an essential element of every S.B. program and is undertaken during the senior year as part of ENG-SCI 100HF. Faculty-supervised reading and research is an important aspect of this requirement.
5. *General examination*: None.
6. *Other information:*
    a. ENG-SCI 50, ENG-SCI 51, and ENG-SCI 53, and ESE 6: No more than three of these courses may count toward concentration credit. ENG-SCI 53 and ESE 6 can only count as an engineering elective when taken during the first or sophomore year.
    b. By prior petition and approval, other advanced undergraduate or graduate courses, as well as courses at MIT, can be used to satisfy general requirements and track requirements and electives. Petitions will only be considered for courses that possess engineering content at a level similar to other technical engineering courses at SEAS.
    c. Pass/fail and SAT/UNS: None of the courses used to satisfy the concentration requirements may be taken pass/fail or SAT/UNS.
    d. Plan of Study: Concentrators are required to file an approved departmental Plan of Study during their third term (i.e., the first term of their sophomore year) and to keep their plan up to date in subsequent years. All S.B. programs must meet the overall ABET program guidelines, as well as feature a minimum of four courses in basic sciences, four courses in mathematics, and 12 courses in engineering topics. Plan of Study forms may be obtained from the School of Engineering and Applied Sciences' Office of Academic Programs, SEC 1.101, and from the SEAS website at https://www.seas.harvard.edu/electrical-engineering/undergraduate-programs/concentration-information/concentration-requirements.
    e. Additional terms: Concentrators who wish to remain beyond the end of the second term of their senior year to complete the S.B. requirements must be approved to do so by the Undergraduate Engineering Committee. A written petition is required and should always be submitted as early as possible and under discussion with the Associate Director of Undergraduate Studies or the Director of Undergraduate Studies. Petitions can be submitted no later than January 15 between the student's fifth and sixth terms (i.e., middle of junior year), or August 15 between the student's fifth and sixth terms if the student's fifth term is the spring. Under no circumstances will the committee grant a

student permission for more than two additional terms. Petitions are only granted in exceptional cases and only to meet specific S.B. degree requirements. More information can be found on the SEAS website at https://www.seas.harvard.edu/electrical-engineering/undergraduate-programs/concentration-information/concentration-requirements.

f. Joint concentrations: Electrical Engineering does not participate in joint concentrations.
g. Double concentrations: Engineering does not participate in double concentrations.
h. Only four credits of ENG-SCI 91R can count as an approved elective in the degree requirements.
i. Exactly four credits of ENG-SCI 105HFR can count as an approved elective in the degree requirements.
j. Any exceptions to these policies must be approved via written petition.

ADVISING

Students interested in concentrating in Electrical Engineering should discuss their plans with the Director of Undergraduate Studies or the Associate Director of Undergraduate Studies. Each undergraduate who elects to concentrate in Electrical Engineering is assigned a faculty advisor depending on the student's area of specialization. The faculty advisor might also be a member of the Undergraduate Engineering Committee, whose members have the responsibility for reviewing departmental Plans of Study. If students do not request a change of advisor, they have the same advisor until they graduate. Each student is reassigned to another faculty member should the original faculty advisor be on leave. It is expected that students will discuss their Plans of Study and progress with their Director of Undergraduate Studies or Associate Director of Undergraduate Studies at the beginning of each term. Students may seek advice from their faculty advisor, the Director of Undergraduate Studies, the Associate Director of Undergraduate Studies, or the Academic Programs Administrator at any time.

For up-to-date information on Electrical Engineering advising, students should see the Advising Programs Office webpage at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Further information is available from the Director of Undergraduate Studies and the Associate Director of Undergraduate Studies, Dr. Christopher Lombardo (lombardo@seas.harvard.edu, 617-496-5185). Students can also contact the Academic Programs Administrator, Sarah Colgan (scolgan@seas.harvard.edu), in the SEAS Office of Academic Programs (SEC 1.101).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Electrical Engineering	47	43	39	40	44	30	22	33	33	33
Electrical Engineering + another field	0	0	1	0	0	0	0	0	0	0
Another field + Electrical Engineering	0	0	0	0	0	0	0	0	0	0

* Electrical Engineering was a new concentration in 2012–13.

Engineering Sciences

Engineering innovation has long played a critical role in enhancing social progress and bringing about an improved quality of life. Within the past 50 years, the pace and impact of innovation have increased dramatically, facilitating modern health, energy, transportation, communications, and computational infrastructures that knit together the countries of the world. At the same time, engineering innovation has enabled dramatic advances in basic science. Imaging and manufacturing structures at the nanoscales, near-lossless transmission of information, and unprecedented levels of computational power have led to fantastic new discoveries. These types of technologies, for instance, have allowed us to decode the genome, understand the formation of galaxies, and make correlations between social networks and underlying human psychology. In the 21st century, rapid and efficient access to new innovations, necessary to tackle today's myriad challenges, has become even more imperative. Equally important is the need to educate both those who will be future engineering innovators and those who will use those innovations, deploy them, and make critical legal and political decisions about them.

Engineering has evolved over the years to not only dive deeply into specific fields, but also to seek out solutions to real-world problems by combining concepts from a broad range of scientific inquiries and innovations. For example, robotics is a highly interdisciplinary field that straddles multiple traditional engineering disciplines such as mechanical, electrical, and materials engineering and computer science. While roboticists have traditionally been trained in specific engineering disciplines, next-generation roboticists must tackle large complex systems comprising multiple parts that span myriad disciplines—from the mechanical underpinnings of the physical device to electronic control, materials properties, and high-level algorithms—all of which must work in concert to achieve broad-level objectives while adhering to numerous constraints. Alternative energy is another growing and immensely important field that requires integration of solutions across a wide range of science and engineering disciplines. Topics range from understanding the inherent properties of materials and devices that harness the sun's rays to thinking about challenges associated with large-scale production and distribution of electricity and addressing both the societal and environmental impacts of new technologies. The Engineering Sciences concentration is ideally positioned to provide students with both the breadth and depth of study needed to excel in these and other exciting integrative areas of engineering within the liberal arts setting of Harvard.

Harvard offers two degrees in Engineering Sciences: the Bachelor of Arts (A.B.) and the Bachelor of Science (S.B.). The degree requirements differ for each of these programs: The A.B. program requires between 14 and 16 courses (56–64 credits) and the S.B. program requires 20 courses (80 credits).

Students in the Engineering Sciences A.B. program specialize in one of four engineering tracks: biomedical sciences and engineering, electrical and computer engineering, engineering physics, or mechanical and materials science and engineering. Students interested in an A.B. degree may also consider the Biomedical Engineering concentration and the Environmental Science and Engineering concentration, which are also listed in this publication. Students pursuing the S.B. degree in the Engineering Sciences concentration typically specialize in one of two tracks: Bioengineering or Environmental Science and Engineering. Students interested in an S.B. degree specializing in Electrical Engineering or Mechanical Engineering should refer directly to those concentrations, which are also listed in this publication. Students may also apply to a cross-disciplinary track within the Engineering Sciences S.B. program, which provides the opportunity to learn between or across traditional engineering areas.

The S.B. degree curriculum is structured with advanced courses building on the knowledge acquired in math, science, and introductory Engineering Science courses. Concentrators are encouraged to complete the common prerequisite course sequence in their first two years at Harvard. This sequence includes Math (through MATH 1A and MATH 1B; plus MATH 21A and MATH 21B, MATH 22A and MATH 22B, or MATH 23A and MATH 23B), Physics (through APPHY 50A and APPHY 50B, PHYSCI 12A and PHYSCI 12B, or PHYSICS 15A and PHYSICS 15B), and COMPSCI 50, COMPSCI 32, or APMTH 10. Students are cautioned that it is more important to derive a solid understanding of these basic subjects than to complete them quickly without thorough knowledge; this material is used extensively in many subsequent courses. If in doubt, it may be wise to enroll in the MATH 1 sequence rather than proceed to MATH 21A or MATH 23A with marginal preparation.

The S.B. and A.B. degree programs in Engineering Sciences share many course requirements, and there is some flexibility in moving between these programs. To get an early sample of engineering course work, entering students are invited to enroll in ESE 6: Environmental Science and Engineering, ENG-SCI 50: Electrical Engineering, ENG-SCI 51: Mechanical Engineering, and ENG-SCI 53: Biomedical Engineering. These introductory courses have minimal prerequisites with extensive hands-on laboratory sections and have been very popular with prospective engineering concentrators.

The Engineering Sciences program seeks to educate future leaders who have the technical background necessary to develop and critically evaluate the next wave of engineering innovations; to apply these innovations to important global and local problems; and to make informed decisions about them in a societal context.

LEARNING OBJECTIVES

Upon graduation, students in the Engineering Sciences A.B. concentration should demonstrate the following student outcomes:

1. Quantitative problem-solving skills based in the fundamentals of mathematics, basic sciences, engineering sciences, and engineering design.
2. The ability to apply engineering principles to problems in a range of fields and with important societal, economic, and environmental impacts.
3. The ability to communicate technical information clearly and efficiently through written, visual, or oral presentations.

Upon graduation, students in the Engineering Sciences S.B. concentration should demonstrate the following student outcomes:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret

data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

REQUIREMENTS

There are several track options in the two degrees:

1. Bachelor of Arts in Engineering Sciences
    - Biomedical Sciences and Engineering Track.
    - Electrical and Computer Engineering Track.
    - Engineering Physics Track.
    - Mechanical and Materials Science and Engineering Track.

2. Bachelor of Science in Engineering Sciences
    - Bioengineering Track.
    - Environmental Science and Engineering Track.
    - Cross-Disciplinary Track.

Bachelor of Arts (A.B.) in Engineering Sciences
Concentration Requirements: 14 courses (56 credits)

1. *Required courses (for all tracks):*
    a. Mathematics (two courses): MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B, or higher levels.
    b. Physics (two courses): APPHY 50A, PHYSCI 12A, or PHYSICS 15A or PHYSICS 16; and APPHY 50B, PHYSCI 12B, or PHYSICS 15B. Appropriate advanced-level physics courses may also fulfill this requirement. (Students should consult with SEAS advisors.)
    c. Computer science (one course): COMPSCI 32, COMPSCI 50, COMPSCI 51, or COMPSCI 61.
2. *Required courses by track:*
    a. Biomedical Sciences and Engineering Track—Mechanical subtrack, Electrical subtrack, and Chemical and Materials subtrack:
        i. Required for all subtracks (three courses):
            1. ENG-SCI 53 and BE 110.
            2. LS 1A or LPS A.
        ii. Required for Mechanical subtrack (four courses):
            1. ENG-SCI 120, ENG-SCI 123, and ENG-SCI 181.
            2. ENG-SCI 50.
        iii. Required for Electrical subtrack (four courses):
            1. ENG-SCI 150.
            2. Circuits: Select ENG-SCI 50, or both of ENG-SCI 152 and COMPSCI 141.
            3. To reach four courses for the subtrack, select one to two courses from: BE 128, BE 129, BE 130, BE 131, and ENG-SCI 157 (formerly ENG-SCI 155).
        iv. Required for Chemical and Materials subtrack (four courses):
            1. ENG-SCI 123, ENG-SCI 112 or ENG-SCI 181, and BE 191 (preferred) or ENG-SCI 190.
            2. PHYSCI 1, PHYSCI 11, or CHEM 10.
        v. Approved electives (two courses):
            1. ENG-SCI 51, ENG-SCI 91R (one term only), ENG-SCI 120, ENG-SCI 123, ENG-SCI 128, ENG-SCI 181, ENG-SCI 190,

ENG-SCI 211, ENG-SCI 220, ENG-SCI 221, ENG-SCI 227, and ENG-SCI 240.
2. BE 121, BE 124, BE 125, BE 128, BE 129, BE 130, BE 131, BE 191.
3. Either APMTH 101 or ENG-SCI 150.
4. One from ENG-SCI 50 or ENG-SCI 152.
5. PHYSICS 136, PHYSICS 140, PHYSICS 143A, PHYSICS 151, PHYSICS 153.
6. One from PHYSCI 1, CHEM 17, or CHEM 20.
7. APMTH 104 or APMTH 105.

b. Electrical and Computer Engineering Track:
   i. Required (five courses): ENGSCI 150, ENGSCI 152, ENGSCI 155, ENGSCI 156, and COMPSCI 141.
   ii. Approved electives (four courses):
      1. BE 128, BE 129, BE 130, BE 131.
      2. ENG-SCI 50, ENG-SCI 51, ENG-SCI 53, ENG-SCI 91R (one term only), ENG-SCI 120, ENG-SCI 121, ENG-SCI 123, ENG-SCI 151, ENG-SCI 159, ENG-SCI 173, ENG-SCI 175, ENG-SCI 177, ENG-SCI 181, ENG-SCI 183, ENG-SCI 190.
      3. COMPSCI 51, COMPSCI 141, COMPSCI 143, COMPSCI 144R, COMPSCI 146, COMPSCI 148, COMPSCI 175.
      4. APMTH 104, APMTH 105, APMTH 108.
      5. APPHY 195.
      6. CHEM 160.
      7. PHYSICS 143A, PHYSICS 153.

c. Engineering Physics Track—Materials, Optoelectronics, and Photonics subtrack and Earth and Planetary Physics subtrack:
   i. Required for all subtracks (four courses):
      1. One from APMTH 104, APMTH 105, APMTH 108, ENG-SCI 111.
      2. ENG-SCI 190.
      3. Either ENG-SCI 181 or PHYSICS 181.
      4. Either PHYSICS 143A or CHEM 160.
   ii. Required for Materials, Optoelectronics, and Photonics subtrack (three courses):
      1. ENG-SCI 173 and ENG-SCI 177.
      2. Either APPHY 195 or ENG-SCI 120.
   iii. Required for Earth and Planetary Physics subtrack (three courses):
      1. One from E-PSCI 121, ASTRON 110, ASTRON 189.
      2. One from ENG-SCI 120, E-PSCI 171.
      3. One from ENG-SCI 123, ESE 131, ESE 132, ESE 162.
   iv. Approved electives (two courses):
      1. PHYSICS 140, PHYSICS 153, PHYSICS 175.
      2. E-PSCI 171.
      3. ASTRON 110, ASTRON 189.
      4. APPHY 195.
      5. APMTH 104, APMTH 105, APMTH 108, APMTH 120.
      6. ESE 131, ESE 132, ESE 162.
      7. ENG-SCI 51, ENG-SCI 53, ENG-SCI 91R (one term only), ENG-SCI 111, ENG-SCI 115, ENG-SCI 120, ENG-SCI 123, ENG-SCI 125, ENG-SCI 128, ENG-SCI 153, ENG-SCI173, ENG-SCI 175, ENG-SCI 177.

d. Mechanical and Materials Science and Engineering Track:
   i. Required (seven courses):

1. ENG-SCI 120, ENG-SCI 123, ENG-SCI 125, ENG-SCI 181, and ENG-SCI 190.
2. APMTH 105.
3. ENG-SCI 50 or both of ENG-SCI 152 and COMPSCI 141. (If both ENG-SCI 152 and COMPSCI 141 are taken, the second course can count as an elective below.)

ii. Approved electives (two courses):

1. BE 110.
2. COMPSCI 141.
3. ENG-SCI 50, ENG-SCI 51, ENG-SCI 53, ENG-SCI 54, ENG-SCI 91R (one term only), ENG-SCI 96, ENG-SCI 128, ENG-SCI 151, ENG-SCI 152, ENG-SCI 156, ENG-SCI 159, ENG-SCI 173, ENG-SCI 175, ENG-SCI 177, ENG-SCI 183, ENG-SCI 192.
4. ESE 131, ESE 132, ESE 162.
5. APPHY 195.
6. CHEM 160.
7. PHYSICS 143A.

2. *General examination*: None.
3. *Thesis*: Required for recommendations of high honors and highest honors, and for joint concentrators.
4. *Other information:*
   a. In cases when a course can satisfy both an elective and a requirement of a track, the total number of courses is not reduced. In these cases, additional electives must be taken.
   b. By prior petition and approval, other advanced undergraduate or graduate courses, as well as courses at MIT, can be used to satisfy general requirements and track requirements and electives. Electives alternative to those listed in the tracks may be counted for credit upon prior petition and approval. Petitions will only be considered for courses that possess engineering content at a level similar to other technical engineering courses at SEAS.
   c. ENG-SCI 50, ENG-SCI 51, ENG-SCI 53, ESE 6: No more than three of these courses may count toward concentration credit. ENG-SCI 53 and ESE 6 can only count as an engineering elective when taken during the first or sophomore year.
   d. Only four credits of ENG-SCI 91R can count as an approved elective in the degree requirements.
   e. Exactly four credits of ENG-SCI 105HFR can count as an approved elective in the degree requirements.
   f. Pass/fail or SAT/UNS: None of the courses used to satisfy concentration requirements may be taken pass/fail or SAT/UNS.
   g. Plan of Study: Concentrators are required to file an approved departmental Plan of Study and to keep their plan up to date in subsequent years. Plan of Study forms may be obtained from the Office of Academic Programs (SEC 1.101) or from the John A. Paulson School of Engineering and Applied Sciences website at http://seas.harvard.edu.
   h. Joint concentrations: The Engineering Sciences A.B. program participates in joint concentrations (though the Engineering Sciences S.B. program does not participate in joint concentrations). The requirements for joint concentrators are the same as for sole concentrators; in addition, a joint concentrator is required to write an interdisciplinary thesis that combines the two fields. This thesis is required regardless of whether Engineering Sciences A.B. is the primary or allied concentration.

i. Any exceptions to these policies must be approved via written petition.

Bachelor of Science (S.B.) in Engineering Sciences
Concentration Requirements: 20 courses (80 credits)

Prospective concentrators are encouraged to make early contact with concentration representatives. Students wishing to enter the concentration must obtain the appropriate Engineering Sciences S.B. Plan of Study and related instructions for their intended track from the Office of Academic Programs (SEC 1.101) or on the SEAS website and should review materials prior to meeting with an Assistant Director of Undergraduate Studies, an Associate Director of Undergraduate Studies, or the Director of Undergraduate Studies. Students should be aware that the Engineering Sciences S.B. degree is more demanding than typical A.B. degrees, requiring 20 courses (80 credits).

Students typically follow specific guidelines provided for one of two tracks: Bioengineering or Environmental Science and Engineering. Students interested in an S.B. degree specializing in Electrical Engineering or Mechanical Engineering should refer directly to those concentrations. Students may also apply to a cross-disciplinary track in their junior or senior years, which provides the opportunity to learn between or across traditional engineering areas.

In addition to the courses listed specifically below, other relevant and/or advanced courses may be approved by petition in the context of a particular Plan of Study. A petition must propound in writing a coherent and persuasive argument for the intellectual merit of the proposal in question.

1. *Required courses (for all tracks):*
    a. Mathematics/Probability and Statistics/Applied Mathematics (four courses):
        i. MATH 1A and 1B; and MATH 21A and 21B, MATH 22A and MATH 22B, or MATH 23A and MATH 23B. (Note: Students who start in MATH 1A will not be required to satisfy either the probability and statistics requirement or the applied math requirement. Students who start in MATH 1B must take a course that satisfies the probability and statistics requirement. Students who start in MATH 21A, MATH 22A, or MATH 23A must complete the courses in both probability and statistics and applied mathematics.)
        ii. Probability and statistics (one course): At least one of APMTH 101, ENG-SCI 150, or STAT 110 (if starting in MATH 1B, MATH 21A, MATH 22A, or MATH 23A). Students should note that ENG-SCI 150 is preferred for students pursuing the Electrical subtrack of the Bioengineering Track.
        iii. Applied mathematics (one course): At least one of APMTH 104, APMTH 105, APMTH 106, or APMTH 107 (if starting in MATH 21A, MATH 22A, or MATH 23A).
    b. Physics (two courses): APPHY 50A, PHYSCI 12A, PHYSICS 15A or PHYSICS 16; APPHY 50B, PHYSCI 12B, or PHYSICS 15B. Appropriate advanced-level physics courses may also fulfill this requirement (students should consult with the SEAS advisors).
    c. Computer science (one course): APMTH 10, COMPSCI 32, COMPSCI 50, COMPSCI 51, or COMPSCI 61.
    d. Engineering design (two courses): ENG-SCI 96 and ENG-SCI 100HF (see item 4 below). ENG-SCI 96 must in taken in junior year, prior to ENG-SCI 100HF.
2. *Required courses by track:*
    a. Bioengineering Track—Mechanical subtrack, Electrical subtrack, and Chemical

and Materials subtrack:

i. Required for all subtracks (five courses):
    1. ENG-SCI 53, BE 110.
    2. Engineering electives (three courses): Three courses from the list in item 7 (any area), with at least two at the 100- or 200-level.
ii. Required for Mechanical subtrack:
    1. Biology and/or chemistry (two courses): Two of the following: LS 1A or LPS A, LS 1B, PHYSCI 1, PHYSCI 10/CHEM 10, PHYSCI 11, and, by approval, other relevant introductory courses in biology or chemistry (students should consult with SEAS advisors).
    2. Mechanical core (four courses): ENG-SCI 120, ENG-SCI 123, ENG-SCI 181, and ENG-SCI 190 or BE 191 (preferred).
iii. Required for Electrical subtrack:
    1. Biology and/or chemistry (two courses): Two of the following: LS 1A or LPS A, LS 1B, PHYSCI 1, PHYSCI 10/CHEM 10, PHYSCI 11, and by approval, other relevant introductory courses in biology or chemistry (students should consult with SEAS advisors).
    2. Electrical core (four courses):
        a. Circuits: ENG-SCI 50 , or both of ENG-SCI 152 and COMPSCI 141. (If both ENG-SCI 152 and COMPSCI 141 are taken, the second course can count as the Electrical Engineering elective below.)
        b. At least two courses from: BE 128, BE 129, BE 130, BE 131, ENG-SCI 157 (formerly 155).
        c. Up to one additional Electrical Engineering elective to reach four courses for the Electrical core.
iv. Required for Chemical and Materials subtrack:
    1. Biology and/or chemistry (one course): LS 1A or LPS A, LS 1B, PHYSCI 1, PHYSCI 10/CHEM 10, PHYSCI 11, and, by approval, other relevant introductory courses in biology or chemistry (students should consult with SEAS advisors).
    2. Organic chemistry (one course): CHEM 17 or CHEM 20.
    3. Chemical and Materials core (four courses): ENG-SCI 123, BE 121 or BE 125, ENG-SCI 112 or ENG-SCI 181, and ENG-SCI 190 or BE 191 (preferred).

b. Environmental Science and Engineering Track:
    i. Chemistry (two courses): Two from: PHYSCI 11 (preferred) or PHYSCI 1; LS 1A or LPS A; PHYSCI 10/CHEM 10; CHEM 17 or CHEM 20. Note: Students should be aware that many upper-level courses in the Environmental Science and Engineering track have PHYSCI 1 or PHYSCI 11 as a prerequisite.
    ii. Environmental Science and Engineering core (five courses):
        1. ESE 6.
        2. Select four from ESE 109, ESE 115, ESE 131, ESE 132, ESE 133, ESE 160, ESE 161, ESE 162, ESE 163, ESE164, ESE 166, ESE 168, ESE 169, ENG-SCI 112, ENG-SCI 123.
        3. Engineering breadth (three courses): One upper-level (above the 100-level) course from each of the following depth areas (see item 7 below):
            a. Mechanics and Materials.
            b. Electrical.

c. Engineering Physics and Chemistry.
4. Engineering electives (one course): At least one course from the list in item 7 (any area).

c. Cross-Disciplinary Track:
i. Biology and/or chemistry (two courses): Two of the following: LS 1A or LPS A; LS 1B, PHYSCI 1 or PHYSCI 11; CHEM 10; and, by approval, other relevant introductory courses in biology or chemistry (students should consult with SEAS advisors).
ii. Engineering depth (three courses): At least three courses from one area of Engineering Sciences (see item 7 below).
iii. Engineering breadth (three courses): At least three courses from three other areas of Engineering Sciences (see item 7 below).
iv. Engineering electives (three courses): At least three courses in Engineering Sciences or relevant related fields with engineering topics (see item 7 below).

3. *Tutorial*: Required. ENG-SCI 100HF.
4. *Thesis*: Required. An individual engineering design project is an essential element of every S.B. program and is undertaken during the senior year as part of ENG-SCI 100HF. Faculty-supervised reading and research is an important aspect of this requirement.
5. *General examination*: None.
6. *Engineering Sciences courses organized by area*:
a. Biomedical: ENG-SCI 53, ENG-SCI 221, ENG-SCI 227, BE 110, BE 121, BE 124, BE 125, BE 128, BE 129, BE 130, BE 131, BE 191.
b. Computer: COMPSCI 51, COMPSCI 61, COMPSCI 120, COMPSCI 121, COMPSCI 124, COMPSCI 141, COMPSCI 143, COMPSCI 144R, COMPSCI 146, COMPSCI 148, COMPSCI 175, COMPSCI 179, COMPSCI 181, COMPSCI 182, COMPSCI 183, COMPSCI 184, COMPSCI 187, COMPSCI 189R, COMPSCI 249R.
c. Electrical: ENG-SCI 50, ENG-SCI 54, ENG-SCI 128, ENG-SCI 143, ENG-SCI 151, ENG-SCI 152, ENG-SCI 153, ENG-SCI 154, ENG-SCI 155, ENG-SCI 156, ENG-SCI 157, ENG-SCI 158, ENG-SCI 159, ENG-SCI 173, ENG-SCI 175, ENG-SCI 176, ENG-SCI 177, COMPSCI 141, COMPSCI 143, COMPSCI 144R, COMPSCI 146, COMPSCI 148, COMPSCI 189R, COMPSCI 249R, APPHY 195B.
d. Engineering Physics and Chemistry: ENG-SCI 112, ENG-SCI 170, ENG-SCI 173, ENG-SCI 181, ENG-SCI 190.
e. Environmental: ESE 6, ESE 109, ESE 115, ESE 131, ESE 132, ESE 133, ESE 160, ESE 161, ESE 162, ESE 163, ESE 164, ESE 166, ESE 168, ESE 169, ENG-SCI 112, ENG-SCI 123.
e. Mechanics and Materials: ENG-SCI 51, ENG-SCI 120, ENG-SCI 123, ENG-SCI 125, ENG-SCI 128, ENG-SCI 181, ENG-SCI 183, ENG-SCI 190, ENG-SCI 192.

7. *Note*: Students entering Harvard with secondary school preparation that places them beyond the level of any of the required courses listed above may substitute appropriate advanced-level courses. However, ABET accreditation requires that all students complete at least eight courses in math and science and 12 courses in engineering topics. Students who start in MATH MA will need to take 21 courses in order to fulfill the degree requirements. Given the number and complexity of the requirements, students interested in pursuing Engineering should consult with the Director of Undergraduate Studies or Assistant/Associate Director of Undergraduate Studies about their Plans of Study as early as possible.
8. *Other information:*
a. By prior petition and approval, other advanced undergraduate or graduate

courses, as well as courses at MIT, can be used to satisfy general requirements and track requirements and electives. Petitions will only be considered for courses that possess engineering content at a level similar to other technical engineering courses at SEAS.

b. ENG-SCI 50, ENG-SCI 51, and ENG-SCI 53, ESE 6: No more than three of these courses may count toward concentration credit. ENG-SCI 53 and ESE 6 can only count as an Engineering elective when taken during the first or sophomore year.
c. Only four credits of ENG-SCI 91R can count as an approved elective in the degree requirements.
d. Exactly four credits of ENG-SCI 105HFR can count as an approved elective in the degree requirements.
e. Pass/fail or SAT/UNS: None of the courses used to satisfy the concentration requirements may be taken pass/fail or SAT/UNS.
f. Plan of Study: Students entering the concentration must file an Engineering Sciences S.B. Plan of Study and present an intellectually coherent plan in consultation with an Assistant/Associate Director of Undergraduate Studies or the Director of Undergraduate Studies. Subsequent modifications to the plan must be reviewed by a relevant Assistant/Associate Director of Undergraduate Studies.
g. Cross-Disciplinary Track requirements: Admission to the Cross-Disciplinary Track is by application. To apply to the track, students must have at least a 3.5 College grade-point average at the time of application. Applications can be submitted no earlier than the end of sophomore year, and no later than the fifth Monday of the student's seventh semester.
h. Additional terms: Concentrators who wish to remain beyond the end of the second term of their senior year to complete the S.B .requirements must be approved to do so by the Undergraduate Engineering Committee. A written petition is required and should always be submitted as early as possible and under discussion with the Assistant/Associate Director of Undergraduate Studies or Director of Undergraduate Studies. Petitions can be submitted no later than January 15 between the student's fifth and sixth terms (i.e., by the middle of junior year) or by August 15 between the student's fifth and sixth terms if the student's fifth term is the spring. Under no circumstances will the committee grant a student permission for more than two additional terms. Petitions are only granted in exceptional cases, and only to meet specific S.B. degree requirements. More information can be found on the SEAS website for the Bioengineering Track at https://www.seas.harvard.edu/bioengineering/undergraduate-program/concentration-information/concentration-requirements or the Environmental Science and Engineering Track at https://www.seas.harvard.edu/environmental-science-engineering/undergraduate-program/concentration-information/concentration.
i. Joint concentrations. The Engineering Sciences S.B. program does not participate in joint concentrations.
j. Double concentrations. The Engineering Sciences S.B. program does not participate in double concentrations.
k. Exceptions: Any exceptions to these policies must be approved via written petition.

ADVISING

Students interested in concentrating in Engineering Sciences should discuss their plans with the Director of Undergraduate Studies or the Assistant/Associate Director of Undergraduate

Studies. Each undergraduate who elects to concentrate in Engineering Sciences is assigned a faculty advisor depending on the student's track. The faculty advisor might also be a member of the Undergraduate Engineering Committee, whose members have the responsibility for reviewing departmental Plans of Study. If students do not request a change in advisor, they have the same advisor until they graduate. Each student is reassigned to another faculty member should the original faculty advisor be on leave. It is expected that students will discuss their Plan of Study and progress with their Director of Undergraduate Studies or Assistant/Associate Director of Undergraduate Studies at the beginning of each term. Students may also seek advice from their faculty advisor, the Director of Undergraduate Studies, the Assistant/Associate Director of Undergraduate Studies, or the Academic Programs Administrator at any time.

For up-to-date information on Engineering Sciences advising, students should see the Advising Programs Office webpage at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Further information is available from the Director of Undergraduate Studies in Engineering Sciences at es-dus@seas.harvard.edu or from the relevant Assistant/Associate Director of Undergraduate Studies (for Mechanical and Materials Science and Engineering and Electrical and Computer Engineering, contact Dr. Christopher Lombardo at lombardo@seas.harvard.edu; for Bioengineering, contact Dr. Linsey Moyer at lmoyer@seas.harvard.edu; and for Environmental Science and Engineering, contact Dr. Bryan Yoon at byoon@seas.harvard.edu. Students can also contact the Academic Programs Administrator, Sarah Colgan, at scolgan@seas.harvard.edu in the SEAS Office of Academic Programs (SEC 1.101).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Engineering Sciences	98	99	112	107	89	88	68	82	92	103
Engineering Sciences + another field	4	3	1	1	7	6	3	4	4	5
Another field + Engineering Sciences	3	6	8	2	2	2	1	2	1	3

English

Humans use stories to cope and thrive, from prehistoric cave paintings to distilling experience in novels, screenplays, and hip-hop rhymes. By studying English literature, students learn how to analyze and appreciate the language of the past and how to contribute to the narrative of the future. Students develop expertise in interpreting others' rhetoric and learn to communicate meaningfully themselves—skills that are more crucial than ever with the explosion of online forms of textual exchange. In addition, in the English concentration, students are exposed to the dazzling imaginary worlds that have brought readers and writers together across vast expanses of space and time.

The path through English normally begins with English 10: Literature Today. This wide-ranging lecture course, exploring writing since the year 2000, is geared particularly toward students in their first or second years as an introduction to English literary study at Harvard. The course focuses on work by contemporary writers from around the world and speaks directly to today's urgent problems: exclusionary and divisive politics, economic disruption, technological innovation, social alienation, racism, misogyny, and colonialism.

The English concentration's two Common Courses, normally completed by the end of sophomore year, give students the tools they need to succeed in the concentration. English 20: Literary Forms introduces the concepts of style, form, and genre, exploring how writers use literary language to address personal and societal concerns and challenges. English 97: Sophomore Tutorial: Literary Methods looks at the questions that arise when we make the written word an object of study. What is the secret power of literary interpretation? How do our personal histories inform encounters with literature? How do critical race theory, psychology, gender studies, linguistics, political science, philosophy, and more alter our approach to reading and writing? Together, the gateway courses and Common Courses provide a shared foundation for literary study among each year's cohort of students.

Junior tutorials, required of all concentrators, let students define their own areas of study and produce original research on that topic. Through additional electives, students pursue a range of topics and approaches, always exploring how literature reflects and changes the world. Among their electives, concentrators must include three courses focused on literary periods (pre-1700, 1700–1900, and 1900–2000), which provide students the historical knowledge essential to understanding literature's transformations. In studying historical literatures, students learn how each literary period struggles to find new expressions to fit its contemporary moment by building on earlier innovations and styles. Most elective courses meet one of these period requirements.

Through their course work, students will acquire knowledge of:

- The global breadth and historical depth of writing in English.
- Some of the myriad bodies of imaginative writing produced in the English language, in its many and proliferating forms, across space and time.
- The roles of genres, of intellectual traditions and media, and of the cultural forces of privilege, oppression, and marginalization in shaping literary production.
- The history of English studies as a field, and what is at stake in that history.

English concentrators can pursue either the Honors Program or the Elective Program. Students in the Honors Program write a two-semester senior honors thesis or create a one-semester senior project. In either format, students may investigate a critical topic or produce creative work. Professors in the English faculty direct all theses and projects. The Elective

Program omits the senior project or thesis. A third option, for honors candidates only, is a joint concentration, which culminates in a thesis supervised by faculty in English and one other department. All honors candidates must have a concentration grade-point average of 3.40 or higher and of 3.60 or higher for the joint concentration.

LEARNING OBJECTIVES

A degree in English prepares students for any field that values clear expression, careful reading, critical thinking, and persuasive writing. Our concentrators go on to careers in media and publishing, as novelists, journalists, playwrights, and poets, as well as to careers in law, education, business, medicine, politics, and many other fields. They will enter those fields confident in their ability to:

- Speak and write persuasively and with nuance in one or more literary genres, including the genres of nonfiction.
- Enjoy literary texts aesthetically (in the body) and philosophically (in the mind).
- Analyze texts from stylistic, generic, contextual, and theoretical perspectives.
- Understand the difference between good and bad arguments.
- Conduct research and present it lucidly in oral and written forms.
- Read, perform, and write literary texts with a trained awareness of how they at once shape and are shaped by the societies in which they are written and received.

We commit ourselves to helping students immerse themselves in the literary worlds they know and love, discover new worlds they might not think to explore, acquire the means to find their own paths, and sustain themselves on their intellectual and creative journeys.

REQUIREMENTS

English
Honors Program Requirements: 14 courses (56 credits)

1. *Required courses and tutorials:* Four courses:
    a. ENGLISH 10: Literature Today.
    b. ENGLISH 20: Literary Forms.
    c. ENGLISH 97: Sophomore Tutorial: Literary Methods.
    d. ENGLISH 98R: Junior Tutorial.
2. *Electives:* Eight or nine courses:
    a. One must primarily address texts written before 1700 (see 4b below).
    b. One must primarily address texts written between 1700 and 1900 (see 4b below).
    c. One must primarily address texts written between 1900 and 2000 (see 4b below).
    d. Two may be creative writing workshops (see 4c below).
    e. One may be a related course from outside the English Department (see 4d below).
    f. Note: A student writing a two-semester senior thesis completes eight electives. A student writing a one-semester senior project completes nine electives.
3. *Senior thesis or senior project:* One or two courses:
    a. The senior thesis: The two-term senior tutorial, ENGLISH 99R, culminates in an honors thesis. Students may investigate any critical or research question in literary studies or may write an imaginative work in any creative genre. Theses are by application during the junior year. Students applying to write a creative thesis should have taken at least one course in creative writing by the middle of their junior year. Thesis applicants may be asked to propose a senior project in its place.

b. The senior project: Students may instead complete a senior project in the fall semester. Senior projects may resemble senior theses, but are on a smaller scale, or may explore more public-facing forms of writing. Students who choose this option will be eligible to receive a departmental degree recommendation of honors or high honors.

4. *Other information:*
    a. Grading basis and concentration grade-point average: All letter-graded courses taught by English Department faculty will count for the concentration grade-point average. Courses counting for concentration credit must be taken for a letter grade. The only exceptions are the Senior Thesis Tutorial and one First-Year Seminar, if taught by a member of the English Department faculty; these are graded SAT/UNS.
    b. Historical period requirements: Courses meeting these requirements introduce students to the variety of writers and genres that make up the 1,300-year tradition of literature in English.
    c. Creative writing courses: Admission to creative writing courses is by application only. No more than two creative writing courses may count toward the total number of required courses for the concentration. Students may apply to and enroll in as many courses as their Plan of Study can accommodate.
    d. Related course: Students may petition to count one related course (ordinarily from other humanities departments) as an English elective.
    e. Oral examination for highest departmental honors: To qualify for a departmental degree recommendation of highest honors, all eligible senior honors concentrators must take an oral examination during the reading period of their final term. Eligibility is determined by concentration grade-point average and thesis grades, explained in detail on the department's website.

English
Elective Program Requirements: 12 courses (48 credits)

1. *Required courses and tutorials:* Four courses:
    a. ENGLISH 10: Literature Today.
    b. ENGLISH 20: Literary Forms.
    c. ENGLISH 97: Sophomore Tutorial: Literary Methods.
    d. ENGLISH 98R: Junior Tutorial.
2. *Electives:* Eight courses:
    a. One must primarily address texts written between 1900 and 2000 (see 4b below).
    b. Two may be creative writing workshops (see 4c below).
    c. One may be a related course from outside the English Department (see 4d below.).
3. *Thesis:* None.
4. *Other information:*
    a. Grading basis and concentration grade-point average: All letter-graded courses taught by English Department faculty will count for the concentration grade-point average. Courses counting for concentration credit must be taken for a letter grade. The only exception is one First-Year Seminar, if taught by a member of the English Department faculty, which is graded SAT/UNS.
    b. Historical period requirements: Courses meeting this requirement introduce students to the variety of writers and genres that make up the 1,300-year tradition of literature in English.
    c. Creative writing courses: Admission to creative writing courses is by application only. No more than two creative writing courses may count toward the total number of required courses for the concentration. Students may apply to and

enroll in as many courses as their Plan of Study can accommodate.
    d. Related course: Students may petition to count one related course (ordinarily from other humanities departments) as an English elective.

English
Joint Concentration Requirements: 7 or 9 courses (28 or 36 credits)

Upon approval from the Director of Undergraduate Studies, honors candidates may combine a concentration in English with a concentration in another department, supervised by advisors in each department. Joint concentrators may declare English to be either their primary or allied concentration; the requirements are the same for both primary and allied, with the exception of the Thesis Tutorial (99R), which is listed in the primary concentration. Ordinarily, only students with a concentration GPA of 3.60 or above, an overall strong record, and a clearly formulated project across two disciplines will receive approval. A joint senior thesis is required.

1. *Required courses and tutorials:* Four courses:
    a. ENGLISH 10: Literature Today.
    b. ENGLISH 20: Literary Forms.
    c. ENGLISH 97: Sophomore Tutorial: Literary Methods.
    d. ENGLISH 98R: Junior Tutorial.
2. *Electives:* Three courses:
    a. One must primarily address texts written before 1700 (see 4b below).
    b. One must primarily address texts written between 1700 and 1900 (see 4b below).
    c. One must primarily address texts written between 1900 and 2000 (see 4b below).
3. *Senior thesis:* No courses or two courses:
    a. The senior thesis: The two-term senior tutorial, ENGLISH 99R, culminates in an honors thesis, and theses are by application during the junior year. Students may investigate any critical or research question in literary studies or may write an imaginative work in any creative genre. Students applying to write a creative thesis should have taken at least one course in creative writing by the middle of their junior year.
    b. Note: If English is the allied field, the senior tutorial is taken in the primary concentration and the student does not enroll in ENGLISH 99R.
4. *Other information:*
    a. Grading basis and concentration grade-point average: All letter-graded courses taught by English Department faculty will count for the concentration grade-point average. Courses counting for concentration credit must be taken for a letter grade. The only exceptions are the Senior Thesis Tutorial and one First-Year Seminar, if taught by a member of the English Department faculty; these are graded SAT/UNS.
    b. Historical period requirements: Courses meeting these requirements introduce students to the variety of writers and genres that make up the 1,300-year tradition of literature in English.
    c. Creative writing courses: Admission to creative writing courses is by application only. Students may apply to and enroll in as many creative writing courses as their Plan of Study can accommodate.
    d. Oral examination for highest departmental honors: To qualify for a departmental degree recommendation of highest honors, all eligible senior honors concentrators must take an oral examination during the reading period of their final term. Eligibility is determined by concentration grade-point average and thesis grades, explained in detail on the department’s website.

ADVISING

The English Department is committed to providing high-quality advising to undergraduate concentrators, prospective concentrators, and any Harvard student interested in the study of English literature. Each concentrator is paired with a faculty advisor, with whom students discuss substantive and practical Plans of Study. Concentrators are encouraged to visit other members of the English faculty during scheduled office hours. The staff of the Undergraduate Program Office are available to discuss specific questions regarding the program.

RESOURCES

English concentrators may apply for department-administered awards and fellowships. These range from funds for thesis research to postgraduate scholarships and annual essay, fiction, and poetry prizes.

Odile Harter is the library liaison to the English Department and is available to answer research questions. Child Memorial Library, located on the top floor of Widener Library, is the English Department's research library and is open to all students. Its extensive, noncirculating collection comprises works from all areas and periods of English and American literature. Maintained and staffed by graduate students, Child Memorial Library is dedicated to providing up-to-date, scholarly editions of authors, as well as a cross-section of recent and influential criticism.

HOW TO FIND OUT MORE

The *Guide for Concentrators*, along with all advising worksheets and forms, is available on the department website at https://english.fas.harvard.edu.

Questions may be directed to any member of the staff:

- The Director of Undergraduate Studies at EnglishDUS@fas.harvard.edu.
- The Associate Director of Undergraduate Studies at English-ADUS@fas.harvard.edu.
- Lauren Bimmler, Undergraduate Program Administrator, at lbimmler@fas.harvard.edu.
- Emily Miller, Undergraduate Program Assistant, at emily_miller@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
English	165	155	144	144	130	116	62	73	95	112
English + another field	9	12	11	9	17	13	14	22	24	16
Another field + English	6	4	8	11	12	9	9	11	11	10

Environmental Science and Engineering

Environmental Science and Engineering (ESE) is an interdisciplinary program with the goal of understanding, predicting, and responding to natural and human-induced environmental change. Addressing environmental issues such as global warming, stratospheric ozone depletion, or local and regional air and water pollution requires perspectives from a diverse set of scientific disciplines including atmospheric physics and chemistry, oceanography, glaciology, hydrology, geophysics, ecology, and biogeochemistry. The ESE program is structured around the view that the environmental system comprises a complex set of chemical, physical, and biological interactions, all impacted by the various activities of human society. Through exploration of the underlying processes and feedbacks within the Earth system, and with a range of approaches from theory and modeling to experiments and observations, students are trained to think about environmental processes in an integrated fashion, preparing them to manage the environmental challenges we face.

At its core, Environmental Science and Engineering exemplifies the pursuit of a technical liberal arts degree. In order to better understand and address environmental challenges, environmental scientists and engineers draw on core knowledge from other closely related fields to develop technical solutions and advance innovations in environmental measurements, modeling, control, and regulation. This cross-disciplinary nature is reflected in the fact that many of Harvard's ESE faculty are jointly appointed or affiliated in other Schools or departments in the Faculty of Arts and Sciences (FAS). The liberal arts nature of the discipline is reflected in the flexible degree requirements of the concentration. Students have the intellectual freedom to select a program that provides fundamentals in ESE that are aligned with their specific interests. Working closely with their concentration advisors, students develop a Plan of Study consisting of core courses from within the basic sciences and the ESE program, and approved electives from closely related fields like Earth and planetary sciences, integrative biology, applied mathematics, and other engineering disciplines and natural sciences to best support their individual academic goals.

The A.B. degree consists of 14 courses (56 credits). Concentrators study the fundamental processes underlying environmental systems, including atmospheric sciences and climate dynamics; pollution of our air, water, and soil; and the development of sustainable energy systems. Throughout their course work, students learn to apply these principles to understand and model complex environmental problems and to mitigate human impacts on the environment. Concentrators are required to take a fundamental set of introductory math, physics, and chemistry courses as the foundation of their studies (six of the 14 required courses). Students also take one foundational course (ESE 6) as an introduction to the field. The remaining seven courses are selected from a list of approved electives from across the breadth of the ESE course offerings, as well as related natural sciences. To provide a core foundation in Environmental Science and Engineering, all students will be strongly encouraged to take at least one course on environmental physics and at least one course on environmental chemistry. Additionally, one of the five remaining approved electives must be a course having significant engineering design content, which provides each student with exposure to the design challenge of solving an environmental problem.

LEARNING OBJECTIVES

Students interested in environmental science and engineering study the fundamental processes and technologies underlying environmental systems, including natural and polluted waters and soils, the atmosphere, climate, and energy. Students learn to apply these principles to mitigate human impact on the environment by providing technical solutions and advancing innovation in environmental measurement, modeling, and control.

REQUIREMENTS

Environmental Science and Engineering
Concentration Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Gateway course (one course): ESE 6 is strongly recommended as the gateway course for students entering the ESE A.B. program. Alternatively, (1) taking one additional course in environmental physics (see 1e, below) or environmental chemistry (see 1f, below), or (2) taking ESE/EPS 50 can satisfy the gateway requirement.
    b. Mathematics (two courses): MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B, or higher levels. Students should begin the mathematics sequence according to placement.
    c. Physics (two courses): PHYSCI 12A, PHYSICS 15A or PHYSICS 16, or APPHY 50A; and PHYSCI 12B, PHYSICS 15B, or APPHY 50B.
    d. Chemistry (two courses): Two courses from the following list:
        i. Strongly recommended: PHYSCI 11.
        ii. LS 1A (or LPS A, according to placement).
        iii. CHEM 10, CHEM 17, CHEM 20, CHEM 40, CHEM 60, or CHEM 160.
    e. Environmental physics (one course): ESE 101, ESE 129, ESE 131, ESE 132, ESE 162, or ENG-SCI 112.
    f. Environmental chemistry (one course): ESE 133, ESE 161, or ESE 164. Substitutions for requirements listed in 1b–1f below may be allowed by petition.
    g. Approved electives (five courses): With permission from the Director of Undergraduate Studies, up to two of these five courses can be substituted with relevant, upper-level courses from other areas of the natural sciences and engineering.
        i. Environmental Science and Engineering: 101, 102, 109, 115, 129, 131, 132, 133, 138, 160, 161, 162, 163,164, 166, 168, 169.
        ii. Data analytics, statistics, and scientific computing (no more than one): APMTH 10, APMTH 101, APMTH 120, CS 32, CS 50, SCI 5, STAT 110, STAT 111, STAT 121A/B. Note: Students are strongly encouraged to acquire competency in this area before taking upper-level ESE courses with programming or data analysis components.
        iii. Engineering Sciences: 91R (one term), 96, 112, 123, 181, 183.
        iv. Earth and Planetary Sciences: 53, 134, 187.
        v. Organismic and Evolutionary Biology: 55, 120, 157.
        vi. Introductory Engineering Sciences (no more than one): ENG-SCI 50, ENG-SCI 51, ENG-SCI 53.
        vii. Upper-level Applied Math (no more than one): APMTH 105, APMTH 115.
2. *Design experience*: All students must take an approved course with significant design experience as one of their electives. This requirement may also be satisfied with a design component within a senior thesis, or a design component within an independent research project (ENG-SCI 91R).
3. *Thesis*: A thesis is required for recommendations of high honors and highest honors, and for joint concentrators.
4. *General examination*: None.
5. *Other information:*
    a. By prior petition and approval, other advanced undergraduate or graduate courses, as well as courses at MIT, can be used to satisfy general requirements and track requirements and electives. Petitions will only be

considered for courses that possess technical content at a level similar to other upper-level engineering courses at SEAS.

b. Only four credits of ENG-SCI 91R can count as an approved elective in the degree requirements.
c. Joint concentrations: Environmental Science and Engineering participates in joint concentrations. A joint concentrator must fulfill all of the course requirements for the stand-alone degree; in addition, a joint concentrator is required to write an interdisciplinary thesis that combines the two fields. This thesis is required regardless of whether Environmental Science and Engineering is the primary or allied concentration.
d. Plan of Study: Concentrators are required to file an approved departmental Plan of Study and to keep their plan up to date in subsequent years. Plan of Study forms may be obtained from the Office of Academic Programs (SEC 1.101) or from the School of Engineering and Applied Sciences (SEAS) website at http://seas.harvard.edu/.
e. Pass/fail and SAT/UNS: All courses for concentration credit must be letter-graded.
f. Any exceptions to these policies must be approved via written petition.

ADVISING

Students interested in concentrating in Environmental Science and Engineering should discuss their plans with the Director of Undergraduate Studies or the Assistant Director of Undergraduate Studies, Dr. Bryan Yoon, reachable at byoon@seas.harvard.edu. Each undergraduate who elects to concentrate in Environmental Science and Engineering is assigned a faculty advisor. If students do not request a change in advisor, they have the same advisor until they graduate. Each student is reassigned to another faculty member should the student's original faculty advisor be on leave. It is expected that students will discuss their Plan of Study and progress with the Director of Undergraduate Studies or Assistant Director of Undergraduate Studies at the beginning of each term. Students may also seek advice from their faculty advisor or the Director of Undergraduate Studies or Assistant Director of Undergraduate Studies at any time.

HOW TO FIND OUT MORE

Further information is available from Sarah Colgan, the Academic Programs Administrator in the School of Engineering and Applied Sciences Office of Academic Programs, SEC 1.101, at 617-495-2833.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators*	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Environmental Science and Engineering	9	16	6	14	15	12
Environmental Science and Engineering + another field	2	3	3	3	4	4
Another field + Environmental Science and Engineering	0	4	3	4	2	1

* Environmental Science and Engineering was a new concentration for 2018–19.

Environmental Science and Public Policy

The concentration in Environmental Science and Public Policy (ESPP) is designed to provide a multidisciplinary introduction to current problems of the environment. It is founded on the premise that the ability to form rational judgments concerning many of the complex challenges confronting society today involving the environment requires both an understanding of the underlying scientific and technical issues and an appreciation for the relevant economic, political, legal, historical, and ethical dimensions. All students have to satisfy a core of requirements in the physical, biological, and social sciences and mathematics. Depending on preparation, students may be encouraged to substitute more advanced courses for these requirements. In consultation with their concentration advisor, students also develop an individual Plan of Study for a series of advanced courses around a particular field of specialization. Through their field of specialization, students develop expertise in a particular field of study relating to the environment. To the level that would enable them to pursue graduate-level study in the relevant discipline(s) if they chose to do so.

In the junior year, students take one or more seminars to complement their field of specialization. The seminars are envisaged as a central integrating component of the concentration, cover a number of current environmental issues comprehensively and in depth. They are taught by faculty from a number of departments in the Faculty of Arts and Sciences and from several of the professional schools, including Harvard Law School, Harvard T.H. Chan School of Public Health, and Harvard Business School. Topics covered change from year to year, but have included policy issues relating to environmental health, renewable energy, conservation and biodiversity, and world food systems and the environment.

In the senior year, students undertake a capstone project in which they conduct an in-depth examination of a particular environmental issue consistent with their field of specialization, applying skills and knowledge gained in their courses and tutorial experiences. For students wishing to be considered for honors, the capstone project consists of a yearlong eight-credit course senior thesis, while for non-honors students the typical requirement is a one-course term paper or equivalent.

The concentration is overseen by a Committee on Degrees functioning as a Board of Tutors including representatives from other departments of the Faculty of Arts and Sciences and from other Schools as appropriate to ensure the requisite breadth of the program.

LEARNING OBJECTIVES

Students interested in environmental science and public policy study a set of foundational courses in both the natural and the social sciences and use their advanced courses to develop expertise in a particular field of study relating to the environment.

REQUIREMENTS

Environmental Science and Public Policy
Basic Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Introductory course: The introductory course is designed to provide a multidisciplinary examination of a particular current environmental challenge. One course chosen from:
        i. E-PSCI 50: The Fluid Earth: Oceans, Atmosphere, Climate, and Environment.

ii. ESE 6: Introduction to Environmental Science and Engineering.
iii. GENED 1085: Energy Resources and the Environment.
iv. GENED 1094: Confronting Climate Change: A Foundation in Science, Technology and Policy
v. GENED 1137: The Challenge of Human Induced Climate Change: Transitioning to a Post Fossil Fuel Future.
vi. GENED 1158: Water and the Environment.

b. Physical sciences: One course: PHYSCI 11.
c. Mathematics and/or statistics: Two courses: the minimum course requirement is: MATH 1A and MATH 1B. More advanced courses are encouraged.
d. Biological sciences: One course: OEB 10 or OEB 55 or OEB 65.
e. Social sciences: One course: ESPP 77 or ESPP 78.
f. Economics: One course: ECON 1661. (Depending on a student's background, an additional course in microeconomics may be required in order to take ECON 1661.)
g. Advanced courses: Four courses in the student's field of specialization. At least one course must be from the social sciences/policy, and at least one course must be chosen from the natural sciences or engineering.

2. *Junior Seminar*: One course chosen from ESPP 90: Junior Seminar offerings (consistent with focus field of specialization).
3. *Capstone project (non-honors)*: One course: ESPP 91R: Supervised Reading and Research. In the capstone project, students conduct an in-depth examination of a particular environmental issue consistent with their field of specialization. (The typical requirement is a term paper or equivalent.)
4. *Tutorial*: Junior year. ESPP 90 seminar required of all concentrators.
5. *Thesis*: None.
6. *General examination*: None.
7. *Other information*:
    a. Students must file a concentration Plan of Study and identify their field of specialization by the end of their sophomore year. The Plan of Study will be developed in consultation with the student's advisor and will be reviewed and approved by the ESPP Board of Tutors. The Plan of Study is to be revised and reviewed at the end of the junior year.
    b. Course substitutions. Students interested in substituting a course in place of the above requirements should consult their concentration advisor and submit a petition to the Head Tutor.

Environmental Science and Public Policy
Honors Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Same as **Basic Requirements**.
    b. ESPP 99**:** Senior Tutorial/Thesis. Two courses.
2. *Tutorials:*
    a. Junior year: ESPP 90: Junior Seminar. Required of all concentrators.
    b. Senior year: ESPP 99: Senior Tutorial/Thesis.
3. *Thesis*: Required. Written as part of ESPP 99.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**.

ADVISING

At the beginning of the first term of the concentration, each student is assigned a faculty member of the ESPP Board of Tutors who will act as their concentration advisor. These

assignments are based on the student's interests and their current intended field of specialization.

For many students, their interests and planned field of specialization will evolve over time. We view this evolution as an integral part of the ESPP advising process. If desired, students may be subsequently reassigned to an advisor more appropriate for the student's developing field of specialization.

Students are expected to meet with their advisor at least once each term to discuss their Plan of Study and their resulting course selections, research opportunities, and other academic matters. However, students are encouraged to meet with their advisors more often throughout the year as their interests and desired field of specialization develop. Students may also seek advice from any member of the Board of Tutors in Environmental Science and Public Policy.

RESOURCES

The concentration's physical and administrative home is located in the Harvard University Center for Environment. The Center serves the larger Harvard community and provides a focus for interdisciplinary, cross-faculty research and education. The Center draws its strength from faculty members and students from across the University and complements the environmental education and research activities of the community of scholars based in Harvard's academic units. Stewarded by the Faculty of Arts and Sciences, the Center is designed to serve the entire Harvard community by developing and facilitating projects and activities in the areas of environmental education, research, and outreach—adding the value of an integrated, collaborative approach to traditional academic pursuits.

The Harvard University Center for the Environment's website at www.environment.harvard.edu provides a wealth of information resources, including an online guide to environmental studies, courses, student groups, faculty and researchers, centers at Harvard, and email listings for environmental events. The Center also supports a series of distinguished lectures, colloquia, and other events throughout the calendar year.

HOW TO FIND OUT MORE

Additional information may be obtained from the Head Tutor, Professor N. Michele Holbrook, Associate Director of Undergraduate Studies, Dr. Diana Sharpe, or Lorraine Maffeo, Program Administrator, at 26 Oxford Street, Fourth Floor, reachable at 617-496-6995, espp@fas.harvard.edu, or by visiting http://www.espp.fas.harvard.edu/.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Environmental Science and Public Policy	36	49	47	48	49	42	30	43	50	68
Environmental Science and Public Policy + another field	3	4	5	5	5	3	3	2	7	3
Another field + Environmental Science and Public Policy	0	0	4	2	4	7	3	3	5	6

Folklore and Mythology

Folklore and Mythology is a liberal education in and of itself. The program encourages the study of any given society through its language and culture, offering an array of choices for drawing on a variety of disciplines in the humanities and social sciences. To focus on the folklore and mythology of society (at local and regional, as well as national levels) is to understand how that group or society defines itself through epics, music, folktales, legends, dramas, dance, rituals, beliefs, proverbs, customs, law codes, festival celebrations, “wisdom literature,” and many other forms of expressive culture. To study the folklore and mythology of any group is to discover how that group identifies itself in relation to others. Concentrators conduct independent research on the material, oral, written, or performed forms of folklore and mythology in a variety of cultures, among them African, North and South American, Celtic, Chinese, English, German, Greek, Indian, Japanese, Scandinavian, and Slavic.

The purpose of the basic courses outlined below is to provide concentrators with a general knowledge of the materials of folklore and mythology, its genres and divisions, and the various kinds of intellectual approaches to the materials that have been, and still are, used to understand and interpret them. The course on fieldwork and ethnography continues this purpose of providing general background by critiquing and applying various anthropological methods of interpreting cultural expressions. In these basic courses and early tutorials, materials from many cultures are used.

The special fields are designed to assure that the concentrator has an in-depth knowledge of folklore and mythology in one given area. There is considerable variation in the special fields administered by the Committee on Degrees in Folklore and Mythology, and the specific requirements vary from field to field. They can be roughly divided between those that are language- and literature-based and those that are not, such as music or social anthropology. Sample programs for several special fields are available through the Head Tutor’s office, but each student should work out the details of the student’s own Plan of Study with the Head Tutor or the committee member or members representing the particular special fields.

The tutorials in the second half of the junior year and throughout the senior year are in the special field, the senior tutorials being devoted largely to developing either a senior thesis or a senior project.

During the senior year, students concentrating in Folklore and Mythology are expected to demonstrate their command of cultural theory and analysis. All students will complete one of three potential senior capstone projects: (1) an Analytical Thesis, (2) a Creative Thesis, or (3) a Senior Project.

Students who choose the Analytical Thesis option are expected to submit an analytical thesis of 40–60 pages. Analytical theses are graded based on Latin Honors by outside readers and are eligible for all levels of honors.

Students who choose the Creative Thesis option are expected to submit a creative thesis, accompanied by a 15- to 20-page analytical component. Creative theses are graded based on Latin Honors by outside readers and are eligible for all levels of honors.

Students who choose the Senior Project option are expected to produce a capstone project, including an explanatory component, to be determined in consultation with the project advisor and the Folklore and Mythology Head Tutor and/or Director of Undergraduate Studies. Senior projects are graded by the student’s FOLKMYTH 96R instructor and are eligible for honors.

Analytical and creative theses are carried out over two semesters as FOLKMYTH 99, under the supervision of a faculty advisor. Senior projects are carried out over one or two semesters as FOLKMYTH 96R, under the supervision of a faculty advisor. While most senior honors theses take the form of written analyses based on original research, the creative thesis and senior project options allow students to demonstrate their competence through performances, exhibits, or other creative forms of expression, usually in connection with specific Folklore and Mythology courses (or related courses approved by the Head Tutor).

Students interested in concentrating in Folklore and Mythology should make an appointment with the Head Tutor to discuss the concentration and special field interests. Joint concentrations with other fields are possible, and students should discuss their interests of combining fields with the Head Tutors or Directors of Undergraduate Studies of both Folklore and Mythology and the allied program. In joint concentrations, Folklore and Mythology can be either the primary or the allied field.

LEARNING OBJECTIVES

Folklore and Mythology concentrators conduct independent research on the material, oral, written, or performed forms of folklore and mythology in their areas of specialization, which range greatly across time and space. Our students develop and practice folkloristic methods—deep listening, observant participation, cross-cultural comparison, historical contextualization, collaborative interpretation, cultural documentation, empathetic engagement, and good storytelling—in relationship to whichever communities most interest and enthrall them.

REQUIREMENTS

Folklore and Mythology
Concentration Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. GENED 1097: Tradition, Performance, and Culture.
    b. FOLKMYTH 97.
    c. FOLKMYTH 98A and 98B.
    d. FOLKMYTH 99 (two terms) or FOLKMYTH 96R (one or two terms). See item 2 below.
    e. One Folklore and Mythology seminar: One approved seminar-style course from among the Folklore and Mythology offerings.
    f. Five courses in a special field to be selected with the advice of the Head Tutor or a committee member in that field.
    g. Two courses outside the special field, to be selected from among such courses as the committee may designate.
2. *Tutorials*:
    a. Sophomore year: FOLKMYTH 97. Required. Letter-graded.
    b. Junior year: FOLKMYTH 98A and 98B. Required. Letter-graded.
    c. Senior year: FOLKMYTH 99 (two terms), graded SAT/UNS; or FOLKMYTH 96R (one or two terms), letter-graded.
3. *Senior capstone project (Analytic Thesis, Creative Thesis, or Senior Project)*: Required of all concentrators in the senior year.
4. *General examination*: Required of all concentrators in the final term of the senior year; includes both a written and an oral component.
5. *Other information:*
    a. Pass/fail: Courses counting for concentration credit may not be taken pass/fail, except that one First-Year Seminar may be counted for concentration credit if the student received a positive evaluation and if permission to do so is

obtained from the Head Tutor.

b. Special fields: Before or during fall term of the junior year, each concentrator must choose a special field in consultation with the Head Tutor and an appointed advisor.

c. Language study: Proficiency in a language other than English, equivalent to that acquired by two years of college study, is highly recommended. Up to three courses of language study may, in individual cases and with the approval of the Head Tutor in consultation with an advisor in the relevant special field, be counted toward the concentration. The specifics of language study within the concentration should be discussed at an early stage with the Head Tutor and the advisor in the concentrator's special field.

ADVISING

Students planning to concentrate in Folklore and Mythology should consult with the Head Tutor and a faculty member in the student's prospective special field, normally a member or affiliated member of the Committee on Degrees in Folklore and Mythology. Concentrators are required to see the Head Tutor at the beginning of each term about their selection of courses and tutorials; preparation for the senior thesis or senior project, and for the general examination; and for approval of course registration.

For up-to-date information on advising in Folklore and Mythology, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The Milman Parry Collection of Oral Literature

The Milman Parry Collection of Oral Literature is one of the largest and best of its kind in the world. It contains unpublished epics, ballads, songs, tales, and other kinds of lore from Europe, Africa, Asia, and North America in the original languages.

Peabody Museum of Archaeology and Ethnology

Students interested in folk life or ethnography will find the superb collections in the Peabody Museum of Archaeology and Ethnology of value.

Archive of World Music in the Loeb Music Library

The Archive of World Music in the Loeb Music Library constitutes a rich resource, not only for ethnomusicologists but also for folklorists in general.

HOW TO FIND OUT MORE

For up-to-date information on advising in our program, students may see the Advising Programs Office website at https://advising.college.harvard.edu/academic-planning-for-students/concentrations-and-secondaries. Our website, https://folkmyth.fas.harvard.edu/, is a further resource.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Folklore and Mythology	9	11	10	6	5	3	4	5	5	5
Folklore and Mythology + another field	1	0	5	5	6	5	1	4	0	0
Another field + Folklore and Mythology*	1	2	3	2	6	4	2	5	6	4

* Folklore and Mythology participates in joint concentrations as either the primary or the allied concentration.

Germanic Languages and Literatures

The Department of Germanic Languages and Literatures offers a rich and diverse program of literary and cultural studies, including film and music. We offer students the option to pursue a concentration in German Studies or in Scandinavian Studies—or a joint concentration in German and another field. Our goal is to provide students with the enriching experience of studying languages, literatures, and cultures different from their own so they can gain new perspectives on their languages and countries of origin. At the same time, students will learn how the German-speaking and Nordic countries have influenced the development of Western culture and society. Our graduates are well positioned to understand the central role played by modern Germany in international politics and economics. They can explain why Germany takes the positions it does, the role of the European Union, and why international organizations call on distinguished members of the Scandinavian countries to represent them on task forces involving matters of conscience. We aim above all to equip students with proficient language, analytical, and critical skills for academic, professional, or personal use, as well as an understanding of the politics, culture, history, and ideas through literature, film, music, and other media. Thus, the program is designed not only for students who wish to pursue graduate study in Germanic studies, but also for students who choose careers in education, medicine, law, government, the social sciences, scientific research, business, the arts, design, and other fields.

Our department has a highly favorable ratio of full-time faculty to concentrators, which enables the faculty to provide students with individual guidance and support. Much of the tutorial work is done by full-time faculty, and all seniors writing a thesis have the opportunity to work individually with a professor. The department actively supports both work and study abroad, and all concentration options are designed to accommodate them.

There are no prerequisites for the concentration; however, students should first develop their language skills to meet the required level of proficiency. German language is offered from beginning to advanced levels; students with prior knowledge of German should take a placement test. Students may begin to study the German language with GERMAN 10 (elementary German) or with GERMAN 10AB (intensive elementary). Most concentrators in German take the sequence of GERMAN 20 (second year) and at least one 60-level course (third year) in order to prepare them for the 100-level courses. The introductory survey courses, GERMAN 101 and GERMAN 102, count as the sophomore tutorial in German, though students are permitted to postpone this sequence until their junior year. Students interested in the Scandinavian concentration (or a Scandinavian language citation) are likewise urged to begin their language study as soon as possible. Students with prior knowledge of a Scandinavian language should contact Dr. Broomé for placement. Our program offers Swedish courses through the second-year level, from SWEDISH 10 (Beginning Swedish Language and Literature) to SWEDISH 20 (Special Topics in Swedish Literature and Culture), as well as Old Norse (SCAND 160A and SCAND 160BR). SCAND 91R (Independent Study) is available for advanced language students. Danish, Finnish, modern Icelandic, and Norwegian are available as language tutorial courses (SCAND 90R.A–C). Students interested in these languages should contact Dr. Broomé at their earliest opportunity, preferably prior to the start of the academic term when they wish to begin their language study.

Concentrators desiring to be considered for honors write a senior thesis of 40–50 pages. The thesis is designed to demonstrate that a candidate can read and interpret a literary text or a complex cultural or social phenomenon with authority, insight, and originality, and is familiar with the major critical writings on the subject. All seniors are required to pass a three-hour

written examination. The questions for this examination, designed to give students the opportunity to synthesize the knowledge they have gained from their studies, are based on individual reading lists submitted by each senior to a faculty committee.

LEARNING OBJECTIVES

Our goal is to provide students with the enriching experience of studying languages, literatures, and cultures different from their own so that they can gain new perspectives on their languages and countries of origin. By acquiring proficiency in German, Dutch, or a Scandinavian language, students will gain a lasting skill useful in many fields of endeavor. Advanced study builds on these foundations by further developing critical and creative thinking, by teaching students how to pursue their own research questions, and by making deeper connections to related fields of study, including philosophy, comparative literature, music, art history, media studies, theater, and the visual arts.

REQUIREMENTS

Germanic Languages and Literatures
Basic Requirements for All Options

1. *Required courses*: See **Specific Requirements** for each option.
2. *Tutorials*:
    a. Sophomore year: Optional; see **Specific Requirements**.
    b. Junior year: Optional; see **Specific Requirements**.
    c. Senior year: GERMAN 99A and GERMAN 99B (two terms) or SCAND 99A and SCAND 99B (two terms) required of honors candidates. Graded SAT/UNS. Non-honors candidates: SCAND 99C (one term). Letter-graded.
3. *Senior thesis*: Required of honors candidates only.
4. *General examination*: Required of all honors and joint concentrators.
5. *Other information*:
    a. Pass/fail: None of the courses counted for the concentration may be taken pass/fail except for 200-level courses.
    b. Courses counted for concentration credit must be passed with a grade of B- or above.
    c. One First-Year Seminar may, upon approval of the Director of Undergraduate Studies, count toward concentration credit.
    d. The degree of honors recommended is based on the results of the general examination, the grade-point average, and the thesis evaluation.

German Studies
Requirements: 9 courses (36 credits)

1. *Basic required courses*: Nine courses.
    a. Up to two courses in German at the 60-level.
    b. GERMAN 100.
    c. Four additional courses in German at the 100-level or above.
    d. An additional three courses either in German or in related fields with sufficient focus on the German aspect of the field. In consultation with the Director of Undergraduate Studies, students coordinate these courses into a coherent but flexible program of study. Courses may be selected from such fields as English; Folklore and Mythology; Government; History; History of Art and Architecture; History of Science; Linguistics; Literature; Music; Philosophy; Psychology; Comparative Study of Religion; Visual and Environmental Studies; Women, Gender, and Sexuality; and others, including German itself.
    e. Up to three courses (combined from 1c and 1d) may be courses in which the

instruction and readings are entirely in English. Together, these courses should address a wide spectrum of topics of German culture from the medieval period to the present, and at least one should address a literary genre.

2. *Courses required for honors eligibility*: Same as item 1, plus two terms of GERMAN 99 (Thesis Tutorial) and the General Examination.
3. *Other information*:
    a. The concentration is designed to make it possible to begin with elementary German (GERMAN 10 or GERMAN 10AB) in the first year and to complete the concentration without difficulty.
    b. One First-Year Seminar may, upon approval of the Director of Undergraduate Studies, count toward concentration credit.
    c. At the student's request, concentration credit is granted for second-year language courses (GERMAN 20A, GERMAN 20B, and GERMAN 20AB)

Joint Concentration with German Studies
Requirements: 5 courses (20 credits)

This option is intended for students who wish to combine the study of German culture and literature with the study of one other field significantly related to some aspect of the larger field of Germanic languages and literatures. Many students have successfully pursued joint concentrations with Germanic Languages and Literatures and another concentration, including History of Art and Architecture; Chemistry; Linguistics; Music; Government; Theater, Dance & Media; and Philosophy. Programs in German and another literature, or German and another field may be submitted for approval of the departments concerned. For information about other possible combinations, consult the Director of Undergraduate Studies.

1. *Required courses*: Five courses.
    a. Five numbered courses in German, which should include GERMAN 100.
    b. For German primary: GERMAN 99 (two terms).
2. *Thesis.* Required.

Scandinavian Studies
Requirements: 10 courses (40 credits)

This option is intended for students who wish to combine the study of Scandinavian literature and culture with the study of some aspect of Western civilization closely related to a special area of the larger field of Scandinavian Languages and Literatures. Programs in Scandinavian and other literatures (including German), drama, folklore, history, linguistics, or an aspect of the social sciences may be submitted for approval by the Director of Undergraduate Studies. Note that this is not considered a joint concentration and that the level of honors will be determined solely by the Department of Germanic Languages and Literatures.

1. *Basic required courses*: 10 courses.
    a. Six courses in Scandinavian Languages and Literatures (may include SCAND 91R, SCAND 97, and SCAND 98).
    b. Four courses in related subjects.
2. *Courses required for honors eligibility*: 12 courses. Same as item 1, plus two terms of SCAND 99 (Thesis Tutorial).
3. *Other information*: For a list of approved related courses, see the Director of Undergraduate Studies, who must also approve each concentrator's courses. One of the framework courses in the humanities (HUM 11A–C) may count toward concentration credit.

ADVISING

Departmental advising of concentrators in all three years is carried out by the Directors of Undergraduate Studies. Students meet with the Director of Undergraduate Studies in their field regularly at the beginning of each term and thereafter as desired (contact information can be found below).

For up-to-date information on advising in Germanic Languages and Literatures, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Widener Library and Houghton Library

Widener Library offers the most complete research collection in German and Scandinavian literatures, history, and civilization available in the United States. Valuable manuscripts and papers from the estates of such distinguished German poets as Hofmannsthal, Rilke, and Brecht, and of such distinguished Scandinavian playwrights as Henrik Ibsen and August Strindberg, can be found in Houghton Library together with manuscripts from medieval Germany and Iceland.

Busch-Reisinger Museum

A unique and important resource is the Busch-Reisinger Museum, the only museum on this continent dedicated to Germanic art. The museum, located within the Fogg Museum, was established at the beginning of this century by Kuno Francke, a distinguished professor in the German Department, with the intention of acquainting language and literature students with the artistic heritage of the German-speaking peoples.

Goethe-Institut Boston

The Goethe-Institut Boston (170 Beacon Street, Boston) offers a wide variety of lectures, exhibitions, films, and concerts on all aspects of Germany and its present and past culture, and the Scandinavian Library (206 Waltham Street, West Newton) likewise hosts lectures, a Nordic film series, and a weekly coffee hour.

Campus Activities

Students can gain additional practice in conversation by attending the German and Scandinavian tables held in the various Houses, a weekly *Stammtisch* at The Queen's Head, or a monthly *Kaffeestunde* in the Barker Center. Harvard is also home to the German Club, the Harvard College Scandinavian Society, and the Harvard Club of Sweden.

HOW TO FIND OUT MORE

More detailed information on these concentration programs can be obtained by contacting the Director of Undergraduate Studies for German or the Director of Undergraduate Studies for Scandinavian. They are available to answer all questions regarding the department's concentrations, and they can provide students with reading guides, lists of courses approved each year, copies of past general examinations, etc. All potential concentrators are encouraged to contact them. The department's offices are located in the Barker Center. Additional information is available on the department website at https://german.fas.harvard.edu/our-people.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Germanic Languages and Literatures	5	7	4	3	0	2	2	2	2	9
Germanic Languages and Literatures + another field	0	0	0	2	3	1	0	0	0	0
Another field + Germanic Languages and Literatures	1	1	3	3	4	5	2	4	2	3

Government

The concentration in Government introduces students to the discipline of political science: the study of power in all of its many forms and consequences. Aiming both to prepare students to lead engaged civic lives and to introduce them to the ways in which political scientists explain and analyze the social and political world around us, the concentration has four curricular goals.

Our first goal is to make students aware and critical of their unexamined assumptions about politics. Learning to think independently and with some critical distance, to analyze arguments—theoretical, empirical, and rhetorical—to weigh alternatives, to write cogently, and to speak persuasively are essential skills for responsible global citizenship as well as professional careers. GOV 97 (the sophomore tutorial) begins the process by asking students to write a research paper on real-world issues important to them. This training in research and analysis is provided in the context of small seminars on a variety of topics, giving students an opportunity to read cutting-edge research and to debate these issues with others who share the same interests.

To achieve breadth in the discipline of political science is our second aim. Political science covers many different subjects, including the philosophy and ethics of exercising power and the history of political ideas (political theory); the operation of politics in the United States (American politics); the diversity of political regimes, institutions, and behaviors in the contemporary world and the significance of these divergences (comparative politics); and, finally, the interaction among international actors, the causes of war and peace, and the roots of global poverty and prosperity (international relations). Political scientists work in and across these disciplinary subfields using a large and varied tool kit: They use qualitative methods such as historical and archival research, fieldwork, interviews, and textual analysis, and various quantitative approaches including statistical analysis, formal modeling, and experiments. Our goal is to assure that concentrators grasp the main approaches and topics in the discipline by requiring concentrators to take at least one course in each of the traditional subfields, and by requiring GOV 50: Data or a higher-level methods course.

Third, we encourage students to chart a distinctive path through political science. We offer students the possibility of satisfying their particular intellectual bent and curiosity through a cluster of electives and at least one required seminar. Students have the freedom to determine their own path through the diverse Government curriculum, but we want to ensure that their choices are thoughtful and informed. Therefore, students begin to work on a particular plan to navigate the rich resources in the department in sophomore spring in consultation with their sophomore tutor and concentration advisor. During the next four semesters, students refine this plan with the help of advisors and faculty. Often, students cluster electives either in a subfield, a geographical area, or a particular methodological approach, and enroll in a seminar that allows them to think about framing a research question using their chosen focus.

Finally, we encourage students to produce as well as consume political science research. All concentrators are required to take at least one seminar in which they produce a research paper or other project under the guidance of teaching faculty. They are also welcome to fulfill one elective requirement through GOV 92R: Faculty Research Assistantship for credit. Those who choose the honors track (which requires a thesis) are normally expected to take one of the research practice courses: GOV 51: Data Analysis and Politics, GOV 62: Research Design, Qualitative, or Mixed Methods, or GOV 63: Topics and Resources in Political Theory. Honors concentrators often use multiple seminars to explore possible research directions for

their senior thesis, a substantial work of independent scholarship that serves as the capstone of their experience in Government.

Government as a Secondary Field
Many students pursue a secondary field in Government, which requires five courses, with no more than two at the foundational level (for example, GOV 10, GOV 20, GOV 30, or GOV 40). For examples of how students have used secondary fields in Government, students should consult the Secondary Field page on our website at https://www.gov.harvard.edu/undergraduate/academics/secondary-field/.

Government as Part of a Joint Concentration
Government offers students the possibility of a joint concentration, with Government as either the primary or allied concentration. For more about this option, see the Joint Concentration page on our website at https://www.gov.harvard.edu/undergraduate/academics/joint-concentration/ and note the special requirements for joint concentrators listed below.

LEARNING OBJECTIVES

Our first goal is to make all students aware and critical of their unexamined assumptions about politics. Learning to think independently and with some critical distance, to analyze arguments—theoretical, empirical, and rhetorical—to weigh alternatives, to write cogently, and to speak persuasively is essential for responsible global citizenship as well as professional careers. To achieve breadth in the discipline of political science is our second aim. Third, we encourage students to chart a distinctive path through political science. We offer students the possibility of satisfying their particular intellectual bent and curiosity through a cluster of electives and at least one required seminar. Finally, we encourage students to produce as well as consume political science research.

REQUIREMENTS

Government
Basic Requirements: 10 courses (40 credits)

1. *Required courses:*
    a. Field requirements: One course in each of the four subfields. These need not be foundational courses (i.e., GOV 10, GOV 20, GOV 30, and GOV 40). See "Other Information," below. The four subfields are:
        i. Political Thought and Its History.
        ii. Comparative Government.
        iii. American Government.
        iv. International Relations.
    b. Research methods requirement: Students can take either a Government methods course (such as GOV 50 or GOV 51), or a statistics course (for example, STAT 100 or STAT 104) to fulfill the research methods requirement. If a statistics course is substituted, one more Government elective is required.
    c. Government electives: Three additional courses in Government (four if substituting STAT 100 or STAT 104 for GOV 50). Up to two may be from a list of preapproved Harvard Kennedy School courses, which can be found at https://www.gov.harvard.edu/undergraduate/academics/concentration-requirements/courses-at-hks/.
    d. Tutorial: GOV 97: Sophomore Tutorial. Letter-graded.
    e. Seminar: One undergraduate seminar (GOV 94).
2. *Thesis*: Not required.
3. *General examination*: Not required.
4. *Other information:*

a. Pass/fail and SAT/UNS: Only one Government elective may be taken pass/fail or SAT/UNS. All other courses counted for concentration requirements must be letter-graded. Courses to fulfill subfield, seminar, or methods requirements must be taken for a letter grade.
b. GOV 91R: Supervised Reading and Research cannot count toward the Government concentration requirements.
c. Regarding the "Field Requirements" in item 1a, the courses that count for each subfield in any given academic year may be found by searching my.harvard as follows:
    i. Political Thought and Its History: keyword search "theory_subfield"
    ii. Comparative Government: keyword search "comparative_subfield."
    iii. American Government: keyword search "american_subfield."
    iv. International Relations: keyword search "ir_subfield."

Government
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Field requirements: One course in each of the four subfields (same as **Basic Requirements**).
    b. Research methods requirement: GOV 50: Data or an alternative (same as **Basic Requirements**). GOV 51 is also encouraged for thesis writers.
    c. Electives: Three additional courses in Government (four if substituting a statistics course for GOV 50). Up to two courses may be from a list of preapproved Harvard Kennedy School courses at https://www.gov.harvard.edu/undergraduate/academics/concentration-requirements/courses-at-hks/.
    d. Tutorials:
        i. Sophomore year: GOV 97. Letter-graded.
        ii. Senior year: GOV 99R (two terms), devoted to the writing of a thesis. Graded SAT/UNS. Students should consult the Assistant Director of Undergraduate Studies for more information.
    e. Seminars: Two seminars, ordinarily a research practice course (GOV 51, GOV 62, or GOV 63) and at least one GOV 94 undergraduate seminar. Students may substitute a second GOV 94 seminar for a research practice course.
2. *Thesis*: Required of all candidates for honors. A student may not earn credit for the second semester of GOV 99R without submitting a completed thesis. To earn credit for the first semester of GOV 99R, a student (1) must submit at least 30 pages of written work that is acceptable to the thesis advisor and (2) must be enrolled and actively participating in the senior thesis tutorial.
3. *General examination*: An oral examination is required under certain circumstances.
4. *Other information:*
    a. Pass/fail and SAT/UNS: Only one Government elective may be taken pass/fail or SAT/UNS. All other courses counted for concentration requirements must be letter-graded. Courses to fulfill subfield, seminar, or methods requirements must be taken for a letter grade.
    b. GOV 91R: Supervised Reading and Research cannot count toward the Government concentration requirements.

Joint Concentration with Government as the Primary Field
Requirements: 11 courses in Government (44 credits)

1. *Required courses:*
    a. Government field requirements: one course in each of the four subfields (same

as **Basic Requirements**).
    b. Tutorials:
        i. Sophomore year: GOV 97. Letter-graded.
        ii. Senior year: GOV 99R (two terms), devoted to the writing of a thesis. Graded SAT/UNS. Students should consult with the Director of Undergraduate Studies for more information.
    c. Research methods requirement: Students can take either a Government methods course (such as GOV 50 or GOV 51), or a statistics course (for example, STAT 100 or STAT 104) to fulfill the research methods requirement.
    d. Electives: One additional course in Government.
    e. Seminars: Two seminars, ordinarily a research practice course (GOV 51, GOV 62, or GOV 63) and at least one GOV 94 undergraduate seminar. Students may substitute a second GOV 94 seminar for a research practice course.
2. *Thesis*: Required.
3. *General examination*: An oral examination is required under certain circumstances.
4. *Other information:* Properly qualified candidates for honors interested in pursuing a joint concentration must petition the Director of Undergraduate Studies for approval. Further details are available at https://www.gov.harvard.edu/undergraduate/academics/joint-concentration/.

Joint Concentration with Government as the Allied Field (Class of 2027 and Beyond)
Requirements: 8 courses (32 credits) in Government

1. *Required courses:*
    a. Government field requirements: one course in each of the four subfields (same as **Basic Requirements**).
    b. Tutorial: GOV 97: Sophomore Tutorial. Letter-graded.
    c. Research methods requirement: Students can take either a Government methods course (such as GOV 50 or GOV 51), or a statistics course (for example, STAT 100 or STAT 104) to fulfill the research methods requirement.
    d. Seminars: Two seminars: Ordinarily, a research practice course (GOV 51, GOV 62, or GOV 63) and at least one GOV 94 undergraduate seminar. Students may substitute a second GOV 94 seminar for a research practice course.
2. *Thesis: Required.*
3. *General examination*: An oral examination is required under certain circumstances.
4. Other information: Properly qualified candidates for honors interested in pursuing a joint concentration must petition the Director of Undergraduate Studies for approval. Further details are available at https://www.gov.harvard.edu/undergraduate/academics/joint-concentration/.

STUDY ABROAD

The Government Department encourages study abroad for a term, and it is also possible to study abroad for an entire academic year. The Government Department is flexible in granting credit toward the concentration requirements for political science courses taken elsewhere, although all such courses must be discussed with, and approved by, the Director of Undergraduate Studies (DUS). Ordinarily, a student can count two courses taken abroad in any one semester toward Government concentration requirements. Students must receive a grade of B- (or equivalent) or higher in order to receive credit for courses taken abroad.

SUMMER SCHOOL

Generally, students can count only one Harvard Summer School government course, chosen from a list of preapproved courses, toward their Government concentration requirements.

More information as well as the list of preapproved courses can be found at https://www.gov.harvard.edu/undergraduate/academics/summer-school-policy/.

ADVISING

For information and advice about the Government concentration, students are encouraged to meet with the Director of Undergraduate Studies and with the concentration advisors in the Houses. Students should consult the department's website at https://www.gov.harvard.edu/undergraduate/ for a listing of advisors and office hours.

HOW TO FIND OUT MORE

For further information concerning a concentration in Government, students may contact the Government Undergraduate Program Office at 617-495-3249 and undergrad@gov.harvard.edu. The office, located at CGIS Knafel Building, Room K151, 1737 Cambridge Street, is open Monday through Friday, 9:30 a.m.–5 p.m. Additional information is also available on the department's website at https://www.gov.harvard.edu/undergraduate/.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Government	384	347	333	324	305	313	252	364	398	445
Government + another field	2	3	12	16	19	15	10	32	43	30
Another field + Government	2	4	16	22	19	15	24	33	39	22

History

What is history, and how do we view the world?
Historical reasoning is a core competency in the education of citizens and citizen-leaders. Over the course of the concentration, History students encounter new ideas and new approaches to understanding the past and reckon with concepts that challenge their assumptions. As concentrators gain the skills of historical research, they contribute to our collective project of better understanding our pasts and using this knowledge to imagine a more just and egalitarian society. From this transformative work we hope that History concentrators will gain a deeper sense of what they value and of how they might translate these values into a fulfilling and impactful life after Harvard.

What is it like to study history at Harvard?
The History concentration combines rigorous training with flexibility, facilitates close student engagement with our diverse faculty, and solicits regular student input. The History Department faculty teach courses that seek to unsettle students—encouraging them to confront unfamiliar ideas, cultures, and eras—and to question their own assumptions about the world and their place in it. Interdisciplinarity is essential to historical practice. Our students familiarize themselves with the methods and theoretical assumptions of other disciplines, even while learning how these methods and theories are just as much products of history as the questions they were developed to address.

How can I decide if History is the right concentration for me?
The best way to explore the History concentration is to take a course in the History Department. All of our courses are open to non-concentrators, and the majority of them do not have prerequisites. For Fall 2024 we are introducing a new gateway course open to all students, “History 10: The History of the Present,” that will examine the historical origins of some of our most urgent contemporary issues. The department also has a series of foundational courses (the History “101s”) that are especially welcoming to first-year students and to pre-concentrators. You do not need prior knowledge of the time or place studied to take one of these courses, nor are you expected to have done any prior college-level history. History 10 and the “101s” are wonderful gateways into the department.

The department has also developed a series of thematic and career course clusters to provide students with additional pathways into the concentration. These clusters can help guide your course selections, depending on your intellectual interests or the future career you might be considering. Students can explore History foundations courses and thematic and career course clusters on our undergraduate webpage at https://history.fas.harvard.edu/undergraduate-programs.

Is a thesis required?
History has two tracks, the standard program and the honors program. They differ only in that the honors track requires a thesis as well as enrollment in History 99, our yearlong thesis seminar. Our advising programs support students who begin preliminary thesis work as early as junior year, and numerous college fellowships provide funding for summertime research. The thesis program itself is flexible enough that students can decide as late as senior fall whether to write a thesis. Meanwhile, the requirement to produce a substantial research paper in one of your History seminars ensures that you will produce an original work of historical scholarship that can be the capstone to your undergraduate academic career.

What are the alternatives to the full concentration?
The department offers several alternatives to a full concentration in History: a joint

concentration with History and a robust secondary field in History. In addition, our faculty are well represented in the General Education course offerings and in interdisciplinary courses within a variety of disciplines. Hundreds of non-concentrators every semester take classes from History faculty, gaining an introduction to the critical and creative skills historians emphasize. No matter what interests you, History has something to offer—everything has a history, and our department teaches you how to recover, re-create, and interpret it.

LEARNING OBJECTIVES

The study of history holds vital lessons and skills: to appreciate change over time; to understand contingency, complexity, and diversity of perspectives; to analyze sources closely; to research deeply; to write clearly; and to speak with confidence. The empathy inherent in historical work grants concentrators the ability to imagine multiple perspectives and to dialogue across differences. In a polarized society, history models critical but responsible intellectual engagement; shifting debates and disagreements into the past tense provides students with the language to disagree rigorously and respectfully about matters of the present. In this way, history is a civically engaged discipline, and concentrators are able to relate their education to life and the world. Graduates of the department consistently tell us that they find the skills they developed as historians to be useful beyond their lives as students. Our department teaches tomorrow's leaders why yesterday matters.

REQUIREMENTS

History
Basic Program Requirements: 10 courses (40 credits)
Thesis Program Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. One course that focuses significantly on the history of North America (Mexico, Canada, and the U.S.).
    b. One course that focuses significantly on histories beyond North America.
    c. One course that focuses significantly on historical societies before 1750.
    d. Four additional courses in History, to be chosen in consultation with the student's House advisor, who signs the Crimson Cart in my.harvard. Each concentrator may petition the Director of Undergraduate Studies (DUS) to receive History credit for one non-departmental course. This "related field" might be a course of a historical nature taught by other faculty in the College, or a course providing auxiliary knowledge or skills related to the concentrator's historical interests.
2. *Tutorials*:
    a. HIST 97 (offered in spring): Taken during the first term in the concentration. Required and letter-graded.
    b. Two seminars: Ordinarily taken by the end of the second term of the junior year. Required and letter-graded. In at least one of these seminars, students must write a substantial research paper. For students wishing to write a senior thesis, that research paper must be at least 20 pages long and involve primary source research.
    c. Basic Program: No thesis.
    d. Thesis Program: HIST 99. Yearlong eight-credit course. Required and graded SAT/UNS.
3. *General examination*: Oral examination for highest (departmental) honors candidates.
4. *Other information:*
    a. History courses: The courses listed under "History" in my.harvard (including cross-listed courses), as well as other courses taught outside the department by members of the Department of History, are available for History credit

without petition. Courses of a historical nature taught by other faculty in Harvard College in related fields may be taken for History credit by petition to the DUS.

b. SAT/UNS: Courses, aside from HIST 99, taken on a SAT/UNS (pass/fail) basis may not be counted for concentration credit.
c. Study abroad: The History Department encourages study out of residence and urges interested students to consult the DUS about their programs at their earliest convenience. Additional information is available on our website at http://history.fas.harvard.edu/main-concentration-study-abroad.
d. First-Year Seminars: First-Year Seminars taught by members of the History Department count toward concentration credit; as a general rule, other First-Year Seminars do not. In case of uncertainty, students should contact the Undergraduate Office.

History
Joint Concentrations

History offers preapproved joint concentrations in African and African American Studies, Anthropology, East Asian Studies, Near Eastern Languages and Civilizations, and Ancient (Greek and Roman) History. Joint concentrations with other fields are also increasingly common and are designed in consultation with both departments. Students wishing to discuss an individualized joint concentration should consult Derek Penslar, DUS, or Carla Heelan, Assistant Director of Undergraduate Studies (ADUS).

Students whose interest in African and African American studies, anthropology, East Asian studies, Near Eastern languages and civilizations, or ancient (Greek and Roman) civilizations is primarily historical in character should consult the relevant joint concentration that has been preapproved in each of these areas. Students pursuing one of the preapproved joint concentrations will complete one-half of their tutorial work in the History Department (HIST 97) and the other half in the allied program. Students take a History seminar, typically in junior year, in which they write a 20-page research paper based on primary sources; in addition, they take a seminar or junior tutorial in the joint field as specified in each case. In the senior year, joint concentrators write an honors thesis, an original work of research that is advised and evaluated in both concentrations and that typically focuses on some aspect of African, African American, East Asian, Near Eastern, or Ancient Greek and Roman history, or is located at the intersection of history and anthropology (archaeological or social).

All joint concentrators are required to take 14 courses in total split between the two departments, including the senior thesis tutorial in History or the joint field if History is the allied field. For further information on our joint requirements, students should see the department website at https://history.fas.harvard.edu/joint-concentrations.

ADVISING

Students are encouraged to come to the History Undergraduate Office in Robinson 100 for information and advice regarding the History concentration. It is particularly important for anyone considering a concentration in History to make an appointment with the Director of Undergraduate Studies or the Assistant Director of Undergraduate Studies—the sooner, the better, and in any case in advance of the concentration deadline (mid-November of sophomore year). For 2023–24 the Director of Undergraduate Studies is Professor Derek Penslar; in 2024–25 the DUS will be Professor Ian Miller. The DUS and the Assistant Director of Undergraduate Studies both hold weekly office hours and see students throughout the year. Each House has a History advisor on staff (resident or nonresident), and each History concentrator who requests one will be assigned a faculty advisor.

EXPLORING HISTORY

First-year students interested in exploring History as a concentration are encouraged to take two or more of the following in the pre-concentration period: a History "101," (these include General Education courses taught by History faculty), a First-Year Seminar led by a member of the department, any lecture course designated as a broad survey in the department, and/or a seminar in the fall of sophomore year.

For lists of History Department Student Advisory Board members and House advisors in History and other useful links, students should visit the History Department's website for undergraduates at https://history.fas.harvard.edu/undergraduate-programs.

RESOURCES

In addition to the advising resources listed above, the History Department's Widener Library liaisons Fred Burchsted (burchst@fas.harvard.edu) and Anna Assogba (assogba@fas.harvard.edu) have been working with the History Department for several years. They welcome and invite students to email them whenever they have questions about any library matter. These liaisons answer questions via email and help students in finding sources for papers, and they are happy to meet with students in person to talk about their work.

HOW TO FIND OUT MORE

Students should visit the department's website at https://history.fas.harvard.edu/ for more information about the History concentration. The office is open Monday–Friday, 8:30 a.m.–4:30 p.m., and may be reached by telephone at 617-495-2157. Students may sign up for an appointment with the Director of Undergraduate Studies or Assistant Director of Undergraduate Studies at the History Department's website for undergraduates at https://history.fas.harvard.edu/undergraduate-programs. Alternatively, students can contact the DUS (historydus@fas.harvard.edu) or ADUS (cmheelan@fas.harvard.edu) directly.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
History	159	152	146	136	128	118	90	132	141	138
History + another field*	11	6	7	9	10	10	10	13	14	13
Another field + History**	9	10	10	5	9	6	9	15	18	18

History & Literature

History & Literature is the oldest concentration at Harvard. At the heart of History & Literature are individual and small-group tutorials that provide dedicated mentoring and student-centered opportunities to pursue topics of interest in depth. Beyond the core History & Literature tutorials, concentrators take courses across a wide variety of departments and programs for concentration credit.

Students take a History & Literature tutorial each semester. The sophomore tutorial—taught in the sophomore spring by two instructors, one a historian, the other a literary scholar—introduces students to interdisciplinary methods and explores topics in depth. In the fall semester of the junior tutorial, small groups of students collaboratively design a syllabus with the guidance of an instructor. In the junior spring, students focus on researching and writing the junior essay. The senior tutorial involves one-on-one instruction, both in the fall and the spring, primarily devoted to researching and writing the thesis.

Students work closely with concentration advisors to select a field of study at the end of sophomore year. These fields are American Studies, Ethnic Studies, European Studies, Latin American Studies, the Modern World, the World Before 1800, and the Medieval World. In the junior and senior years, the fields of study provide a structure to ensure that concentrators gain knowledge that is broad as well as deep.

Many concentrators choose to study abroad as a means to augment their work in the concentration. Advisors in the concentration work closely with students who elect to study abroad to help craft Plans of Study that integrate courses taken out of residence.

Students interested in History & Literature are encouraged to schedule an advising meeting. One of the best ways to learn what History & Literature has to offer is to enroll in one of our HIST-LIT 90 seminars or HIST-LIT 10 lectures, which are all open to non-concentrators.

History & Literature welcomes joint concentrations, double concentrations, and secondary fields, and it aspires to make the integration of two concentrations as seamless as possible.

LEARNING OBJECTIVES

History & Literature teaches concentrators how to grow as writers and researchers, and the concentration is designed to teach students to think in interdisciplinary ways. Students develop skills in close reading, identifying and analyzing primary and secondary sources, posing research questions, conducting original research, making arguments, and communicating clearly and persuasively.

REQUIREMENTS

History & Literature
Concentration Requirements: 14 courses (56 credits)

At the end of sophomore year, each History & Literature concentrator selects a field of study and submits a Field Worksheet. Revised worksheets are submitted in the junior and senior years. A regularly updated list of courses in various fields that count toward the concentration is available on the History & Literature website at https://histlit.fas.harvard.edu/courses-count. Courses in the social sciences on subjects related to the student's field may be accepted for concentration credit by the Committee on Instruction by petition.

1. *Required courses*:
    a. At least eight courses in the field of study, balanced between history and literature. Specific period requirements exist in several fields of study. Details on fields of study and their requirements are available on the History & Literature website at http://histlit.fas.harvard.edu/fields. Generally, courses must be letter-graded to count for concentration credit.
    b. Language requirement: Students must take at least one course in which they read sources in a language other than English. A list of ways to fulfill the language requirement, including by earning a language citation, is available on the History & Literature website at http://histlit.fas.harvard.edu/language-requirement.
2. *Tutorials*:
    a. Sophomore year: HIST-LIT 97 (one course). Required. Letter-graded.
    b. Junior year: HIST-LIT 98 (two courses). Required. Letter-graded.
    c. Senior year: HIST-LIT 99 (two courses). Required. Graded SAT/UNS.
3. *Junior essay*: A required 6,000-word research paper is the focus of the second semester of the junior tutorial.
4. *Senior thesis*: A 10,000- to 20,000-word thesis is expected of all concentrators and is required for concentration honors. A student enrolled in HIST-LIT 99 who does not complete a thesis can receive credit for this course by completing a paper in the relevant field.
5. *Senior honors oral examination*: A one-hour oral examination is required of all concentrators, except those who do not submit a thesis by the deadline for consideration for honors.
6. *Other information:*
    a. Fields of study:
        i. American Studies.
        ii. Ethnic Studies.
        iii. European Studies.
        iv. Latin American Studies.
        v. Modern World.
        vi. World before 1800.
        vii. Medieval World.
    b. Subfields: In the junior year, concentrators may propose subfields, which consist of two or three courses that would not otherwise count toward the student's field of study. Students will be examined on the subfield during the senior oral exam.
    c. Study abroad: History & Literature encourages study abroad. Generally, students will take an additional course that counts for concentration credit to replace the tutorial they miss while abroad. Students who successfully complete the junior essay process while studying abroad in the junior spring will receive a one-course reduction in the 14 total required concentration courses.
    d. Joint concentrations: History & Literature allows joint concentrations, but it must be the primary concentration in any joint Plan of Study, except when the student plans to pursue a creative senior project.
    e. Independent study: With the permission of the Director of Studies, concentrators may be allowed to take HIST-LIT 91R for credit.

ADVISING

Each student is assigned to a tutor who also functions as that student's academic advisor. The advisor and student work closely together to assemble a Plan of Study that fits the student's intellectual interests and fulfills concentration requirements. Each student is also

assigned a concentration advisor who will be a resource for the student through every stage of the concentration. History & Literature's personalized academic advising gives students a flexible, individualized educational experience.

HOW TO FIND OUT MORE

Students are invited to visit the History & Literature Office in the Barker Center, Room 122. Visit http://histlit.fas.harvard.edu/ or email histlit@fas.harvard.edu to schedule an appointment with the Director of Studies and other concentration advisors.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
History & Literature	126	128	142	147	144	138	74	102	102	80
History & Literature + another field*	8	7	13	24	36	42	28	29	39	30
Another field + History & Literature	0	0	0	0	6	8	6	8	8	2

* History & Literature must be the primary concentration in any joint Plan of Study, except when the student intends to pursue a creative senior project. In that case, the department providing artistic training may be the primary concentration. Students should see the Director of Studies with any questions about joint concentrations.

History and Science

The History and Science concentration at Harvard is a flourishing interdisciplinary field of study. We are also a small and friendly concentration with a real sense of community, and we pride ourselves on finding ways to nurture students' individual interests through a flexible curriculum and opportunities for one-on-one instruction, internships, behind-the-scenes museum and exhibition design opportunities, and research assistantships with faculty.

Why should I consider History of Science?
History and Science may be a good choice for you if:

1. You would like to do significant work in some area of science (any field taught in the College) and combine it with historical, ethical, and social analysis of how science, medicine, or technology works in the world.
2. You are interested in the ways in which science, medicine, or technology is affected by (and in turn affects) important issues in politics, industry, and policy—whether climate change, the teaching of evolution in public schools, the patenting of genes and new forms of life, and more.
3. You are interested in big questions—the existence of God, the nature of free will, the roots of human morality, and more—and would like to understand the ways in which science has shaped or is shaping the ways in which we think about these questions.
4. You are considering attending medical school and would like a concentration that allows you to count many of your pre-med science requirements, even as you take classes and do advanced research in the history of medicine, medical anthropology, and health policy.
5. You are interested in computer science or are considering a career in engineering or information technology, and would like a concentration that allows you to count many computer science and engineering classes for concentration credit, even as you take classes and do advanced research in the history and social analysis of technology, computer science, and the world of big data.
6. You are interested in health or science policy, including problems of global health and health inequities, and want a concentration that will offer you an interdisciplinary path of study for engaging with the issues.
7. You are—or aspire to be—a person who is equally literate in the world of the sciences and the world of the humanities and the social sciences.
8. You value a concentration that cares deeply about teaching, provides abundant opportunities for interaction with faculty, and will rigorously train you in essential analytic, presentation, and research skills that will be valuable for you, no matter what career you choose to pursue.

How is the concentration structured?
The concentration has a two-track structure that provides students with high levels of flexibility. Both tracks offer an honors and a non-honors option.

The Science and Society track is designed for students who have an interest in doing significant course work in an area of science but who also want to study how science develops and affects the world: how it relates to industry, policy, politics, and the broader culture. Students can both do science and analyze how science functions in the world of human affairs.

The History of Science track does not require students to take science courses beyond the level mandated by General Education (though some may choose to do so and receive

concentration credit). It offers students the possibility of studying the history and social relations of science more broadly. By taking a combination of courses from our department and outside of it, students can learn how sciences as diverse as theoretical physics and economics interact with other areas of culture such as literature, film, art, or government.

Concentrators in History and Science generally combine course work in the history of science, medicine, or technology (broadly defined) with course work focused in any area of science taught in the College. Our students also often take courses for concentration credit in global health, science and religion, medical ethics, sociology of science, philosophy of science, anthropology of medicine, and more. Tutorials are aimed at introducing concentrators to some of the most exciting questions in the field and training them with the reading, research, and writing skills they need to do original research of their own. By the time of graduation, all our concentrators possess advanced social science research skills, and often produce original academic work of very high quality.

The concentration also offers three special foci, or paths, through the program: (1) Medicine and Society, (2) Mind, Brain, Behavior, and (3) Technology, Information, and Society.

1. Medicine and Society offers pre-medical students an opportunity to combine the science work required of them for medical school with disciplined historical and social science analysis of medicine, health care, public health, and the allied medical sciences and medical technologies. This is an honors-optional Plan of Study.
2. The Mind, Brain, Behavior pathway offers students with interdisciplinary leanings an opportunity to join a College-wide community of undergraduates from six different departments who have interests in the neurosciences and their allied fields, all while focusing their own studies in a mix of psychology, brain science, and the history of the mind, brain, and human sciences. This is an honors-only Plan of Study, and all students must write a senior thesis.
3. Technology, Information and Society offers students an opportunity to combine course work in computer science and its allied fields (including select courses in Engineering Sciences) with courses in the history and social study of technology, computing, and information science. This is an honors-optional Plan of Study. Students are encouraged to write a senior thesis, but some may choose instead to take more advanced work in engineering or computer science during the course of their senior year.

What are the requirements?
Every concentrator will take HISTSCI 100, which is offered in the fall semester. In addition, every concentrator will take one semester of sophomore tutorial and one semester of junior tutorial, taught by faculty members and teaching fellows from the Department of the History of Science.

HISTSCI 97, the sophomore tutorial, is a hands-on course that introduces students to some of the most exciting and productive questions in the history of science, technology, and medicine, while developing critical reading, presentation, and discussion skills. Students work in groups to explore different aspects of a larger theme each week, and then share discoveries in sessions led by the faculty instructor. The course is further enhanced by a series of supervised individual group projects.

HISTSCI 98, the junior tutorial, is a course designed to train students in historical research, from how to work in archives to how to master relevant theoretical perspectives needed to think well about a research question. All students enrolled in this course are guided through an intense but supportive mentoring process that results in a 25-page independent research paper.

HISTSCI 99AB, the senior thesis tutorial, is an opportunity to spend a sustained period of time working on a research problem. Students choosing to write a senior thesis may be supervised by a faculty member or an advanced graduate student and are free to pursue a diverse range of topics. Many of our theses go on to win College awards, and some have even been published. Students are welcome to look through a collection of past and present senior theses, which are located in the Department of the History of Science.

What can graduates do with a degree in History and Science?
Our graduates frequently go on to successful careers in many areas, especially in jobs or forms of further professional training that require or value both technical and social scientific understanding of information science, biotechnology, medicine, health and global health, the law, and public policy. Many win prestigious fellowships that allow them to pursue further academic study. Our alumni have had this to say about their experience with History and Science:

> *It was the most flexible, versatile, and practical concentration on campus. It prepared me for both research endeavors within the halls of academia as well as the critical thinking skills needed for graduate degree work.*
>
> *History and Science is the best concentration of all time. Period. … Liberal arts educations aren't intended to "qualify" you for any particular job, but History and Science provides you with a truly broad-based, well-rounded education and teaches you novel ways of looking at the world which have been invaluable to me as a lawyer and as a human being.*

Employers are increasingly looking for graduates who are not just literate but also scientifically literate, not just technically skilled in a special subject but able to see the larger cultural, social, and policy implications and impact of scientific and technical developments. If this kind of breadth of vision appeals, our concentration may be right for you.

LEARNING OBJECTIVES

The Science and Society track is designed for students who want to combine history of science (and related areas) with training in a particular science area. We also have a special Medicine and Society option for pre-med students, as well as an option for students interested in Mind, Brain, Behavior or Technology, Information, and Society.

The History of Science track offers students the opportunity to take extra courses in the history of science and related areas, and does not require any specific science courses. This track allows for more connections to be built to other relevant social science fields, such as sociology, philosophy, anthropology, or government.

REQUIREMENTS

History of Science Track
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the Word: Introduction to the History of Science.
    b. Six courses in the history of science, medicine, and technology. These courses should be coherent, should be chosen in consultation with a departmental advisor, and should serve the student's goals. By senior year, some students may opt for a 2000-level course—with the approval of the instructor. One course, if desired, may consist of supervised reading and research beyond that

required by the tutorials.
    c. Two courses, normally outside the department, designed to allow students to connect special interests in the History of Science to relevant course work offered in other departments. Examples include certain courses in History, Film Studies, Sociology, the Comparative Study of Religion, Medical Anthropology, Philosophy of Science, and Literature.
2. *Tutorials:*
    a. Sophomore year: HISTSCI 97 (one course) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
3. *Thesis*: None.
4. *General examinatio*n: None.
5. *Other information:*
    a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Study abroad: Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence toward concentration requirements. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department.

History of Science Track
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to the History of Science.
    b. Six courses in the history of science, medicine, and technology. These courses should be coherent, should be chosen in consultation with a departmental advisor, and should serve the student's goals. By senior year, some students may opt for a 2000-level course—with the approval of the instructor. One course, if desired, may consist of supervised reading and research beyond that required by the tutorials.
    c. Two courses, normally outside the department, designed to allow students to connect special interests in the history of science to relevant course work offered in other departments. Examples include certain courses in History, Film Studies, Sociology, the Comparative Study of Religion, Medical Anthropology, Philosophy of Science, and Literature.
2. *Tutorials*:
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
    c. Senior year: HISTSCI 99AB (two terms) required. Preparation of senior honors thesis. Graded SAT/UNS.
3. *Thesis*: Required.
4. *General examination:* None.
5. *Other information:*
    a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Study abroad: Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence toward concentration requirements. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more

information.

History of Science Track
Honors Eligibility (Non-Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials*: Same as **Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a concentration GPA equivalent to the College-wide cutoff for degrees *magna cum laude* in the field. Concentration grade-point averages will be calculated from a student's 12 best courses that meet the requirements, including final semester grades.
    b. One graduate-level course: Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 2000-level) course taught by a member of the History of Science faculty or in an appropriate other department (for example, History). This requirement can also be met by completing a graduate-level track of work, as determined by the faculty instructor, offered within a 1000-level course. This requirement is normally fulfilled in the senior year.
    c. Determination of departmental honors: A degree recommendation of honors (not high or highest honors) will be awarded to students who meet these requirements.

Science and Society Track
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to the History of Science.
    b. Four courses in the history of science, medicine, and technology. If a student has chosen one of the special foci, these courses will normally be concentrated in that area of interest. Historically oriented courses dealing with science, medicine, or technology offered in other departments may be counted toward this requirement with the approval of the Director of Undergraduate Studies. By senior year, some students may opt for a 2000-level course, with the approval of the instructor. One course, if desired, may consist of supervised reading and research beyond that required by the tutorials.
    c. Four courses in science, all in one coherent field, though not necessarily in one department. No more than two may be introductory. Note: Courses may be drawn from any of the physical and biological or life sciences.
2. *Tutorials*:
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
3. *Thesis*: None.
4. *General examination:* None.
5. *Other information:*
    a. Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Students may elect to study abroad during their junior year. The department will count up to two approved courses taken out of residence toward concentration requirements. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more

information.

Science and Society Track
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to the History of Science.
    b. Four courses in the history of science, medicine, and technology. Normally, these courses will be concentrated in the student's area of interest. Historically oriented courses dealing with science, medicine, or technology offered in other departments may be counted toward this requirement with the approval of the Director of Undergraduate Studies. By senior year, some students may opt for a 2000-level course—with the approval of the instructor. One course, if desired, may consist of supervised reading and research, beyond that required by the tutorials.
    c. Four courses in science, all in one coherent field, though not necessarily in one department. No more than two may be introductory. Note: Courses may be drawn from any of the physical and biological or life sciences.
2. *Tutorials*:
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
    c. Senior year: HISTSCI 99AB (two terms) required. Preparation of senior honors thesis. Graded SAT/UNS.
3. *Thesis*: Required.
4. *General examination:* None.
5. *Other information:*
    a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Study abroad: Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

Science and Society Track
Honors Eligibility (Non-Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials*: Same as **Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a concentration GPA equivalent to the College-wide cutoff for degrees *magna cum laude* in the field. Concentration grade-point averages will be calculated from a student's 12 best courses that meet the requirements, including final semester grades.
    b. One graduate-level course: Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 2000-level) course taught by a member of the History of Science faculty or in an appropriate other department (for example, History). This requirement can also be met by completing a graduate-level track of work, as determined by the faculty instructor, offered within a 1000-level course. The requirement is normally fulfilled in the senior year.

c. Determination of departmental honors: A degree recommendation of honors (not high or highest honors) will be awarded to students who meet these requirements.

Science and Society Track
Medicine and Society
Basic Requirements: 12 courses (48 credits)

The Medicine and Society focus within the Science and Society track is appropriate for students considering a career in medicine, health sciences, or health policy, or who otherwise have a pronounced interest in the medical sciences. It allows students to combine course work in many of the scientific subjects required for medical school admission with a coherent program of courses that look at health and medicine from a range of historical, social scientific, and humanistic perspectives.

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to History of Science.
    b. Four courses in medical sciences. No more than two courses may be introductory. Courses should be relevant courses in chemistry, life sciences, the physical sciences, mathematics, molecular and cellular biology, organismic and evolutionary biology, neurobiology, or human evolutionary biology.
    c. Five additional courses:
        i. At least four courses must be in the history of medicine or its allied fields (including the life sciences, mind sciences, bioethics, and biotechnology) and must be taught by members of the Department of the History of Science. Up to two courses may be (though are not required to be) drawn from other disciplines concerned with the social, ethical, or humanistic analysis of medicine and health (for example, anthropology, economics, ethics, sociology).
        ii. One course may be an open-ended elective that can be fulfilled by taking any of the courses offered by the Department of the History of Science.
2. *Tutorials*
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
3. *Thesis:* None.
4. *General examination:* None.
5. *Other information:*
    a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Study abroad: Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.
    c. More information may be found in the *Guide to the Focus in Medicine and Society*, which is available on the History of Science Department website at https://histsci.fas.harvard.edu/.

Science and Society Track
Medicine and Society
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to History of Science.
    b. Four courses in medical sciences. No more than two courses may be introductory. Courses should be relevant courses in chemistry, life sciences, physical sciences, mathematics, molecular and cellular biology, organismic and evolutionary biology, neurobiology, or human evolutionary biology.
    c. Five additional courses:
        i. At least four courses must be in the history of medicine or its allied fields (including life sciences, mind sciences, bioethics, and biotechnology) and must be taught by members of the Department of the History of Science. Up to two courses may be (though they are not required to be) drawn from other disciplines concerned with the social, ethical, or humanistic analysis of medicine and health (for example, anthropology, economics, ethics, sociology).
        ii. One course may be an open-ended elective that can be fulfilled by taking any of the courses offered by the Department of the History of Science.
2. *Tutorials*
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
    c. Senior year: HISTSCI 99AB (two terms) required. Preparation of senior honors thesis; normally, this tutorial will deal with some historical question to do with medicine and health, broadly understood. Graded SAT/UNS.
3. *Thesis:* Required.
4. *General examination:* None.
5. *Other information:*
    a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Study abroad: Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.
    c. More information may be found in the *Guide to the Focus in Medicine and Society*, which is available on the History of Science Department website at https://histsci.fas.harvard.edu/.

Science and Society Track
Medicine and Society
Honors Eligibility (Non-Thesis) Requirements: 13 courses (52 credits)

1. *Required courses:* Same as **Basic Requirements**.
2. *Tutorials:* Same as **Basic Requirements**.
3. *Thesis:* None.
4. *General examination:* None.
5. *Other information:* Same as **Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a concentration GPA equivalent to the College-wide cutoff for degrees *magna cum laude* in the field. Concentration grade-point averages will be calculated from a student's 12 best

courses that meet the requirements, including final semester grades.

b. One graduate-level course: Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 2000-level) course taught by a member of the History of Science faculty or in an appropriate other department (for example, History). This requirement can also be met by completing graduate-level work, as determined by the faculty instructor, offered within a 1000-level course. The requirement is normally fulfilled in the senior year.
c. Determination of departmental honors: A degree recommendation of honors (not high or highest honors) will be awarded to students who meet these requirements.

Science and Society Track
Mind, Brain, and Behavior Sciences
Honors Eligibility Requirements: 14 courses (56 credits)

Students interested in integrating serious study of the sciences of mind, brain, and behavior with thoughtful attention to sociocultural, philosophical, and historical questions raised by those sciences may pursue a Mind, Brain, Behavior (MBB) focus in History and Science, developed in collaboration with the Standing Committee on Neuroscience and the University-wide Mind Brain Behavior Interfaculty Initiative (https://mbb.harvard.edu/). (MBB tracks are also available in Computer Science, Human Evolutionary Biology, Linguistics, Neuroscience/Neurobiology, Philosophy, and Psychology.) Requirements for this program are based on those of the Science and Society track, except that:

1. At least three of the five sociocultural courses should be historical in nature. Up to two courses may be taken in an auxiliary area, such as:
    a. Health and science policy.
    b. Medical anthropology.
    c. Religion and ethics.
    d. Philosophy of mind and behavior.
2. The four courses in science must include PSY 1: Introduction to Psychological Science; the remaining three courses in science must include MCB 80/NEURO 80: Neurobiology of Behavior (ordinarily in the sophomore year), and at least two advanced science courses that focus in one of the following areas (in some circumstances, courses from two areas may be combined):
    a. Cognitive systems.
    b. Psychopathology.
    c. Human evolutionary biology.
    d. Child development and the brain.
    e. Computational neuroscience.
    f. Neurobiology.
3. Students pursuing the MBB focus are also expected to participate in the University-wide MBB research milieu, including a non-credit senior year seminar for MBB thesis writers.

Science and Society Track
Technology, Information, and Society
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to the History of Science.
    b. Four courses in the history of science and technology designed to study the larger historical, ethical, and social implications of technology, engineering, and

information in the modern world. Two of the four courses may be taken in the General Education program, but two should normally be at least 1000-level courses in the History of Science Department. Normally, one of the courses may be taken in an area outside the primary focus (for example, history of medicine).

c. Five courses in computer science or an area of engineering taught in the College (Bioengineering, Electrical Engineering, Mechanical Engineering, Environmental Science and Engineering). No more than two may be introductory. Note: Normally, students will begin with a foundational course recommended by the relevant science department and then take a minimum of four additional courses.

2. *Tutorials*:
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
    b. Students may elect to study abroad during their junior year. The department will count up to two approved courses out of residence toward concentration requirements. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

Science and Society Track
Technology, Information, and Society
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. HISTSCI 100: Knowing the World: Introduction to the History of Science.
    b. Four courses in the history of science and technology designed to study the larger historical, ethical, and social implications of technology, engineering, and information in the modern world. Two of the four courses may be taken in the General Education program, but two should normally be at least 1000-level courses in the History of Science Department. Normally, one of the courses may be taken in an area outside the primary focus (for example, history of medicine).
    a. Five courses in computer science or an area of engineering taught in the College (Bioengineering, Electrical Engineering, Mechanical Engineering, Environmental Science and Engineering). No more than two may be introductory. Note: Normally, students will begin with a foundational course recommended by the relevant science department and then take a minimum of four additional courses.
2. *Tutorials*:
    a. Sophomore year: HISTSCI 97 (one term) required. Group tutorial. Letter-graded.
    b. Junior year: HISTSCI 98 (one term) required. Letter-graded.
    c. Senior year: HISTSCI 99AB (two terms) required. Preparation of senior honors thesis; normally, this will deal with some historical question to do with technology, information, and society, broadly understood. Graded SAT/UNS.
3. *Thesis*: Required.
4. *General examination*: None.
5. *Other information:*

a. Pass/fail: Two non-letter-graded courses, including relevant First-Year Seminars taught by department faculty, may count for concentration credit.
b. Study abroad: Students may elect to study abroad during their junior year. There is also the possibility of receiving two courses' worth of credit for participation in a summer study abroad program led by a member of the department. Students should consult with the Director of Undergraduate Studies or the Manager of Student Programs for more information.

Science and Society Track
Technology, Information, and Society
Honors Eligibility (Non-Thesis) Requirements: 13 courses (52 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials*: Same as **Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a concentration GPA equivalent to the College-wide cutoff for degrees *magna cum laude* in the field. Concentration grade-point averages will be calculated from a student's best 12 courses that meet the requirements, including final semester grades.
    b. One graduate-level course: Students must successfully complete (with a minimum B+ grade) at least one graduate-level (i.e., 2000-level) course taught by a member of the History of Science faculty or in an appropriate other department (for example, History). This requirement can also be met by completing a graduate-level track of work, as determined by the faculty instructor, offered within a 1000-level course. The requirement is normally fulfilled in the senior year.
    c. Determination of departmental honors: A degree recommendation of honors (not high or highest honors) will be awarded to students who meet these requirements.

ADVISING

Rebecca Lemov, Director of Undergraduate Studies, has overall responsibility for advising in the concentration. She is also available for individual consultation, and can be reached at rlemov@fas.harvard.edu. Students seeking advice on course selection, or any other aspect of the concentration, should first contact Alice Belser, the Manager of Student Programs, reachable at ajbelser@fas.harvard.edu. Faculty in charge of students' History of Science tutorials also function as advisors: Sophomores may consult with the faculty in charge of the sophomore tutorial; juniors with faculty in charge of the junior tutorial; and seniors with the senior tutorial course head.

For up-to-date information on advising in History and Science, students should see the History of Science website or the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

For more information, students can contact the Manager of Student Programs, Alice Belser, at ajbelser@fas.harvard.edu, 617-495-3742, Science Center 355, or the Director of Undergraduate Studies, Professor Rebecca Lemov, at rlemov@fas.harvard.edu, Science Center 363. The Department's main website is histsci.fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
History and Science	110	96	106	105	104	109	84	127	140	127
History and Science + another field	2	1	3	7	9	21	25	23	23	24
Another field + History and Science	0	0	0	1	1	3	2	2	1	3

History of Art and Architecture

The History of Art and Architecture concentration offers training in the historical interpretation and critical analysis of the visual arts and architecture.

The concentration is an effective core to a liberal arts education and not merely pre-professional training for future art historians working in the academy or in the museum. The history of art and architecture is virtually unique among academic disciplines in studying the products of societies in every part of the world over the entire span of human history, from Paleolithic cave paintings to the works of our closest contemporaries. Furthermore, the concentration develops skills of visual discrimination and verbal expression fundamental to many fields of inquiry and action.

Art history is itself a multifaceted discipline embracing many different methods, perspectives, and interests. Sometimes it deduces from works of art the time and place of their making, or the identity of their makers. Sometimes it examines how concepts, ideals, and sensibilities of people of the past are expressed in—and shaped by—their art. Sometimes it explores within large-scale fabrications (buildings, towns, cities) the dynamic between human and natural or technological worlds. These and other approaches are reflected in the teaching and scholarship of the History of Art and Architecture faculty.

Training in the critical analysis of art seeks to clarify the perception—and understanding—of how artworks relate to the techniques and materials used in their making, and to the environment in which they are seen. It also fosters visual literacy and the ability to make and explain judgments of cultural resonance, social impact, and formal coherence. Instruction in critical analysis is aided by the department's partnership with the Harvard Art Museums, one of the world's greatest teaching museums, comprising the Fogg, Busch-Reisinger, and Sackler museums. This offers students a unique opportunity for firsthand study of original works of art in many media. Other collections on campus commonly used in teaching include those of the Peabody Museum, the Harvard Museum of the Ancient Near East (HMANE), and Houghton Library. The Fine Arts Library also boasts expansive special collections of unique books, facsimiles, albums, prints, and photographs.

Concentration requirements ensure that students are well versed in both the historical and critical facets of the field. Generally, course work offers coverage of the history of art and architecture, while a sequence of small-group tutorials develops critical skills. For students with a special interest in architecture, the concentration offers courses on architectural history and urban planning, while also helping to advise in, and coordinate, relevant course work undertaken beyond the department. (Architecture Studies is a track within the concentration jointly administered by the History of Art and Architecture and the Graduate School of Design. The track has its own requirements, detailed below.) Students wishing to pursue other specific interests may receive advising from appropriate faculty as arranged by the Director of Undergraduate Studies.

Courses in the History of Art and Architecture undergraduate curriculum are structured as a three-tier system, consisting of a sequence of entry-level and field-specific introductory courses, upper-level courses, and tutorials.

HUMAN 20: A Colloquium in the Visual Arts and HAA 11: Landmarks of World Architecture are general, conceptual introductions (to world art from prehistory to the present, and to the history of world architecture, respectively), each of which could serve as a point of entry into the courses and concentration of History of Art and Architecture. Other double-digit lecture

courses in HAA, or those offered by HAA faculty through the program in General Education, are also suitable points of entry into the concentration.

Tutorials are small-group seminars that discuss the methodology of the discipline or examine a specific research topic in the discipline. These are intended to provide increasing expertise in critical and analytical thinking, and serve as a basis for independent senior research projects. The senior thesis offers a student the opportunity to apply in greater depth one or more of the methods and aims developed in courses and tutorials, although theses often deal with subjects not included in class work.

The concentration in History of Art and Architecture can be pursued in conjunction with several other concentrations, most commonly Art, Film, and Visual Studies; English; Anthropology; History and Literature; and Romance Languages. Together with the departments of the Classics, Near Eastern Languages and Civilizations, and Anthropology, the Department of History of Art and Architecture initiates students in the study of archaeology.

Requirements for all concentrators, joint and full, provide exposure to a variety of areas within the history of art and architecture, as well as allow for the selection of a major field focus.

Students concerned with joint concentration, credit for work done elsewhere, and late transfer into History of Art and Architecture should consult with the Director of Undergraduate Studies. All concentrators should arrange advising appointments with the Director of Undergraduate Studies at the start of each term. General advising about course offerings and concentration requirements is provided by the Undergraduate Program Coordinator.

LEARNING OBJECTIVES

Training in the critical analysis of art seeks to clarify the perception—and understanding—of how artworks relate to the techniques and materials used in their making, and to the environment in which they are seen. It also fosters the ability to make and explain judgments of quality and value.

REQUIREMENTS

History of Art and Architecture
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. Three courses from offered introductory courses, numbered HAA 1–89. GENED courses and First-Year Seminars taught by HAA faculty will also be considered. HUM 20: A Colloquium in the Visual Arts is also accepted toward this requirement. (First-year students considering the concentration should normally take at least one of these courses in their first year, although this is not a prerequisite for the concentration.)
    b. Three courses in a major field chosen from the list in item 5c, under “Other Information,” below.
    c. Three courses in at least two different areas outside the major field to be chosen from courses with two- or three-digit numeration or offerings by HAA faculty in the Program in General Education.
    d. One course of HAA 97R (detailed in “Tutorials,” below).
    e. Two courses of HAA 98 (detailed in “Tutorials,” below).
    f. Note: Of the 12 courses required, a distribution requirement must be fulfilled as follows:
        i. One course in items 1a, 1b, and 1c above must be in Asian, Islamic, African, or Latin American/pre-Columbian art and architecture if the

major field is in any area of European or North American art or architecture; or one course in European or North American art or architecture if the major field is Asian, Islamic, African, or Latin American/pre-Columbian art and architecture.

ii. Two courses in two different periods other than that of the major field.

iii. No more than five of the series of courses numbered HAA 1–89 may be taken for concentration credit, except with the approval of the Director of Undergraduate Studies. The balance should be tutorials and upper-level courses.

2. *Tutorials:*
    a. Sophomore year: History of Art and Architecture 97R (one term). Required. Letter-graded. This group tutorial is an introduction to the practice of art and architectural history through object-based teaching. The course is led by a graduate student, with individual weekly looking and discussion sessions led by faculty members in the department.
    b. Junior year: History of Art and Architecture 98 (two terms). Required. Letter-graded. This group tutorial consists of weekly meetings with a graduate student and regular reading and writing assignments. Under the 98-course number four topics are offered. Concentrators select two of the four topic offerings to fulfill their two terms of HAA 98 (98AR, 98BR, 98CR, AND 98DR). These include:
        i. HAA 98AR: Museums and Collections.
        ii. HAA 98BR: Architectural Methods.
        iii. HAA 98CR: Race and Aesthetics.
        iv. HAA 98DR: Writing Art History.
3. *Thesis*: None. (The thesis is required only for students who wish to be eligible for honors.).
4. *General examinations*: None.
5. *Other information:*
    a. History of Art and Architecture courses may include General Education courses given by members of the Department of History of Art and Architecture; all historical courses in Art, Film, and Visual Studies; courses in classical archaeology; selected courses in the Program in General Education, the humanities, anthropology, and African and African American studies; certain offerings of the Graduate School of Design; and certain First-Year Seminars. The designation of any course taken outside the department as a concentration course is subject to the approval of the Director of Undergraduate Studies. No more than two courses may be “imported” into the concentration by petition over and above those already cross-listed; exceptions for course work done as part of study abroad programs will be considered on a case-by-case basis.
    b. Pass/fail: Normally, no work taken pass/fail will be accepted as part of the concentration; however, the Director of Undergraduate Studies may make an exception for not more than one First-Year Seminar (graded SAT/UNS).
    c. Exceptions: Although it is highly preferred that concentrators meet their concentration requirements using courses taught by HAA faculty, there are rare circumstances where their academic goals within the concentration are better served by other courses. In these circumstances, concentrators can petition no more than two non-HAA courses into the concentration. For a course to be approved, it must meet the following criteria: The course's contents and focus must be primarily art-historical in nature; it must be instrumental in furthering a concentrator's academic goals; there must be no other similar course being offered by HAA faculty. Exceptions must be sought in writing from the Undergraduate Program Coordinator or Director of Undergraduate Studies. With the exception of first or second semester sophomores, approval should be sought prior to registering for the course.

d. Major fields: Students elect one of the categories below as an area of focus.
    i. African.
    ii. Black.
    iii. American.
    iv. Ancient.
    v. Architecture.
    vi. Baroque and Rococo.
    vii. Byzantine.
    viii. Chinese.
    ix. European 18th and 19th centuries.
    x. South Asian.
    xi. Islamic.
    xii. Japanese.
    xiii. Latin American/Pre-Columbian.
    xiv. Medieval.
    xv. Modern and Contemporary.
    xvi. Photography.
    xvii. Renaissance (Northern and Southern).

History of Art and Architecture
Honors Eligibility Requirements: 14 courses, including thesis (56 credits)

1. *Required courses:* Same as **Basic Requirements.**
2. *Tutorials:*
    a. Sophomore year: Same as **Basic Requirements.**
    b. Junior year: Same as **Basic Requirements.**
    c. Senior year: HAA 99A and HAA 99B (both terms). Graded SAT/UNS. In the fall term, HAA 99A includes several group tutorial meetings with the senior thesis advisor, and assignments are aimed at facilitating the research and writing of a senior thesis.
3. *Thesis*: Required. The thesis is ordinarily written as part of HAA 99A and HAA 99B. A student who does not complete the thesis but wishes to receive yearlong eight-credit or semester-long four-credit course credit for History of Art and Architecture 99 must submit a paper or other substantial piece of work. Only students with a minimum grade-point average of 3.00 within the concentration are eligible to write a thesis.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements.**

History of Art and Architecture
Joint Concentration Requirements: 10 courses, including thesis (40 credits)

1. *Required courses*:
    a. Two courses chosen from the introductory course offerings numbered History of Art and Architecture 1–89. GENED courses and First-Year Seminars taught by senior HAA faculty will also be considered. HUM 20: A Colloquium in the Visual Arts is also accepted toward this requirement.
    b. Two upper-level courses with three-digit numeration in a major field. **See Basic Requirements** under item 5d for a list of major fields.
    c. Two upper-level courses with three-digit numeration outside of the major field.
2. *Tutorials*:
    a. Sophomore year: HAA 97R: Sophomore Seminar (one term). **See Basic Requirements.**

    b. Junior year: HAA 98 (98AR, 98BR, 98CR, or 98DR): Junior Tutorial (one term). **See Basic Requirements.**
    c. Senior year: HAA 99A: (two terms). **See Honors Eligibility Requirements.**
3. *Thesis*: Required. HAA 99A and HAA 99B (both terms). The thesis should be registered in the primary concentration, with the approval of the allied concentration. Students should register for the 99 course of their primary concentration.
4. *General examination:* None.
5. *Other information:*
    a. Students applying for a joint concentration must confer with the Directors of Undergraduate Studies of each department to establish a well-conceived three-year plan. The Architecture Studies track is not eligible for joint concentrators. However, students in Architecture Studies may choose to undertake a double concentration.
    b. Exceptions: Although it is highly preferred that concentrators meet their concentration requirements using courses taught by HAA faculty, there are rare circumstances where their academic goals within the concentration are better served by other courses. In these circumstances, concentrators can petition no more than two non-HAA courses into the concentration. For a course to be approved, it must meet the following criteria: The course's contents and focus must be primarily art-historical in nature; it must be instrumental in furthering a concentrator's academic goals; there must be no other similar course being offered by HAA faculty. Exceptions must be sought in writing from the Undergraduate Program Coordinator or Director of Undergraduate Studies. With the exception of first or second semester sophomores, approval should be sought prior to registering for the course.

History of Art and Architecture
Architecture Studies Track
Basic Requirements: 12 courses

Architecture Studies is a track within the History of Art and Architecture concentration that is jointly administered by the Department of History of Art and Architecture and the Graduate School of Design. It enables the study of the history, theory, and practice of architecture within the spirit of a liberal arts education. It is not intended as a preprofessional architecture degree. Required courses include a sequence of introductory studio courses designed especially for the track, as well as a wide variety of courses in the history and theory of architecture, including courses offered at the Graduate School of Design.

Within the Architecture Studies track, concentrators study architecture within the broader context of art and visual culture. Interested students should contact the HAA Undergraduate Program Coordinator for further information.

Architecture stands at the intersection of creative imagination, practical realization, and social use, comprising not only the material structures of human occupation, but also the dynamic processes that shape human action and experience. The Architecture Studies track integrates technical and humanistic methods of inquiry with written and visual modes of representation. It includes the study of architecture, cities, landscapes, designed objects, ornament, architectural photography, and material culture throughout the centuries and across the globe, as well as areas of special contemporary concern such as issues of sustainability and social justice, new forms of urbanism, and the use of digital media for visualization and analysis.

1. *Required courses:*
    a. HAA 11: Landmarks of World Architecture.

b. Three courses in architecture or a related field from offered courses numbered HAA 12–89 and HAA 100–199, adhering to the following guidelines: at least one course in Asian, Islamic, African, South Asian, or Latin American/pre-Columbian architecture; one course in any area of European or North American architecture; and one course in architecture before 1800. Students should contact the Undergraduate Program Coordinator for a list of approved courses.
c. HAA 96A: Architecture Studio 1: Transformations. This studio course may be taken sophomore or junior year. No prerequisites. Studio meets for six hours per week.
d. HAA 96B: Architecture Studio 2: Connections. This studio course may be taken junior or senior year. HAA 96A must be taken as a prerequisite. Studio meets for six hours per week.
e. One course of HAA 98 (see **"Tutorials" section below**).
f. One course of HAA 97R (see **"Tutorials" section below**).
g. Four courses that investigate the history and/or theory of architecture, environments, and design media chosen from HAA 100–299 or from recommended courses at the GSD as specified by the Director of Undergraduate Architecture Studies, with approval by the Director of Undergraduate Studies. No more than two of these four courses should be selected from GSD offerings. Courses at the GSD and courses in the HAA 200 range require permission of instructor. Other courses from the HAA or GSD rosters, or courses from other departments, may be substituted with approval of the Director of Undergraduate Studies.
h. Note: a list of approved GSD courses will be circulated each semester and made available on the HAA website.

2. *Tutorials*:
    a. Junior Year (one term): HAA 98 (98AR, 98BR, 98CR, or 98DR). Required. Letter-graded. Led by a graduate student, this tutorial offers concentrators the choice of several topics in the field of art and architectural history.
    b. Sophomore Year: HAA 97R (one term). Required. Letter-graded. HAA 97R is an introduction to the practice of art and architectural history through object-based teaching and is led by faculty members in HAA.
3. *Thesis*: None. (The thesis is required only for students who wish to be eligible for honors). (See **Honors Eligibility Requirements**.)
4. *General examinations*: None.
5. *Other information:*
    a. The designation as a concentration course of any course taken outside of those listed above or on the program's list of approved courses is subject to the approval of the Director of Undergraduate Studies. No more than two courses may be "imported" into the concentration by petition over and above those already cross-listed; exceptions for course work done as part of study abroad programs will be considered on a case-by-case basis.
    b. Pass/fail: Normally, no work taken pass/fail will be accepted as part of the concentration; however, the Director of Undergraduate Studies may make an exception for not more than one First-Year Seminar (graded SAT/UNS).
    c. The Architecture Studies track is not open to joint concentration. However, it is available to pursue as part of a double concentration. Students pursuing a secondary field in HAA are welcome to pursue architectural interests through HAA courses, but may not enroll in studio courses (HAA 92R, HAA 96A, or HAA 96B) or in GSD courses for secondary field credit.

History of Art and Architecture
Architecture Studies Track
Honors Eligibility Requirements: 14 courses, including thesis (56 credits)

1. *Required courses*: Same as **Basic Requirements.**
2. *Distribution requirements for areas of emphasis*: Same as **Basic Requirements**.
3. *Tutorials*:
    a. Sophomore Year: Same as **Basic Requirements.**
    b. Junior Year: Same as **Basic Requirements.**
    c. Senior Year: HAA 92R or HAA 99A. HAA 92R: Design Speculations provides support for students seeking to undertake a design project in lieu of a written thesis. Students in HAA 92R are encouraged to audit HAA 99A, which includes several group tutorial meetings with the senior honors advisor and assignments aimed at facilitating the research and writing of a senior thesis.
4. *Thesis*: Required. Ordinarily prepared as part of HAA 99A and/or HAA 92R. The student may choose to research and write a thesis or prepare a thesis design project. A student who does not complete the thesis but wishes to receive course credit for HAA 99A or HAA 92R must submit a paper or other substantial piece of work. In the spring semester, students in either course should register for HAA 99B, which allows them to receive the full eight credits for their yearlong efforts. Only students with a minimum grade-point average of 3.00 within the concentration are eligible to prepare a thesis.
5. *General examination*: None.
6. *Other information:* Same as **Basic Requirements.**

ADVISING

Departmental academic advising is provided by the faculty; by the Undergraduate Program Coordinator, Marcus Mayo; and by the Director of Undergraduate Studies, Professor Jennifer L. Roberts, who meets individually with concentrators to discuss course selection and tutorials (usually at the beginning of each term and by appointment at other times). Students working on a senior thesis are advised by the senior thesis advisor, Professor Carrie Lambert-Beatty.

Students are reminded, however, that they are each ultimately responsible for the fulfillment of concentration requirements and should check regularly on the status of their progress. Procedural information and advice are available throughout the year in the Undergraduate Office. Students should contact the Undergraduate Program Coordinator, Marcus Mayo, at 485 Broadway, Third Floor, Office 308, and/or at marcus_mayo@fas.harvard.edu. The senior thesis advisor is Professor Carrie Lambert-Beatty, and the Interim Director of Graduate Studies is Professor Felipe Pereda. The Department Chair is Professor Joseph Koerner.

RESOURCES

History of Art and Architecture concentrators benefit from the unusually rich University collections of Harvard's museums (in particular, the Fogg, Sackler, and Busch-Reisinger [the Harvard Art Museums], the Harvard Museum of the Ancient Near East [HMANE], and the Peabody Museum of Archaeology and Ethnology), which contain Western, Asian, and ethnographic art. Concentrators often have an opportunity to be involved in aspects of museum operations, working with curators and museum staff to research pieces in the collection and/or share in the mounting of exhibitions. Harvard's library holdings in art and archaeology include more than 250,000 books and more than 1.5 million photographs and slides.

The Museum of Fine Arts, the Isabella Stewart Gardner Museum, and the Institute of Contemporary Art (ICA) are three of Boston's great cultural resources. Entrance to these

institutions is free to undergraduates who show their Harvard ID cards at the door.

Two departmental funds are available to support senior thesis writers looking to travel as part of their research: The Matthew Abramson ’96 Travelling Fellowship and The Joseph Pulitzer Jr. ’36 Beneficiary Aid Fund. More information can be found on the Prizes, Grants, and Opportunities page on the department website.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
History of Art and Architecture	62	45	36	28	35	35	24	43	42	53
History of Art and Architecture + another field	3	0	0	4	7	8	7	6	6	6
Another field + History of Art and Architecture	4	8	7	6	6	8	6	8	6	7

Human Developmental and Regenerative Biology

Human Developmental and Regenerative Biology (HDRB) is a life science concentration that educates students on how human beings develop from a fertilized egg, are maintained and repaired throughout adulthood, and age till life's end. Students will be given a broad education in modern life sciences by studying important biological principles within the specific rubric of the developing and regenerating body. By adding an explicit and heavy emphasis on hands-on research opportunities in all four undergraduate years, HDRB will engage students with an interest in research and take advantage of Harvard's special strengths as a teaching college and research university.

To the extent that "translational" or "applied" research focuses on the application of discoveries made in model systems to humans, the HDRB concentration will embrace the opposite approach. Its emphasis will be on rigorous basic science with a focus on what the study of humans reveals about fundamental biology—and reciprocally, what a greater understanding of biology teaches us about ourselves. We believe that a fundamental understanding of how the human organism develops and maintains itself requires foundational knowledge in life sciences, chemistry, and physical sciences, which are in turn dependent on a fundamental knowledge of quantitative science. The requirements for the concentration reflect this view.

Students begin their study via foundational courses in the life sciences. Ordinarily, students next will enroll in Stem Cell and Regenerative Biology (SCRB) 10, which is a gateway course for the HDRB concentration. SCRB 10 introduces concentrators to concepts presented in depth by later electives. Students will delve deeper into more focused topics through at least three upper-level lecture or laboratory courses. SCRB 91R, a semester-long course of independent laboratory research, serves as the concentration tutorial and is ordinarily taken in the junior year. Honors candidates must also enroll in SCRB 99 and submit a thesis.

The framework of the concentration takes advantage of faculty strength in the Faculty of Arts and Sciences and Harvard Medical School through the Department of Stem Cell and Regenerative Biology. The curriculum provides a range of courses that will benefit students interested in medicine and biomedical research, as well as other fields in which a comprehensive understanding of human biology is needed.

LEARNING OBJECTIVES

The Human Developmental and Regenerative Biology concentration embraces basic science, including the following aspects of science today:

- Life science: HDRB students develop a profound understanding of human biology to gain a better understanding of disease, and they apply what they learn in laboratory settings. They learn important biological principles that give insights into human biology, specifically in development and regeneration.
- Foundational disciplines: We encourage our students to incorporate not only life science disciplines, but also chemistry, the physical sciences, and mathematics into their learning.
- Research: The HDRB concentration emphasizes hands-on research, both through course work and independent projects. Our students conduct experimental research in HSCRB laboratories throughout their undergraduate years, so they take full advantage

of Harvard's unique strengths as a teaching college and research university.
- Translation: The foundation our students gain in human biology and the mechanisms of disease dovetails with some of the "translational" research conducted in our labs, which is focused on clinical applications.

REQUIREMENTS

Human Developmental and Regenerative Biology
Basic Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Life sciences (two courses): LS 1A (or LPS A) and LS 1B.
    b. Quantitative science (one course): Above the level of MATH 1A. Ordinarily, this is fulfilled by MATH 1B, MATH 19A, MATH 21A, or equivalent. This can also be fulfilled with a course in statistics (STAT 102, STAT 104, STAT 107, STAT 110, STAT 115, or equivalent).
    c. Chemistry (one course): PHYSCI 1, PHYSCI 11, or equivalent.
    d. Human developmental and regenerative biology (one course): SCRB 10. Concentrators ordinarily take this course in the first semester of their sophomore year.
    e. Molecular biology (one course): MCB 60, SCRB 50, or equivalent.
    f. Physics (one course): PHYSCI 2 or equivalent.
    g. Organic chemistry (two courses): CHEM 17 and CHEM 27, or CHEM 20 and CHEM 30, or equivalent.
    h. Advanced courses: Three courses above the introductory level. Any of the 100-level SCRB courses may be used to fulfill these requirements. Certain advanced courses in Molecular and Cellular Biology, Chemistry and Chemical Biology, Human Evolutionary Biology, and Organismic and Evolutionary Biology may also be used to fulfill this requirement. Consult the concentration office for a list of courses categorized by area of inquiry.
    i. Research experience and tutorial: SCRB 91R. All concentrators are required to carry out at least one semester of supervised undergraduate research in the lab of a SCRB faculty member, Harvard Stem Cell Institute principal faculty member, or others with the permission of the Director of Undergraduate Studies. The concentration office has a list of approved faculty members. Concurrently with this research experience, students meet with their undergraduate research advisor twice per month to discuss progress in their course work and their research, and to review current literature in their field of inquiry. Ordinarily, these two components are combined in one term of SCRB 91R, usually taken in the junior year. Students carrying out thesis research ordinarily enroll in two terms of SCRB 99, one of which may be used to fulfill this requirement.
2. *Thesis*: None.
3. *General examination*: None.
4. *Other information:*
    a. Pass/fail: Courses counted for concentration credit may not be taken pass/fail.
    b. Advanced Placement credits may be counted provided the total number of concentration courses taken at Harvard does not fall below 12 courses and provided the student does not enroll in a course for which the Advanced Placement credit was granted. Advanced Placement credit for PHYSCI 1 may ordinarily be counted if the student begins with CHEM 17 or CHEM 20.
    c. Certain courses offered by the School of Engineering and Applied Sciences and by the Division of Medical Sciences may also be counted for concentration credit if appropriate.

d. Courses required to fulfill General Education subject areas may also be counted toward concentration credit where appropriate.

Human Developmental and Regenerative Biology
Honors Eligibility Requirements: 15 courses (60 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Thesis*: Required. Students enroll in two terms of SCRB 99 during the senior year.
3. *General examination*: None.
4. *Other information*: Same as **Basic Requirements**.

ADVISING

The Assistant Director of Undergraduate Studies for Human Developmental and Regenerative Biology, Dr. Amie Holmes, is available to concentrators and pre-concentrators to provide guidance on course selection, laboratory research, and the fulfillment of concentration requirements. To learn more, students should visit http://lifesciences.fas.harvard.edu/hdrb, contact Dr. Holmes at amie_holmes@harvard.edu or 617-496-1417, or visit https://lifesciences.fas.harvard.edu/hdrb-office-hours to schedule a one-on-one meeting.

For up-to-date information on advising in HDRB, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

The Director of Undergraduate Studies for HDRB is Dr. Bill Anderson, and the Assistant Director of Undergraduate Studies is Dr. Amie Holmes. For more information about the HDRB concentration, students should visit https://lifesciences.fas.harvard.edu/hdrb. Students may also contact Dr. Amie Holmes at Bauer Room 303, 7 Divinity Avenue, or via amie_holmes@harvard.edu and 617-496-1417, for more information.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Human Developmental and Regenerative Biology*	177	172	146	123	107	93	86	89	122	133
Human Developmental and Regenerative Biology + another field	0	0	0	1	4	1	0	0	0	2
Another field + Human Developmental and Regenerative Biology	0	1	0	0	0	0	0	0	0	0

* Human Developmental and Regenerative Biology does not participate in joint concentrations.

Human Evolutionary Biology

The concentration in Human Evolutionary Biology (HEB) allows students to explore all aspects of human biology from an evolutionary perspective. HEB engages students to develop knowledge and skills to investigate questions about how and why humans are the way we are and how the answers can help solve modern problems related to health, society, and environment. Research in human evolutionary biology is increasingly relevant to medical science, economics, linguistics, psychology, and political science. HEB concentrators explore human biology at every level, from genes to bodies to people in their ecological contexts, to answer questions such as:

- Why are humans the only apes that walk upright?
- Are humans adapted to eating mostly meat, mostly carbohydrates, or something else?
- How does our gut microbiota affect the amount of energy we get from the food we eat?
- How did human societies expand from small hunter-gatherer bands to vast nation states?
- Are culture and language unique to humans?
- What are the genetic bases for human traits?
- What does being aggressive, being a good parent, or gender identity have to do with hormones?
- How can an evolutionary perspective be used to improve obesity and diabetes?
- What has been the impact of environmental change on humans in the past and present?

HEB provides a general foundation in biology as part of the life sciences cluster of concentrations and offers a rigorous education in human biology while encouraging interdisciplinary work. We offer students two options: (1) the general degree in Human Evolutionary Biology and (2) HEB with the Mind Brain Behavior track. All students take LS 1A and LS 1B (or their equivalents) for a life science foundation, along with the HEB sophomore tutorial and a research seminar for applied learning in the field.

LEARNING OBJECTIVES

Human Evolutionary Biology provides a general foundation in human and organismic biology as part of the life sciences cluster of concentrations. All HEB concentrators receive a core introduction to basic evolutionary biology as well as human and nonhuman primate genetics, physiology, anatomy, behavioral biology (including cultural evolution), and paleontology. HEB courses also explore interactions between genes and environments and the co-evolution of genes and culture. We encourage our students to become involved in research in HEB, and we offer many small, advanced courses for students to work intensively with members of the faculty.

REQUIREMENTS

Human Evolutionary Biology
Basic Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. LS 1A and LS 1B or equivalents.
    b. HEB 97 (see Tutorial section below.)
    c. Three introductory-level HEB courses (HEB 10-89), selected from at least three subfields. Students should see the HEB course listing for subfield designations.
    d. Three intermediate- or advanced-level HEB courses (HEB 91R, HEB 100-199).

At least one of these courses must be a research seminar (HEB 91R or HEB 100-139).

e. Four additional courses in related fields, to be chosen from Integrative Biology, Molecular and Cellular Biology, Neurobiology, Chemistry, Physical Sciences, Math, Statistics, Computer Science, Archaeology, and approved courses from Psychology, History of Science, and more.

2. *Tutorials:*
    a. Sophomore tutorial (HEB 97), ordinarily taken in the spring term of the sophomore year. This seminar introduces the major issues and methods of human evolutionary biology through weekly readings and discussions, and provides a shared experience for all concentrators.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. Pass/fail: Ordinarily, all courses must be taken for a letter grade. All tutorials are letter-graded. First-Year Seminars and other courses that are appropriate for concentration credit and that are graded SAT/UNS—such as courses taken while studying abroad—may count toward the concentration with the approval of a concentration advisor.
    b. Languages: No requirement.

Human Evolutionary Biology
Honors Eligibility (Thesis) Requirements: 15 courses (60 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Tutorials:* Same as **Basic Requirements**, plus thesis tutorials HEB 99A and HEB 99B taken in the fall and spring semester, respectively.
3. *Thesis*: Required. Thesis proposals are ordinarily submitted at the end of junior year. The written thesis is submitted in March of senior year and is followed by an (ungraded) oral presentation to the department in the HEB Thesis Symposium.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**.

Human Evolutionary Biology
Honors (Non-Thesis) Requirements: 15 courses (60 credits)

1. *Required courses*: Same as **Basic Requirements**, plus two additional courses in HEB or related fields approved in advance by a concentration advisor. These courses are ordinarily advanced lectures, seminars, or supervised reading courses on a focused topic.
2. *Tutorials*: Same as **Basic Requirements**.
3. *Thesis*: None.
4. *Other information*: Same as **Basic Requirements**. Honors recommendations are based on concentration GPA.

Human Evolutionary Biology
Mind Brain Behavior Track
Requirements: 15 courses (60 credits)

The Mind Brain Behavior track within HEB (the MBB track) is geared toward students interested in human cognition or psychology who want to understand the evolutionary influences on our thoughts and behaviors. A senior thesis is required for this track.

1. *Required courses:*
    a. LS 1B or equivalent.
    b. PSY 1 or GENED 1056: Human Nature.
    c. Neuro 80: Neurobiology of Behavior, or equivalent.
    d. PSY 16 or GENED 1027, plus two courses to be chosen from HEB.
    e. Two additional courses in Mind Brain Behavior.
    f. Three additional courses in related fields. Qualifying courses are the same as for **Basic Requirements**.
2. *Tutorials:* All letter-graded:
    a. Sophomore tutorial (HEB 97). Same as **Basic Requirements**.
    b. One MBB-approved seminar course.
    c. Senior year: HEB 99A and HEB 99B (in the fall and spring, respectively), culminating in the submission of a senior thesis.
3. *Thesis*: Required. Thesis proposals are ordinarily submitted at the end of junior year. The written thesis is submitted in March of senior year and is followed by an (ungraded) oral presentation to the department in the HEB Thesis Symposium.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements.**

RESEARCH

We encourage our students to get involved in research in HEB, and the department offers many small, advanced courses for students to work collaboratively with members of the faculty. Opportunities vary from primarily lab-based research (such as in behavioral endocrinology, primate and human cognition, evolutionary genetics, physiology, anatomy, or nutrition) to field-based work (such as studying nonhuman primates or participating in paleoanthropological excavations). Our faculty members work closely with undergraduates on research projects of all kinds, senior theses, research seminars, and tutorial classes.

ADVISING

The HEB concentration advisor (contact information below) provides guidance on matters such as course selection, research, concentration requirements, summer plans, and career paths.

For up-to-date information on advising in Human Evolutionary Biology, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

The concentration advisor is Dr. Andrew Yegian, Assistant Director of Undergraduate Studies, reachable at ayegian@fas.harvard.edu. For more information, students should visit the HEB page of the Life Sciences website at http://lifesciences.fas.harvard.edu/heb.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Human Evolutionary Biology	106	99	105	95	96	77	53	61	62	63
Human Evolutionary Biology + another field	1	0	0	0	0	3	1	2	2	6
Another field + Human Evolutionary Biology	0	0	0	0	0	2	2	1	1	1

Integrative Biology

The concentration in Integrative Biology (IB) is designed to provide students with opportunities both to explore topics across all areas of biology and to focus in detail on areas of particular interest.

IB asks questions about the function, evolution, and interaction of organisms, both now and in the past. What kinds of organisms are there and how are they related? How are functional design and behavior related to environment? What are the genetic and morphological mechanisms underlying an organism's development, and how is evolution influenced by development? Integrative Biology can be approached in many ways and can reflect an interest in a specific group of organisms (for example, plants, animals, microorganisms), in level of organization (for example, ecological systems, population genetics), in approach (for example, systematics, biogeography, biomechanics, developmental biology, mathematical theory, neurobiology), or in sampling broadly across multiple areas. IB is, therefore, inherently an interdisciplinary field, ranging over different levels of biological organization, evolutionary processes, taxa, and physiological and molecular systems.

Students who are considering Integrative Biology as a concentration are encouraged to complete the three introductory courses (LS 1A/LPS A, LS 1B, OEB 10) by the end of their sophomore year. From the foundation of these introductory courses, students explore one or more areas in depth by taking upper-level courses. Students are encouraged to consult the concentration website at https://lifesciences.fas.harvard.edu/ib for further details on various pathways through the concentration (i.e., suggested combinations of mid-level and upper-level courses). Students are also free to design their own pathway.

For many students, the concentration will culminate in independent research leading to a senior thesis, but a thesis is not the only means by which a student may participate in research. The concentration website at https://lifesciences.fas.harvard.edu/ib provides information on research opportunities in Integrative Biology as well as general advice about how to identify and contact faculty whose research is of interest. The concentration also provides opportunities to study biological diversity in the field, whether close to home or abroad. IB does not participate in joint concentrations but will consider senior theses that incorporate work from a secondary field.

LEARNING OBJECTIVES

Integrative Biology emphasizes independent exploration and, critical thinking, and may include participation in research and field experiences. The goal is to provide a strong foundation of knowledge, to foster the ability to navigate complex scientific territory, and to inspire an appetite for lifelong learning as students prepare for careers in the life sciences and related fields and professions.

REQUIREMENTS

Integrative Biology
Basic Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Three courses in introductory biology: LS 1A, LS 1B, OEB 10. (LPS A can substitute for LS 1A; LS 50A and LS 50B can substitute for LS 1A and LS 1B.)
    b. At least three courses introducing broad fields of biology to be chosen from OEB 11, OEB 50, OEB 51, OEB 52, OEB 53, OEB 54, OEB 55, OEB 56, OEB

57, OEB 58, OEB 59, OEB 60, OEB 65, MCB 60, MCB 63, MCB 80, LS 2, and SCRB 10.

c. Three advanced-level courses in biology, one of which may be a supervised research or reading course.
d. At least four courses (two courses for students who have taken LS 50A and 50B) to be chosen from offerings in Applied Mathematics, Applied Physics, Chemistry, Computer Science (above the level of COMPSCI 1), Mathematics (above the level of MATH 1A), Physical Sciences, Physics, and Statistics.

2. *Thesis*: Optional but required for highest honors in field.
3. *Supervised reading and research courses*: OEB 91R, OEB 99R. Any supervised research and reading course undertaken with mentors outside of OEB must be approved and co-sponsored by an OEB faculty member.
4. *General examination*: None.
5. *Pass/fail*: All concentration requirements must be taken for letter-grade credit.

ADVISING

Questions should be addressed to the IB concentration advisor, Dr. Andrew Berry, at berry@oeb.harvard.edu and 617-495-0684, or the Head Tutor, Professor David Haig, at dhaig@oeb.harvard.edu. Students considering doctoral studies in the life sciences should consult with Dr. Andrew Berry and other relevant faculty to ensure that their undergraduate program is appropriate to their interests and goals. Those contemplating careers in medicine, dentistry, or veterinary medicine are encouraged to consult with the Office of Career Services and appropriate preprofessional advisors regarding entrance requirements for these programs.

For up-to-date information on advising in Integrative Biology, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

In addition to faculty research laboratories, several special facilities offer unique and exciting opportunities for IB concentrators. These include a supercomputer cluster, a state-of-the-art high-throughput DNA sequencing facility, imaging centers, greenhouses, and animal facilities.

In addition, the Museum of Comparative Zoology (MCZ) houses extensive systematic collections of recent and fossil vertebrates and invertebrates; the Harvard University Herbaria (HUH) houses the Farlow Reference Library and Farlow Herbarium, the Gray Herbarium, and the Orchid Herbarium of Oakes Ames; and the Botanical Museum houses the Ware Collection of botanical models (the “Glass Flowers”). The Arnold Arboretum in Jamaica Plain, the Harvard Forest in Petersham, and the Concord Field Station in Bedford also provide research facilities. Links to these and other facilities can be found on the Organismic and Evolutionary Biology Department website at http://oeb.harvard.edu/.

HOW TO FIND OUT MORE

More information about the IB concentration can be found at https://lifesciences.fas.harvard.edu/. The Integrative Biology Head Tutor is Professor David Haig, reachable at the Museum of Comparative Zoology, 26 Oxford Street, Room 410A, and at dhaig@oeb.harvard.edu. The IB concentration advisor is Dr. Andrew Berry, reachable at the Biological Laboratories, Room 1082B, and at berry@oeb.harvard.edu and 617-495-0684.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Integrative Biology*	138	130	119	110	122	134	104	146	137	149
Integrative Biology + another field	0	0	1	0	1	0	0	0	0	1
Another field + Integrative Biology	0	0	0	0	0	1	1	1	0	0

* Integrative Biology does not participate in joint concentrations.

Linguistics

Linguistics, the scientific study of language, is perhaps the ultimate interdisciplinary enterprise, cutting across the humanities, social sciences, cognitive sciences, physical sciences, and biological sciences. Since it is not taught in high school, most undergraduates, including many future Linguistics concentrators, only “discover” linguistics after they come to college. Some are intrigued by the prospect of discovering formal rules to model a complex form of behavior like language; others are interested in the relationship of natural languages to other symbolic systems; still others are curious about similarities and differences they have noticed among individual languages. In exploring these and similar topics, students of linguistics not only learn a great deal about a fascinating field, but they also master a variety of conceptual and empirical techniques that stand them in good stead after graduation. Recent Linguistics concentrators have gone to graduate school in linguistics, mathematics, computer science, cognitive science, English, and music; to medical school, law school, and business school; and into employment in fields as diverse as editing, writing, translating, and language-understanding software design.

The department recognizes that undergraduates are interested in linguistics for a variety of reasons. Some plan to pursue graduate studies in linguistics or a related discipline; some plan to go on to professional work; and some see a concentration in Linguistics as interesting and valuable intellectually, but do not base their future vocational plans upon it. The department has kept all of these considerations in mind in designing its course offerings and concentration requirements.

Many students who are curious about linguistics but who have never taken a linguistics course assume that it is chiefly a subject for people with an extensive background in foreign languages. This is incorrect. While it is true that some kinds of linguists need to have active control of a variety of languages, the overriding fact is that linguistics and language learning are completely separate pursuits. People who are “good at languages” are not always good at linguistics, and vice versa; many of the world’s most successful professional linguists are fluent only in their native language. That said, many concentrators find linguistics to be a natural fit for their interests in language courses both in our department and beyond.

The courses offered by the Department of Linguistics reflect the diversity of the field. The emphases are on linguistic theory, historical linguistics, and the relationship between language and cognition.

Linguistic Theory
A remarkable characteristic of humankind is that children learn language effortlessly, accomplishing this complicated task much earlier than they can learn to do seemingly other simple tasks. Linguistic theory seeks to characterize this knowledge explicitly and to account for the ease and speed with which humans acquire it. Since the bulk of the knowledge that enables us to speak and/or sign language is unconscious, most people are unaware of its almost unbelievable complexity and richness. Nor is it obvious to the casual observer that the underlying structures of languages as superficially different as English, Zulu, American Sign Language, and Navajo are deeply and fundamentally the same. The traditional branches of linguistic theory are syntax, the study of sentence structure; phonology, the study of the sounds and sound systems; morphology, the study of word structure; and semantics, the study of meaning.

Historical Linguistics
All languages change over time, sometimes giving rise to one or more daughter languages

and, eventually, to families of related languages. Depending on their specific interests, historical linguists may investigate the processes and principles by which language change occurs, or study the documented history of individual languages, or try to recover the prehistory of language families by using the "comparative method" to reconstruct the unattested common parent of a set of attested daughter languages. A much-studied example of a reconstructed language is "Proto-Indo-European," the parent language of the family that includes most of the ancient and modern languages of Europe (including English) and northern India, but the comparative method can be used in language families all across the globe to understand broader patterns of language change and human society.

The Linguistics Track in Mind, Brain, and Behavior (MBB)

Because language is a distinctively human characteristic, the study of language provides an important take-off point for investigating the complexities of the human mind and brain. Linguistics spearheaded the "cognitive revolution" in the 1950s and has occupied a privileged position in debates on cognitive issues ever since. At Harvard, the Mind Brain Behavior (MBB) Initiative was founded to help faculty in distinct research areas collaborate on projects making use of emerging techniques in neuroscience, psychology, and other areas in cognitive science. Experimental work in neurolinguistics and psycholinguistics involves establishing connections between linguistic theory and language processing, language acquisition, language use, spatial and social cognition, evolutionary psychology and biology, and neuroscience.

The Linguistics/MBB track gives students an opportunity to delve into the neurobiological, psychological, philosophical, and evolutionary aspects of language, in the process becoming familiar with the different ways that researchers in these fields approach language-related problems. Another option encourages exploration of the relationships between language and computer science, including computational neuroscience. Whatever their specific choices, students who elect to concentrate in Linguistics/MBB graduate with a unique knowledge base and an invaluable set of skills and tools.

The implications of the study of language are broad and interdisciplinary. Modern linguistics theory attempts to characterize a very complex domain of human knowledge, and is thus an area of central concern to philosophers of mind as well as to cognitive psychologists. Furthermore, since the models of language constructed by theoretical linguists are formal in character and inspired by computational and mathematical methodologies, linguistics has a mutually beneficial relationship with computer science and the study of artificial intelligence. Linguistics also offers a firm understanding of the nature of language to literary scholars and language teachers. Finally, since languages are cultural artifacts, the reconstruction of an extinct language can shed light on the physical surroundings and the social institutions of its speakers, making linguistics a topic of interest to anthropologists, sociologists, and archaeologists.

Concentration Requirements

Since high schools and even many universities do not offer courses in linguistics, the department's introductory courses presuppose no prior background in the field. Many linguistics concentrators, in fact, were unaware of the existence of linguistics as a subject before they took their first linguistics course at Harvard. Our courses therefore aim to introduce students to linguistic analysis and actively engage them in it. They also expose students to the great diversity found in the languages of the world.

The best way to begin considering a concentration or secondary field in linguistics is to take one of our introductory courses (LING 83, LING 101, or a First-Year Seminar). An extensive foreign language background is not required or assumed for these or any other undergraduate linguistics courses, and the concentration does not require language courses

beyond the College language requirement, although, of course, existing language experience will be put to good use in any study of language structure.

Concentrators in Linguistics can choose among three tracks: Linguistics; Linguistics with Related Field; and Linguistics with Mind, Brain, and Behavior. The three tracks have the same tutorial program and share a core set of required courses that emphasize argumentation and methodology in phonology, syntax, semantics, and historical linguistics. The Linguistics with MBB track has an additional set of three required core courses that emphasize argumentation and methodology in mind, brain, and behavioral science. Students who choose the straight Linguistics track meet the remainder of the non-tutorial course requirements by taking a combination of more advanced Linguistics courses within the department and linguistics-related offerings in other departments. Examples of linguistics-related offerings in other departments include courses on the linguistic structure of particular languages (for example, Structure of Japanese) and on the computational, philosophical, and psychological aspects of language (for example, Psychology of Language). Students who choose the Linguistics with Related Field track combine courses in linguistics proper with linguistics-related courses in an approved second field such as Anthropology, Classics, Computer Science, Psychology, or perhaps a language area like Romance Languages and Literature, Classics, East Asian Languages and Civilization, etc. Students who choose Linguistics with MBB meet the remainder of the non-tutorial course requirement by taking a combination of more advanced courses on Linguistics or on Mind Brain Behavior. Examples of MBB-related courses typically include courses offered by the Philosophy Department (for example, Philosophy of Language), by the Psychology Department (for example, Cognitive Neuropsychology), and by the Computer Science Department (for example, Natural Language Processing).

Note that the Linguistics with Related Field and the Linguistics with MBB tracks are not the same as a joint concentration in Linguistics and another field, so they will not need to coordinate with any other department, and their advisor will be in Linguistics. These students graduate with a concentration in Linguistics alone, and students in the MBB track receive a certificate from the MBB program upon graduation. Students doing a joint concentration should consult with both concentrations for finalizing their Crimson Cart in my.harvard each term. These students graduate with a concentration in Linguistics and the other field (for example, Linguistics and Mathematics or Linguistics and Anthropology).

Additional information about the requirements for joint concentrators is provided below.

LEARNING OBJECTIVES

An undergraduate degree in linguistics provides insight into one of the most fascinating areas of human knowledge and behavior. As a linguistics major, students learn about many aspects of human language, including sounds (phonetics, phonology), words (morphology), sentences (syntax), and meanings (semantics).

In exploring these and similar topics, students of linguistics not only learn a great deal about a fascinating field; they also master a variety of conceptual and empirical techniques that stand them in good stead after graduation.

REQUIREMENTS

Linguistics Track
Basic Requirements: 12 courses (48 credits)
Honors Eligibility Requirements: 14 courses, including thesis (56 credits)

1. *Required courses:* Nine courses:
    a. One of the introductory courses:
        i. LING 83: Language, Culture, and Cognition.
        ii. LING 101: The Science of Linguistics: An Introduction.
        iii. First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory; 61Q: The Origins of Meaning).
    b. LING 102: Sentence Structure.
    c. LING 105: Sounds of Language.
    d. LING 106: Knowledge of Meaning.
    e. One of the following:
        i. LING 104: Word Structure.
        ii. LING 107: Introduction to Indo-European.
        iii. LING 108: Introduction to Historical Linguistics.
        iv. LING 148: Language Universals.
    f. Four additional courses: At least one of these courses must be in linguistics. Courses in linguistics include any course in the Linguistics Department, or a course on a linguistics topic in another department. For the other three courses, any course in Linguistics or in a related field (for example, Philosophy of the Mind or Neurobiology of Behavior) will do. Alternatives outside of this domain must be approved by the Head Tutor.
2. *Tutorials:* Three courses; for honors eligibility: five courses:
    a. Sophomore year: LING 97 is required in the spring term and consists of two consecutive six-week small-group tutorials.
    b. Junior year: LING 98A (fall) consists of two consecutive six-week small-group tutorials. LING 98B (spring) is a one-term individual tutorial with a faculty member (for honors candidates) or two consecutive six-week small-group tutorials (for non-honors candidates).
        i. Note: The specific topics covered in group tutorials change from year to year. Students are free to choose the tutorials they find most interesting, though the Head Tutor may require a student to select a different tutorial if enrollments have exceeded a certain level.
        ii. Note: For non-honors candidates, it is possible to replace LING 98B with LING 97R (taken twice) or with any other elective course in linguistics.
    c. Senior year: LING 99A (fall) and 99B (spring), required for honors candidates and focused on the research and writing of the senior honors thesis. LING 99A is a one-term group tutorial led by a faculty member in Linguistics with the participation of honors candidates' thesis advisors. LING 99B is a one-term individual tutorial with each honors candidate's thesis advisor. Graded SAT/UNS.
3. *Languages:*
    a. Regular concentrators must demonstrate knowledge of one foreign language by the end of the junior year as required by the College. (The language requirement is described in the Harvard College Student Handbook at https://handbook.fas.harvard.edu/book/welcome.)
    b. Honors candidates must demonstrate knowledge of an additional foreign language by the end of the senior year. This can be done in the following ways:
        i. By being a native speaker of the language.

ii. By obtaining at least a B grade in a yearlong eight-credit, second-year language course.
iii. By passing a Harvard College language placement exam (end of second year).
iv. In some cases, by passing a special departmental reading exam.

c. The same language course cannot count toward both the concentration requirement and the language requirement. But a language course that does not count toward the language requirement can count toward the concentration requirement as an additional course in Linguistics or in the relevant related field.
d. Native speakers of a foreign language are normally not allowed to take courses of basic instruction in that language. Any such courses taken by a native speaker will not be counted toward the departmental language or related field requirements.

4. *Thesis*:
   a. Regular degree program: Not required.
   b. Honors candidates: Required. During the fall term of the senior year, honors candidates produce a thesis prospectus for approval by the Head Tutor. After completing the thesis, honors candidates present the results of their research at a departmental colloquium during Reading Period of the spring term.
5. *Other information*: Courses taken pass/fail may not be counted for concentration credit.

Linguistics with Related Field Track
Regular Requirements: 12 courses (48 credits); 1 language
Honors Eligibility Requirements: 14 courses, including thesis (56 credits)

1. *Required courses*: Five courses:
   a. One of the following introductory courses:
      i. LING 83: Language, Structure, and Cognition.
      ii. LING 101: The Science of Language: An Introduction.
      iii. First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory or 61Q: The Origins of Meaning).
   b. Two of the following courses:
      i. LING 102: Sentence Structure.
      ii. LING 103: Language and Society.
      iii. LING 104: Word Structure.
      iv. LING 105: Sounds of Language.
      v. LING 106: Knowledge of Meaning.
      vi. LING 107: Introduction to Indo-European.
      vii. LING 108: Introduction to Historical Linguistics.
   c. Two additional courses in Linguistics.
   d. Four courses in a related field (for example, Psychology, Romance Languages and Literatures, Computer Science, etc.): These may include courses relevant for the scientific study of language, but not directly within its purview; for example, not only are courses such as “Semitic Linguistics” acceptable, but also courses such as “Complex Fournier Analysis” and “Philosophy of the Mind.” Each program of study is approved on an individual basis by the Head Tutor.
2. *Tutorials*: Same as **Linguistics Track**.
3. *Languages*: Same as **Linguistics Track**.
4. *Thesis*: Same as **Linguistics Track**.
5. *Other information:*
   a. Pass/fail: Courses taken pass/fail may not be counted for concentration credit.

b. Students with an unusually strong background may be permitted to substitute other Linguistics course for LING 101.

Linguistics with Mind, Brain, and Behavior (MBB) Track
Requirements: 14 courses, including thesis (56 credits)

1. *Required courses:* Nine courses:
    a. Four required courses in Linguistics:
        i. LING 83: Language, Culture, and Cognition.
        ii. LING 101: The Science of Language: An Introduction.
        iii. First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory or 61Q: The Origins of Meaning).
        iv. LING 102: Sentence Structure.
        v. LING 105: Sounds of Language.
        vi. Linguistics 106: Knowledge of Meaning.
    b. Three required courses in MBB:
        i. PSY 1: Psychological Science, MCB 80/NEURO 80: Neurobiology of Behavior.
        ii. An MBB interdisciplinary seminar. (The MBB website at http://mbb.harvard.edu/ has more information.)
    c. One additional course in Linguistics.
    d. One additional course in MBB.
2. *Tutorials*: Same as **Linguistics Track—Honors**.
3. *Languages*: Concentrators in the MBB track must demonstrate knowledge of one foreign language by the end of the junior year.
4. *Thesis*: Same as **Linguistics Track—Honors**.
5. *Other information:*
    a. Pass/fail: Courses taken pass/fail cannot be counted for concentration credit.
    b. Study abroad: Courses taken abroad that are directly related to Linguistics count toward the relevant requirements. Students should discuss their courses with the Head Tutor.
    c. Students with an unusually strong background may be permitted to substitute another Linguistics course for LING 101.
    d. No course can be counted doubly to satisfy requirements in items 1a–1c above. The courses to be counted toward the MBB requirements must be approved by the Head Tutor. Approval is automatic if the course is chosen from those listed in the requirements for the Linguistics with MBB track at http://linguistics.fas.harvard.edu/pages/mind-brain-behavior-mbb. (This publication is also available from the department upon request.)

Linguistics
Joint Concentrations

There is a crucial difference between the Linguistics with Related Field track or the Linguistics with MBB track and a joint concentration in Linguistics and another field. A student in Linguistics with Psychology as a related field or in Linguistics with MBB is solely under the jurisdiction of the Linguistics Department, while a student with a joint concentration in Linguistics and Neuroscience, for example, is under the jurisdiction of both Linguistics and Neuroscience—that is, the student needs to fulfill the requirements for joint concentration outlined by both fields. A student in Linguistics with Psychology as a related field graduates with a concentration in Linguistics; a student in Linguistics with MBB also graduates with a concentration in Linguistics and is awarded a certificate by the MBB program; a joint concentrator graduates with a concentration in Linguistics and the other field of concentration. Joint concentrations must be approved by both participating concentrations. Typically, joint concentrators take six courses in Linguistics and six in the joint field and write a thesis that, to

some degree, combines the two fields. Note that the same course cannot be counted as a required course for both fields simultaneously. Courses in the joint field should be selected in consultation with the Head Tutor of that field. Under normal circumstances, the following courses will be taken:

Linguistics as Primary Field Requirements: 8 courses

1. One of the following introductory courses:
    a. LING 83: Language, Structure, and Cognition.
    b. LING 101: The Science of Language: An Introduction.
    c. First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory and 61Q: The Origins of Meaning).
2. Three of the following courses:
    a. LING 102: Sentence Structure.
    b. LING 103: Language and Society.
    c. LING 104: Word Structure.
    d. LING 105: Sounds of Language.
    e. LING 106: Knowledge of Meaning.
    f. LING 107: Introduction to Indo-European.
    g. LING 108: Introduction to Historical Linguistics.
3. One additional course in Linguistics:
    a. LING 97R or LING 98A (one term).
    b. LING 99A and LING 99B (senior tutorial).

Linguistics as Allied Field Requirements: 6 courses

1. LING 101 or LING 83 or First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory or 61Q: The Origins of Meaning).
2. Three of the following:
    a. LING 102: Sentence Structure.
    b. LING 103: Language and Society.
    c. LING 104: Word Structure.
    d. LING 105: Sounds of Language.
    e. LING 106: Knowledge of Meaning.
    f. LING 107: Introduction to Indo-European or LING 108: Introduction to Historical Linguistics.
3. Two additional courses in Linguistics.

Joint concentrators ordinarily also enroll in two terms of a senior tutorial in the primary field (the field listed first). Thesis advisors may be drawn from either of the two departments, subject to approval by the Directors of Undergraduate Studies of both concentrations.

ADVISING

The Head Tutor and Assistant Head Tutor meet with concentrators individually at the beginning of each term to approve course selection and determine tutorial assignments. In addition, they are available to meet with students during regularly scheduled office hours or by appointment. Concentrators are also encouraged to contact other members of the faculty to discuss specific linguistics issues throughout the term.

For up-to-date information on advising in Linguistics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Concentrators are welcome to use the departmental lounge, library, and computing facilities located on the third floor of Boylston Hall. A phonetics lab where students can experiment with the acoustic and articulatory properties of the sounds of the world's languages is located in Boylston 334. Concentrators may also frequent the department's special collection of linguistic materials in Room B, on the top floor of Widener Library. Information about access to these locations can be obtained from the Department Administrator, Cheryl Murphy.

STUDY ABROAD

The Department of Linguistics encourages study abroad for concentrators. Students working on a specific language or language area may wish to spend a term or a summer abroad. They should discuss their options with the staff of the Office of International Education before meeting with the Director of Undergraduate Studies (DUS). Under appropriate circumstances, work done abroad may be counted toward the concentration requirement. Concentrators are encouraged to discuss their interests with the DUS.

HOW TO FIND OUT MORE

For further information about the Linguistics concentration, students should jointly email the Director of Undergraduate Studies at lingdus@fas.harvard.edu and the Assistant Head Tutor at lingaht@fas.harvard.edu. The department website at https://linguistics.fas.harvard.edu/ also contains useful information for undergraduates.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Linguistics	21	21	14	20	23	18	14	17	15	16
Linguistics + another field	4	3	6	5	5	7	6	8	8	10
Another field + Linguistics	2	3	4	6	14	18	14	14	11	7

Mathematics

Mathematics is the science of order, and mathematicians seek to identify instances of order and to formulate and understand concepts that enable us to perceive order in complicated situations.

Perhaps the most important concept of mathematics is that of *function*, which provides us with the means to study dependence and change. The study of real functions of a real variable (and later complex functions), particularly in connection with the limit concept, is called *analysis*. The most effective tool for this study is the infinitesimal calculus that analyzes the relation between functions and their derivatives. The study of number systems and their generalizations is called *algebra*. Here the primary concepts are *group*, *ring*, *field*, and *module*. The last great branch of mathematics is geometry, which now goes far beyond the classical study of the space we live to include the study of geometry of spaces of all dimensions, and generalizations of the notion of space itself (which is the study of *topology*).

Pure mathematics is concerned with these concepts and their interrelationships, while applied mathematics considers the relation of mathematical concepts to problems arising in other disciplines. Applied mathematics is not a single subject; rather it is almost as many different subjects as there are other disciplines. (But it would be a mistake to think that applied mathematics is organized in terms of the disciplines to which it is applied.)

The concentration in Mathematics is designed to acquaint the student with the most important general concepts underlying the three branches of modern mathematics. Concentration in Mathematics will provide an adequate basis for further study in either pure or applied mathematics. Because so many disciplines now rely on the mathematical sciences, a concentration in Mathematics provides a valuable background for many different careers. Concentrators who do not choose to continue in mathematics have often gone on to graduate work in other academic subjects or to professional training in law, business, or medicine.

Concentration in Mathematics requires a minimum of either 12 letter-graded courses or 11 letter-graded courses plus one First-Year Seminar, subject to the following conditions: Eight of the letter-graded courses must be listed as courses taught by the Mathematics Department while the remaining courses can be either Mathematics courses or courses in approved, related subjects. These eight Mathematics courses must include at least one course in analysis, one in algebra or group theory, and one in geometry or topology (all at the 100-level or higher). Tutorials (MATH 99R) are encouraged, but not required. Ordinarily, no more than one MATH 99R course may count toward the concentration requirements. Reading courses, MATH 91R, and MATH 60R (the latter for senior thesis research only; SAT/UNS only) can be arranged, but do not ordinarily count toward concentration requirements. A First-Year Seminar can be used in lieu of one of the 12 letter-graded courses in Mathematics or related fields if it is taught by a faculty member of the Mathematics Department and if permission to count these credits toward the concentration requirements is obtained from the Director of Undergraduate Studies in Mathematics.

Each student is required to submit a five-page expository paper in Mathematics. The paper should be an original, coherent, and correct exposition of a topic in pure or applied mathematics. The paper should be written during the sophomore or junior year under the supervision of a professor or tutor in a tutorial (MATH 99R), a MATH 91R reading course, or a 100- or 200-level course that the student is contemporaneously enrolled in. The paper must be accepted by both that professor or tutor and the Director of Undergraduate Studies. Ordinarily, students enrolled in a tutorial automatically satisfy the expository requirement as

part of the structure of the tutorial. The expository requirement must be met before the end of the Reading Period of the second term of the junior year. Extensions may only be granted by the Director of Undergraduate Studies. A candidate for high or highest honors must, in addition to the course requirements, submit a senior thesis. The thesis may be on any topic in pure or applied mathematics not directly covered in a student's course work. It need not be an original piece of mathematical research, but should be an original exposition of material culled from several sources. If there is original research, there should also be a very substantial expository component to the thesis with the original research comprising the last parts. Candidates for straight honors (neither highest nor high) can either submit a senior thesis or take four extra courses in Mathematics or approved related fields in addition to the 12-course requirement described below under the heading **Basic Requirements**. (The section titled **Honors Eligibility Requirements,** below, has more details.)

The department encourages students to take the most advanced courses for which they are qualified. Nevertheless, students who enter as first-years will not ordinarily be permitted to count courses taken elsewhere toward the 12-course requirement. Transfer students wishing to concentrate in Mathematics should consult the Director of Undergraduate Studies, who will review their transcripts and arrange their concentration requirements.

The department welcomes students who want to change their concentration to Mathematics if it is plausible that they can fulfill the requirements within the time remaining at Harvard. Students considering Mathematics may also wish to consider Applied Mathematics, Computer Science, or Statistics. Joint concentrations with Computer Science, Philosophy, Physics, or other fields can be arranged.

LEARNING OBJECTIVES

The concentration in Mathematics is designed to acquaint the student with the most important general concepts underlying the three overarching areas of mathematics: analysis, algebra, and geometry. Concentration in mathematics will provide an adequate basis for further study in either pure or applied mathematics.

REQUIREMENTS

Mathematics
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. Eight letter-graded courses in Mathematics, at least four of which must be at the 100-level and including at least one in each of the areas of analysis (numbered 110–119), algebra (numbered 120–129), and geometry (numbered 130–139). Appropriate graduate-level courses may be substituted for these area requirements. Courses listed in the course catalog in other departments that are cross-listed by the Mathematics Department do not count toward this requirement but may count toward requirement 1b, below.
    b. Four letter-graded courses in either Mathematics or related subjects. Related courses include:
        i. APMTH 21A, APMTH 21B, APMTH 22A, APMTH 22B (APMTH 22A and APMTH 22B may not be counted in addition to MATH 21, MATH 23A, MATH 25A, MATH 55A), APMTH 50 (may not be counted in addition to MATH 99R or a First-Year Seminar), APMTH 101, APMTH 104, APMTH 105, APMTH 106 (may not be counted in addition to MATH 122), APMTH 107, APMTH 108, APMTH 111, APMTH 115, APMTH 120 (may not be counted in addition to MATH 121) APMTH 121, APMTH 147, APMTH 201, APMTH 202, APMTH 205, APMTH

207, APMTH 210, APMTH 211. Neither APMTH 21A nor 21B may count toward requirements in items 1a or 1b in addition to any of the following courses: MATH 18, MATH 19A, MATH 19B, MATH 21A, MATH 21B, MATH 23A, MATH 23B, MATH 25A, MATH 25B, MATH 55A, MATH 55B.

ii. ASTRON 193, ASTRON 200, ASTRON 201.
iii. OEB 173, OEB 181, OEB 242, OEB 252.
iv. CHEM 10, CHEM 160, CHEM 161, CHEM 242
v. COMPSCI 37 (but not if counting ECON 1071), COMPSCI 51, COMPSCI 109A, COMPSCI 109B, COMPSCI 120, COMPSCI 121, COMPSCI 124, COMPSCI 125, COMPSCI 127, COMPSCI 134, COMPSCI 136, COMPSCI 181, COMPSCI 187, COMPSCI 208, COMPSCI 220R, COMPSCI 221, COMPSCI 222, COMPSCI 223, COMPSCI 224, COMPSCI 225, COMPSCI 226R, COMPSCI 227, COMPSCI 228, COMPSCI 229R, COMPSCI 277.
vi. ECON 1011A, ECON 1011B, ECON 1052, ECON 1057, ECON 1071 (but not if counting COMPSCI 37), ECON 1126, ECON 2010A, ECON 2010B, ECON 2010C, ECON 2010D, ECON 2052, ECON 2059, ECON 2070, ECON 2099, ECON 2120, ECON 2248, ECON 2723.
vii. ENG-SCI 123, ENG-SCI 125, ENG-SCI 145, ENG-SCI 156, ENG-SCI 181, ENG-SCI 201, ENG-SCI 202, ENG-SCI 203, ENG-SCI 209, ENG-SCI 210, ENG-SCI 220, ENG-SCI 241, ENG-SCI 255.
viii. GOV 2005, GOV 2006.
ix. NEURO 140, 1401.
x. PHIL 140, PHIL 144, PHIL 145, PHIL 146, PHIL 149S, PHIL 248R.
xi. PHYSCI 10 (CHEM 10), PHYSCI 11, PHYSCI 12A, PHYSCI 12B.
xii. Physics or Applied Physics, all except 90R, 91R, 95, 187R, and courses which are primarily laboratory courses such as 123 and 191.
xiii. All statistics courses with numbers STAT 109A through STAT 299.
xiv. SYSBIO 200.
xv. Many other courses are given at the University that make substantial use of Mathematics. Such courses may be counted as related for concentration credit if approved by the Director of Undergraduate Studies. Students must secure approval for courses not listed in item 1b before enrolling through my.harvard.

c. One First-Year Seminar (graded SAT/UNS) can be substituted for one of the 12 letter-graded courses listed in items 1a and 1b above provided that the following three conditions are met:
    i. The First-Year Seminar is taught by a faculty member of the Department of Mathematics.
    ii. The First-Year Seminar is not used in lieu of one of the required MATH 110–119, MATH 120–129, or MATH 130–139 courses noted in item 1a, above.
    iii. Permission is obtained from the Director of Undergraduate Studies in Mathematics before the approval of the Plan of Study. A grade of SAT in the seminar is a necessary but not sufficient condition for such permission.
    iv. Ordinarily, a First-Year Seminar may not be counted in addition to another seminar or tutorial course, such as MATH 99R.
d. Each student is required to submit a five-page expository paper in Mathematics.
    i. The paper should be an original, coherent, and correct exposition of a topic in pure or applied mathematics. The paper should be written during the sophomore or junior year under the supervision of a

professor or tutor in a tutorial (MATH 99R), a MATH 91R reading course, or a 100- or 200-level course that the student is contemporaneously enrolled in. The paper must be accepted by both that professor or tutor, and by the Director of Undergraduate Studies. Ordinarily, students enrolled in a tutorial automatically satisfy the expository requirement as part of the structure of the tutorial.

ii. This expository requirement must be met before the end of the Reading Period of the second term of the junior year. Extensions may only be granted by the Director of Undergraduate Studies.

2. *Tutorial*: None are required, but MATH 99R is suggested. Although MATH 99R may be repeated, only one tutorial will count for concentration.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. Exceptional programs are frequently approved, especially for students doing advanced work. Students should consult the Director of Undergraduate Studies for more information.
    b. A student whose record does not include a course in calculus may be asked to demonstrate familiarity with this subject by a special examination.
    c. MATH 91R will not ordinarily be counted for concentration credit.
    d. MATH 60R will not be counted for concentration credit.
    e. MATH MA and MATH MB together count as one course of concentration credit.
    f. MATH QA and MATH QB together count as one course of concentration credit.

Mathematics
Honors Eligibility Requirements: 12 courses, plus thesis (48 credits)

1. *Required courses*: Same as **Basic Requirements.**
2. *Additional requirements*: Either of the following:
    a. For straight honors only (no high or highest honors): Four additional courses (16 credits) in either Mathematics or the related fields listed under **Basic Requirements**. Course grades in these courses and the 12 basic requirements courses must average B+ or higher.
    b. For straight honors, or high or highest honors: A senior thesis is required. There is also a thesis examination on the area of Mathematics germane to the area of the thesis. No additional courses are required, but course grades in the 12 basic requirement courses must average B+ or higher.

Mathematics
Joint Concentrations
The requirements in Mathematics for a joint concentration differ according to whether Mathematics is the primary or allied field. If Mathematics is first, then the requirements are the same as the requirements for Honors Eligibility as described above. If Mathematics is second, then the requirements are five courses in Mathematics, at least three of which must be at the 100-level and include at least one in each of the areas of analysis (numbered MATH 110–119), algebra (numbered MATH 120–129), and geometry (numbered MATH 130–139). In addition, a B+ average must be maintained in all Mathematic courses. For a joint concentration in which Mathematics is second, no expository paper is required.

Mathematics
Mathematics and Teaching Option
Students interested in secondary school education should contact the Mathematics Department's Director of Undergraduate Education.

ADVISING

Concentrators are assigned a faculty member to act as their concentration advisor when their Plan of Study is approved by the Director of Undergraduate Studies. Advisors assist concentrators in selecting courses and also approve enrollment through my.harvard. In addition, each junior will be asked to meet privately at some point during the academic year with two faculty members to discuss academic progress and career goals.

For up-to-date information on advising in Mathematics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The Mathematics Department's common room (fourth floor, Science Center) is open to all Mathematics concentrators. The department library (third floor, Science Center) is open to all concentrators during regular hours (Monday through Friday, 9 a.m.–5 p.m.). The library may be used at other hours by seniors writing theses and by other Mathematics concentrators with permission from the department.

HOW TO FIND OUT MORE

The Mathematics Department has created six pamphlets to assist students: *Concentration in Mathematics* describes the resources of the department; *Courses in Mathematics* may be useful in the selection of a study plan; *Beyond Math I* focuses on the differences among the 20-level math courses; *Honors in Mathematics* gives details of the procedure for writing a senior thesis; *Graduate Schools and Fellowships in Mathematics* may be useful in formulating graduation plans; and *Mathematical Sciences at Harvard*, published by the School of Engineering and Applied Sciences, describes the resources, courses, and concentrations available to undergraduates interested in pure or applied mathematics.

These pamphlets can be obtained from the Undergraduate Studies Coordinator, Cindy Jimenez, reachable at cindy@math.harvard.edu and 617-495-9116, and located in Science Center Room 334. Other information about the concentration and the department can be found at www.math.harvard.edu.

All questions about the Mathematics concentration should be directed to the Director of Undergraduate Studies. Details and contact information can be found by visiting the department website https://www.math.harvard.edu/undergraduate/courses-and-concentration-information. Information about tutorials, jobs, fellowships, and other matters is posted on the undergraduate bulletin board opposite Science Center Room 320. All Mathematics concentrators are urged to subscribe to the department's undergraduate electronic news network by sending their email addresses to Cindy Jimenez at cindy@math.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Mathematics	69	77	78	79	97	108	79	98	109	143
Mathematics + another field	23	31	30	30	37	38	27	42	40	36
Another field + Mathematics	60	69	65	77	81	105	85	110	110	104

Mechanical Engineering

Mechanical Engineering is a discipline of engineering that uses the principles of physics and materials science for the analysis and design of mechanical and thermal systems. Mechanical Engineering is critical to the success of many human enterprises—it plays a central role in the generation and distribution of energy, transportation, manufacturing, and infrastructure development. Nearly every product or service in modern life has been touched in some way by a mechanical engineer.

The concentration in Mechanical Engineering is structured for a diversity of educational and professional objectives. For students who are planning to work as practicing engineers or who may be preparing for careers in business, education, government, or law—and for those whose career objectives may be less specific—the concentration provides an ideal framework for a well-rounded technical and scientific education.

The technologies that engineers create are changing at an amazing rate, but the fundamental tools of engineering change more slowly. The Harvard Mechanical Engineering curriculum emphasizes a solid background in the applied sciences and mathematical analysis and provides ample opportunity to learn about state-of-the-art technologies. Students also gain experience in the engineering design process, the unique engineering activity that requires creative synthesis as well as analysis to fulfill specified needs.

The objectives of the Mechanical Engineering program are to provide students a solid foundation in mechanical engineering within the setting of a liberal arts college for preparation for a diverse range of careers in industry and government or for advanced work in engineering, business, law, or medicine. The program enables the acquisition of a broad range of skills and approaches drawn from the humanities, social sciences, and sciences in addition to engineering, which enhances engineering knowledge and contributes to future leadership and technical success.

The S.B. degree program requires a minimum of 20 courses (80 credits), and students select one of two tracks: (1) Mechanical Systems or (2) Thermal Systems. The curriculum is structured with advanced courses building on the knowledge acquired in math, science, and introductory engineering science courses. Concentrators are encouraged to complete the common prerequisite course sequence in their first two years at Harvard. These courses include mathematics (through MATH 1A and MATH 1B; plus MATH 21A and MATH 21B, MATH 22A and MATH 22B, MATH 23A and MATH 23B), physics (through PHYSCI 12A and PHYSCI 12B, PHYSICS 15A and PHYSICS 15B, or APPHY 50A and APPHY 50B), and computer science (COMPSCI 50).

Students are cautioned that it is more important to derive a solid understanding of these basic subjects than to complete them quickly without thorough knowledge; this material is extensively used in many subsequent courses. If in doubt, it may be wise to enroll in the MATH 1A/MATH 1B sequence rather than proceed to MATH 21A or MATH 23A with marginal preparation.

The S.B. programs in Mechanical Engineering and Engineering Sciences share many course requirements, and there is some flexibility in moving between these programs. To get an early sample of engineering course work, entering students are invited to enroll in ESE 6 (Environmental Science and Engineering), ENG-SCI 50 (Electrical Engineering), ENG-SCI 51 (Mechanical Engineering), and ENG-SCI 53 (Biomedical Engineering). These introductory courses have minimal prerequisites and have been very popular with prospective Engineering

concentrators. ENG-SCI 50 and ENG-SCI 51 have extensive hands-on laboratory sections.

LEARNING OBJECTIVES

Upon graduation, students in the Mechanical Engineering concentration should demonstrate the following student outcomes:

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- An ability to communicate effectively with a range of audiences.
- An ability to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

REQUIREMENTS

Mechanical Engineering
Basic Requirements: 20 courses (80 credits)

1. *Required courses:* For all tracks:
    a. Mathematics/probability and statistics/applied mathematics (four courses):
        i. MATH 1A and MATH 1B; and MATH 21A and MATH 21B, MATH 22A and MATH 22B, or MATH 23A and MATH 23B. (Students who start in MATH 1A will not be required to satisfy either the probability and statistics requirement or the applied math requirement. Students who start in MATH 1B must take APMTH 105. Students who start in MATH 21A, MATH 22A, or MATH 23A must complete the courses in both probability and statistics and APMTH 105.)
        ii. Applied mathematics (one course): APMTH 105 (if starting in MATH 1B, 21A, MATH 22A or MATH 23A).
        iii. Probability and statistics (one course): At least one of APMTH 101, ENG-SCI 150, or STAT 110 (if starting in MATH 21A,MATH 22A, or MATH 23A).
    b. Physics (two courses): APPHY 50A, PHYSCI 12A, or PHYSICS 15A or PHYSICS 16; and APPHY 50B, PHYSCI 12B, or PHYSICS 15B. (Appropriate advanced-level Physics courses may also fulfill this requirement; students should consult with SEAS advisors for more information.)
    c. Chemistry/advanced science (two courses): LS 1A or LPS A, PHYSCI 1 or PHYSCI 11, or CHEM 10. Advanced science courses by permission.
    d. Computer science (one course): APMTH 10, COMPSCI 32, COMPSCI 50, or COMPSCI 5.
    e. Electronics (one course): ENG-SCI 50 or both of ENG-SCI 152 and COMP-SCI 141. (If both ENG-SCI 152 and COMPSCI 141 are taken, the second course can count as the engineering elective noted in item 1g below.)
    f. Engineering design (two courses): ENG-SCI 96 and ENG-SCI 100HF (noted in

items 3 and 4 below). ENG-SCI 96 must be taken in junior year, prior to ENG-SCI 100HF.

g. Engineering elective (one course):
    i. ENG-SCI 50, ENG-SCI 53, ENG-SCI 111, ENG-SCI 115, ENG-SCI 121, ENG-SCI 151, ENG-SCI 152, ENG-SCI 155, ENG-SCI 162, ENG-SCI 173, ENG-SCI 175, ENG-SCI 177, ENG-SCI 227, ENG-SCI 231.
    ii. ESE 160, ESE 166.
    iii. By prior petition and approval, advanced-level engineering science courses relevant to mechanics and materials engineering and advanced-level MIT courses in mechanical or materials engineering. Petitions will only be considered for courses that possess engineering content at a level similar to other technical engineering courses at Harvard's School of Engineering and Applied Sciences.
    iv. COMPSCI 51, COMPSCI 61, COMPSCI 141, COMPSCI 189.
    v. APPHY 195.
    vi. Students entering Harvard with secondary school preparation that places them beyond the level of any of the required courses listed above may substitute appropriate advanced-level courses. However, ABET accreditation requires that all students complete at least eight courses in math and science and 12 courses in engineering topics. Students who start in MATH MA will need to take 21 courses in order to fulfill the degree requirements. Given the number and complexity of the requirements, students interested in pursuing Mechanical Engineering should consult with the Associate Director of Undergraduate Studies or the Director of Undergraduate Studies about their Plans of Study as early as possible.

2. *Track requirements:*
    a. Mechanical Systems Track:
        i. Required core (four courses):
            1. ENG-SCI 51, ENG-SCI 120, and ENG-SCI 125.
            2. ENG-SCI 123 or ENG-SCI 181 (other can be taken as track elective).
        ii. Track electives (three courses):
            1. Select at least one course on thermal systems: ENG-SCI 181, ENG-SCI 183.
            2. Select from the following to reach a total of three track electives: ENG-SCI 123, ENG-SCI 128, ENG-SCI 155, ENG-SCI 159, ENG-SCI 190, ENG-SCI 192, ENG-SCI 220, ENG-SCI 231, ENG-SCI 240.
    b. Thermal Systems Track:
        i. Required Core (four courses):
            1. ENG-SCI 181 and ENG-SCI 183.
            2. ENG-SCI 120 or ENG-SCI 123 (other can be track elective).
            3. ENG-SCI 51 or ENG-SCI 125 (other can be track elective).
        ii. Track electives (three courses):
            1. Select three from: ENG-SCI 51, ENG-SCI 120, ENG-SCI 123, ENG-SCI 125, ENG-SCI 155, ENG-SCI 173, ENG-SCI 190, ENG-SCI 192, ENG-SCI 220, ENG-SCI 231, ENG-SCI 240.
3. *Sophomore Forum*: Sophomore year. Non-credit. Spring term.
4. *Tutorial*: Required. ENG-SCI 100HF.
5. *Thesis*: Required: An individual engineering design project is an essential element of every S.B. program and is undertaken during the senior year as part of ENG-SCI 100HF. Faculty-supervised reading and research is an important aspect of this

requirement.

6. *General examination*: None.
7. *Other information:*
    a. Students who score below a letter grade of B in their math courses, particularly in the MATH 1A/MATH 1B and MATH 21A/MATH 21B series, are strongly encouraged to speak with the Mechanical Engineering Director of Undergraduate Studies or Associate Director of Undergraduate Studies to discuss their math preparation for Mechanical Engineering.
    b. ENG-SCI 53 and ESE 6 can only count as an engineering elective when taken during the first year or sophomore year.
    c. Only four credits of ENG-SCI 91R can count as an approved elective in the degree requirements.
    d. Exactly four credits of ENG-SCI 105HFR can count as an approved elective in the degree requirements.
    e. Pass/fail and SAT/UNS: None of the courses used to satisfy the concentration requirements may be taken pass/fail or SAT/UNS.
    f. Plan of Study: Concentrators are required to file an approved departmental Plan of Study during their third term (i.e., the first term of their sophomore year) and to keep their plan up to date in subsequent years. All S.B. programs must meet the overall ABET program guidelines, a minimum of four courses in basic sciences, four courses in mathematics, and 12 courses in engineering topics. Plan of Study forms may be obtained from the School of Engineering and Applied Sciences' Office of Academic Programs, SEC 1.101, and from the SEAS website at https://www.seas.harvard.edu/materials-science-mechanical-engineering/undergraduate-programs/concentration-information/requirements.
    g. Concentrators who wish to remain beyond the end of the second term of their senior year to complete the S.B. requirements must be approved to do so by the Undergraduate Engineering Committee. A written petition is required and should always be submitted as early as possible and under discussion with the Associate Director of Undergraduate Studies or the Director of Undergraduate Studies. Petitions can be submitted no later than January 15 between the student's fifth and sixth terms (i.e., middle of junior year), or August 15 between the student's fifth and sixth terms if the student's fifth term is in the spring. Under no circumstances will the committee grant a student permission for more than two additional terms. Petitions are only granted in exceptional cases, and only to meet specific S.B. degree requirements. More information can be found on the SEAS website at https://www.seas.harvard.edu/materials-science-mechanical-engineering/undergraduate-programs/concentration-information/requirements.
    h. Joint concentrations: Mechanical Engineering does not participate in joint concentrations.
    i. Double concentrations: Mechanical Engineering does not participate in double concentrations.
    j. Any exceptions to these policies must be approved via written petition.

ADVISING

Students interested in concentrating in Mechanical Engineering should discuss their plans with the Director of Undergraduate Studies, the Associate Director of Undergraduate Studies, or the Academic Programs Administrator. Each undergraduate who elects to concentrate in Mechanical Engineering is assigned a faculty advisor depending on his or her area of specialization. The faculty advisor might also be a member of the Undergraduate Engineering Committee, whose members have the responsibility for reviewing departmental Plans of Study. If students do not request a change in advisor, they have the same advisor until they

graduate. Each student is reassigned to another faculty member should the original faculty advisor be on leave. It is expected that students will discuss their Plans of Study and progress with their Director of Undergraduate Studies or Associate Director of Undergraduate Studies at the beginning of each term. Students may seek advice from their faculty advisor, the Director of Undergraduate Studies, the Associate Director of Undergraduate Studies, or the Academic Programs Administrator at any time.

For up-to-date information on advising in Mechanical Engineering, students should see the Advising Programs Office webpage at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Further information is available from the Director of Undergraduate Studies for Mechanical Engineering, the Associate Director of Undergraduate Studies, Dr. Seymur Hasanov (shasanov@seas.harvard.edu, 617-496-5463), or the Undergraduate Academic Programs Administrator, Sarah Colgan (scolgan@seas.harvard.edu).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Mechanical Engineering	57	53	64	72	70	67	54	84	96	91
Mechanical Engineering + another field	0	0	0	0	0	0	0	0	0	0
Another field + Mechanical Engineering	0	0	0	0	0	0	0	0	0	0

* Mechanical Engineering was a new concentration for 2012–13.

Molecular and Cellular Biology

The Molecular and Cellular Biology (MCB) concentration emphasizes the intersection of modern research in cellular biology with medicine and society. It is rooted in the investigation of biological processes based on the study of molecules and their interactions in the context of cells and tissues, and in understanding how the vast information context of the genome orchestrates the behavior of the cell. MCB is therefore ideally suited for students who wish to study molecular and cellular processes at the heart of both normal physiology and disease. It focuses on the fundamental principles of modern biology at the hub of nearly all life science subdisciplines, and integrates many different methodologies ranging from chemistry and genetics to computer science and engineering, as well as fundamental concepts in physics and mathematics.

MCB concentrators will acquire an understanding of scientific logic and approaches as they explore a wide range of contemporary subjects, spanning biochemistry, cell biology, genomics, systems biology, developmental biology, immunology, cancer biology, molecular medicine, the microbiome, global health, and infectious disease. Students will also have the opportunity to tackle subjects of a more applied nature, such as drug design, personalized medicine, and biotechnology.

Through course work and hands-on research, students in the concentration will have the opportunity to explore many of the central questions in modern biology and medicine. The MCB faculty is dedicated to supporting undergraduate research, and we encourage students to join the laboratory of an MCB faculty member or a laboratory in one of the affiliated centers at Harvard Medical School, the Harvard School of Public Health, and affiliated institutes. We consider the senior thesis to be the capstone academic experience, and the concentration will provide extensive support to seniors to make thesis writing an enriching experience.

MCB graduates will be informed citizens who can understand and evaluate the impact of new research discoveries in the life sciences, discoveries that are unfolding at a breathtaking and accelerating pace. Both courses and programs that promote interactions with faculty members link basic, mechanistic insights with human disease and show how the study of disease leads to fundamental biological discoveries. Graduates of the MCB concentration will stand poised to pursue a wide range of careers, including biological and medical research, public and global health, science policy, law and intellectual property, business, education, and science writing.

The Board of Tutors in Biochemical Sciences, which was established in 1926, runs the tutorial program for the Molecular and Cellular Biology concentration and the Chemical and Physical Biology concentration. The tutorial program offers individualized instruction to all concentrators beginning at the time of declaration. Concentrators typically meet with their tutors every two weeks and discuss primary research literature in a small group or one-on-one setting. Mentoring on career choices, the research experience, and other academic matters is a logical extension of the tutorial. The tutorial is not taken for credit and therefore does not appear on the my.harvard Crimson Cart or transcript. The Head Tutor and the concentration advisors make all tutorial assignments and are available throughout the academic year to answer questions from students or their tutors. A handout that describes the history, goals, and format of the tutorial program is available on the web at https://lifesciences.fas.harvard.edu/files/lifesci/files/boft_handout.pdf.

LEARNING OBJECTIVES

The Molecular and Cellular Biology (MCB) concentration has several learning objectives, a few of which are listed below:

- Investigate biological processes at the level of cells and molecules.
- Apply the scientific method to solve problems, both in and out of the lab.
- Critically review scientific literature and evidence.

REQUIREMENTS

Molecular and Cellular Biology
Basic Requirements: 12–13 courses (48–52 credits)

1. *Required courses:*
    a. Foundational: Two courses. LS 1A (or LPS A) and LS 1B, or LS 50A and LS 50B, or equivalent.
    b. Biology: Two courses. MCB 60 and one additional course selected from MCB 63, MCB 64, MCB 65, MCB 66, MCB 68, or MCB 80.
    c. Chemistry: Two courses. One of these courses should be general chemistry, such as PHYSCI 111, or equivalent, and the remaining course should be organic chemistry and may be chosen from CHEM 17 or CHEM 20. More information is available in items 3b and 3c, below.
    d. Mathematics and computational skills: One or two courses. In addition to mathematics, statistics and computational skills are increasingly important in our discipline. According to a student's preparation level, this requirement can be fulfilled in two ways.
        i. One path is to take MATH 1B and one of the following:
            1. MATH 19A or higher.
            2. STAT 102 (or STAT 110 or STAT 111 or an approved alternative).
            3. Computer science such as COMPSCI 50 or an approved alternative.
        ii. An alternative path is to demonstrate competency beyond the MATH 1B level by taking MATH 19A or higher, or by taking an approved calculus-based statistics course (such as STAT 110 or STAT 111).
        iii. Students are encouraged to discuss which path is most appropriate for their preparation level and interests with the concentration advising team. Students should note that those who are able and choose to meet the mathematics/computational skills requirement using only one course may need to take one additional course to meet the minimum course requirement for the concentration.
    e. Physics: Two courses. One course in mechanics (PHYSCI 2 or equivalent) and one course in electricity and magnetism (PHYSCI 3 or equivalent).
    f. Advanced courses: Two courses above the introductory level, including at least one MCB course at the 100-level and higher. All MCB courses at the 100-level and higher and many advanced courses in the natural and physical sciences, engineering, and/or mathematics may be used to fulfill this requirement. Students are encouraged to consult concentration advisors when selecting upper-level courses.
    g. Research experience: The requirement for research experience can be fulfilled by at least one semester of research (LS 100R, MCB 91R, or MCB 99) or a summer research experience in an approved program. To fulfill the research requirement, a summer research experience ordinarily (1) consists of at least eight weeks of full-time research, (2) is sponsored by a Harvard-affiliated

faculty member, (3) is broadly related to the field, and (4) culminates in a capstone experience (a substantive written report, poster, or oral presentation outside of the host lab). A list of approved programs that fulfill these requirements is available from the concentration office. Students doing thesis work ordinarily enroll in two terms of MCB 99 in their final year at the College, one of these two terms is sufficient to fulfill this requirement.

2. *Tutorial*: The tutorial program is an important component of the concentration. It provides a mechanism for students to engage in mentorship relationships with the MCB faculty and members of the Board of Tutors in Biochemical Sciences. The goals of the tutorial are to (1) provide opportunities for discussions about science and its role in the larger community, (2) provide students with the foundation to apply their education and the scientific method to life outside of the classroom and Harvard, and (3) advise and inform students on curricular and preprofessional choices. The tutorial is a non-credit program that spans the whole length of time the student is part of the concentration.
3. *Other information*:
    a. Pass/fail: All courses for concentration credit must be letter-graded.
    b. The total number of concentration courses taken during the student's College career (including approved study abroad or transfer credits) must be at least 12 (14 for honors eligibility). Students who place out of particular concentration requirements based on their preparation level should choose additional courses appropriate to their intellectual interests and skill level in consultation with the concentration advising team. Similarly, students who fulfill their research requirement in the summer may need to take an additional course to meet the minimum course requirement.
    c. General chemistry: We highly encourage students who start with CHEM 17 or CHEM 20 (rather than PHYSCI 1) to take a course containing elements of inorganic and/or physical chemistry (such as CHEM 40 or CHEM 60, MCB 65 or MCB 199, PHYSCI 10 or PHYSCI 11, or equivalent), especially if they are considering a career in research or medicine.
    d. Courses offered by the School of Engineering and Applied Sciences and by the Division of Medical Sciences may be counted for concentration credit wherever appropriate. Students should consult the concentration office for more information.
4. Note: The courses listed here are examples of those commonly taken by MCB concentrators to fulfill the respective requirements. Students may fulfill requirements using courses not listed here after consultation with the concentration advisors.

Molecular and Cellular Biology
Honors Eligibility Requirements: 14–15 courses (56–60 credits)

1. *Required courses:*
    a. Same as **Basic Requirements** items 1–3 above.
    b. A second semester of organic chemistry (CHEM 27 or CHEM 30 or equivalent).
    c. One additional advanced course (see item 1f above).
2. *Thesis*: Optional for award of honors or high honors in the field, but required for highest honors in the field. To be considered for highest honors, a thesis based on independent laboratory research is required. Students intending to write a thesis should plan to enroll in two terms of MCB 99 in their final year at the College. One term of MCB 99 counts toward the requirements for a research experience (see item 1g in **Basic Requirements**, above) and the other term counts as one of the three upper-level courses required for honors eligibility (item 1f, above).

Molecular and Cellular Biology
Joint Concentrations

Students wishing to pursue a joint concentration with MCB must fulfill the MCB honors course requirements and complete a senior thesis that is at the intersection of the two fields of study. While a variety of joint concentrations are possible, quantitative fields such as Statistics and Computer Science may be particularly appropriate. Owing to the significant overlap in requirements, a joint concentration in MCB with any of the other life science concentrations (Neuroscience, Chemical and Physical Biology, Human Developmental and Regenerative Biology, Integrative Biology, Human Evolutionary Biology, Biomedical Engineering, Chemistry, Psychology [Life Science track]) is not allowed. Joint concentrations are evaluated and approved on a case-by-case basis. The process for evaluation, approval, policies, and advising for a joint concentration with MCB is as follows:

1. Potential joint concentrators begin the process by declaring on my.harvard. This step facilitates advising and concentration requirement oversight by both potential concentrations. To finish the MCB joint declaration process, potential joint concentrators must submit a petition form and receive approval no later than March 15 of their junior year. Early submission of the petition is preferred. Potential joint concentrators are required to meet with their MCB concentration advisor to map out the joint study plan and discuss potential thesis topics prior to petition submission. (Note that MCB course requirements are unaffected whether MCB is the primary or the allied concentration.) The Head Tutor, in collaboration with the concentration advisors, reviews the petitions for a joint concentration and responds with a decision and feedback within a month from the time of submission. Students whose petitions are denied can address the comments in the feedback and resubmit by the final deadline of March 15. The petition process is intended to give students sufficient time to develop and submit their full thesis proposals during the month of July preceding their senior year.
2. A joint concentration degree will not be awarded if any thesis or course work requirement is not met.
3. MCB limits double-counting for a joint concentration to two courses. This also applies to a MCB joint with concentrations that allow more courses to double-count, regardless of whether MCB is the primary or the allied concentration.
4. The student is responsible for mediating communications with the two concentrations to obtain approval of the thesis proposal and to establish a plan for evaluation of the joint thesis by both concentrations.
5. Joint concentrators are required to discuss their progress at the start of each semester by meeting with advisors from both concentrations.

ADVISING

The MCB concentration advisors, Dr. Dominic Mao and Dr. Monique Brewster, are available to concentrators and pre-concentrators to provide guidance on course selection, laboratory research, and the fulfillment of concentration requirements.

For up-to-date information on advising in Molecular and Cellular Biology, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

A tutorial reference library is housed in the MCB Undergraduate Office at 7 Divinity Avenue (95 Sherman Fairchild Building), which contains books and hard copies of past senior theses (thesis titles from 2011–present). You may also view theses in the “Research & Thesis” pages of the MCB undergraduate website at https://www.mcb.harvard.edu/undergraduate/molecular-and-cellular-biology-mcb/. Three rooms on the upper level of the undergraduate office are

used by concentrators for tutorial meetings and as study spaces.

HOW TO FIND OUT MORE

The concentration advisors are the primary contacts for advice on course selection, petitions around joint concentrations, and laboratory research. The Head Tutor for the Molecular and Cellular Biology concentration is Professor Sam Kunes, and the concentration advisors are Dr. Dominic Mao (dominicmao@fas.harvard.edu, 617-496-1206) and Dr. Monique Brewster (mbrewst@g.harvard.edu, 617-496-6136). Students should visit https://www.mcb.harvard.edu/undergraduate/molecular-and-cellular-biology-mcb/ or contact the concentration advisors for more information.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Molecular and Cellular Biology	101	124	158	150	132	110	99	126	131	135
Molecular and Cellular Biology + another field	1	0	3	3	2	7	8	13	11	11
Another field + Molecular and Cellular Biology	0	0	0	0	1	4	4	4	2	4

Music

The concentration in Music equips students with a critical and practical understanding of music by exploring a wide variety of musical styles, genres, and traditions. Department of Music courses offer a solid foundation in music theory, analysis, composition, and criticism, and provide an opportunity to develop acute listening skills through various cultural and historical contexts. The concentration in Music is centered on an academic focus that supports the intellectual development of musicians while also offering creative programs in music performance, composition, and improvisation.

A wide range of introductory and advanced courses are available in music theory, composition, historical musicology, creative practice and ethnomusicology. These courses reflect the specialties of our academic faculty; diaspora studies and migration, opera, jazz and contemporary music, music and politics, early music and historically informed performance, musical theater, music and media, improvisation, hip-hop, music in film, American and European modernism, music and ecology, music and language, new music of the 21st century, and the musical traditions of Africa, Latin America, and Asia.

Students are encouraged to participate in faculty-led ensembles including orchestra, chorus, jazz, and contemporary ensembles. Chamber music courses focus on small-ensemble repertoire and performance practice through faculty-led coaching and recitals.

Under advisement from the Director of Undergraduate Studies (DUS), students identify their own path of study through the concentration, creating a mix of courses that best reflect their musical interests and aspirations. Students may enter the concentration from any course offered by the Department of Music.

The heart of the concentration is MUSIC 97 Sophomore Tutorial, a semester-long course that introduces students from all musical backgrounds to the study of music. This required course examines select musical repertoires drawn from diverse cultures and historical periods and introduces a wide range of methodologies. Due to its foundational role, it is recommended that MUSIC 97 be fulfilled as early in the concentration as possible, ideally at the time of concentration declaration and before the completion of a student’s sophomore year.

After completing MUSIC 97, students continue with electives that invite engagement with the arts at a deeper level, drawing on courses from a variety of areas of focus. MUSIC 97 provides a shared point of departure for course work in our three primary course categories:

History, Culture, Society
Music Theory
Creating Music

To foster breadth and depth in musical study, the concentration in Music requires that the student complete at least one upper-level (100+) course in each of the three categories listed above.

The department welcomes double and joint concentrations from all participating departments. Students who wish to pursue a joint concentration should consult with the Director of Undergraduate Studies (DUS) prior to concentration declaration to explore how best to pursue their course interests in music, to review the role of primary vs. allied concentration, to consider a thesis topic inclusive of both concentrations, and to review thesis timelines and guidelines. Joint concentrators are required to fulfill a reduced number of course

requirements, as outlined below, including the completion of a senior thesis based on a topic that engages both concentrations.

MUSIC 91R Independent Study is an opportunity for advanced students to pursue an area of musical interest in great depth. Open to Music concentrators only, students are required to submit a detailed proposal to the DUS describing their anticipated project in detail, including an estimated timeline for benchmarks and pathway to completion. MUSIC 91 may be taken for concentration credit as an elective with the approval of the DUS. Independent Study will be approved by the DUS based on appropriateness of the proposed work, faculty availability, and with the understanding that all work must be fully self-directed by the student. Students may not take MUSIC 91R more than once.

LEARNING OBJECTIVES

The concentration in Music encourages students to develop a critical and practical understanding of music by exploring a wide variety of musical styles, genres, and traditions. Department of Music courses offer a solid foundation in music theory and musical analysis, as well as compositional studies in both acoustic and electronic formats. Performance-oriented studies include a focus on large ensembles, chamber music, instrumental and vocal traditions, contemporary music, western classical music, jazz, historical performance practice, improvisation, and conducting. Musicology and ethnomusicology proseminars promote a critical understanding of music in diverse cultural, regional, and historical contexts.

REQUIREMENTS

Music
Requirements: 10 courses (40 credits)

1. *Required courses:*
    a. MUSIC 97 Sophomore Tutorial
    b. One upper-level course (100+) in each of the following three categories (12 credits total):
        i. History, Culture, Society (4 credits)
        ii. Music Theory (4 credits)
            a. MUSIC 51A and MUSIC 51B
            or
            b. Music Theory (100+)
        iii. Creating Music (4 credits)
            a. For MUSIC 10-18, category credit requires that the course be taken for credit via MUSIC 107R. This letter-graded course requires committed participation in one of the performing ensembles (MUSIC 10-18) for a full year (two consecutive semesters), plus additional assignments as determined by the instructor.
2. *Electives*: Six courses (24 credits):
    a. All Department of Music courses satisfy concentration elective requirements. In addition:
        i. One First-Year Seminar taught by Department of Music faculty members may be used to fulfill an elective.
        ii. GenEd courses taught by Department of Music faculty members may be used to fulfill and elective.
        iii. With prior approval from the DUS, MUSIC 91R may be used to fulfill elective credit.

3. *Honors Track* (optional)*:*
    a. MUSIC 99, two semesters, graded SAT/UNS
        i. MUSIC 99 does not count toward the required 10 courses.
    b. An honors thesis is required. For thesis timeline, guidelines, and requirements see the department website at https://music.fas.harvard.edu/undergraduate-thesis.
4. *Other information*:
    a. Courses taken outside the Department of Music will be considered for concentration credit at the discretion of the DUS.
        i. Courses proposed for transfer must not compete with course offerings available in the Harvard Department of Music. Students should schedule an advising session with the DUS to confirm course eligibility prior to petitioning for transfer credit.
        ii. Students who have taken courses through Harvard's cross-registration programs may be eligible to apply credits from cross-registered courses toward their concentration or Secondary fields of study at Harvard, at the discretion of the DUS.
        iii. Courses must be taken for letter grade to count towards concentration category requirements. Courses taken pass/fail will count towards elective credit only, and only at the discretion of the DUS. If permitted, students may not count more than 2 courses pass/fail or SAT/UNS towards a concentration.
        iv. For more information about cross-registration, please visit the *Harvard College Student Handbook* at https://handbook.college.harvard.edu.
    b. Students participating in the joint studies program at Berklee College of Music or the dual degree program at the New England Conservatory of Music may transfer 16 credits (four courses) over four years, with a maximum of 8 credits towards a concentration in Music.
        i. Courses proposed for transfer must not compete with course offerings available in the Harvard Department of Music. Students should meet with the DUS to confirm course eligibility prior to petitioning for transfer credit.
        ii. To receive Harvard credit students must complete and submit the Proposal Form for Dual Programs of Study out of Residence. More information is available on the Dual Programs of Study website https://music.fas.harvard.edu/academics/undergraduate-study-in-music-information-for-prospective-students/about-the-dual-programs-of-study/.

Music
Joint Concentration Requirements: 8 courses (32 credits)

1. *Required courses:*
    a. MUSIC 97 Sophomore Tutorial (4 credits).
    b. One upper-level course (100+) in each of the three following categories (12 credits total):
        i. History, Culture, Society (4 credits)
        ii. Music Theory (4 credits)
            a. MUSIC 51A and MUSIC 51B
            OR
            b. Music Theory (100+)
        iii. Creating Music (4 credits)
            1. For MUSIC 10–18, category credit requires that the course be

taken for credit via MUSIC 107R. This letter-graded course requires committed participation in one of the performing ensembles (MUSIC 10–18) for a full year (two consecutive semesters), plus additional assignments as determined by the instructor.

2. Electives: Four courses (16 credits):
    a. All Department of Music courses satisfy concentration elective requirements. In addition:
        I. One First-Year Seminar taught by Department of Music faculty members may be used to fulfill an elective.
        II. Gen courses taught by Department of Music faculty members may be used to fulfill and elective.
        III. With prior approval from the DUS, MUSIC 91R may be used to fulfill elective credit.
3. Honors track (required):
    a. Students must designate a Primary and Allied concentration. The Primary concentration will be responsible for setting all parameters for the honors thesis process, with advisement from the Allied concentration. If Music is the Primary concentration, students are required to follow the steps below:
    b. MUSIC 99, two semesters, graded SAT/UNS.
        I. MUSIC 99 does not count toward the required 8 courses.
    c. Honors thesis is required. For thesis timeline, guidelines, and requirements see the department website at https://music.fas.harvard.edu/undergraduate-thesis
4. Other information:
    a. Courses taken outside of the Department of Music will be considered for concentration credit at the discretion of the DUS.
        I. Courses proposed for transfer must not compete with course offerings available in the Harvard Department of Music. Students should schedule an advising session with the DUS to confirm course eligibility prior to petitioning for transfer credit.
        II. Students who have taken courses through Harvard's cross-registration programs may be eligible to apply credits from cross-registered courses toward their concentration or Secondary fields of study at Harvard.
        III. Courses must be taken for letter grade to count towards concentration category requirements. Courses taken pass/fail will count towards elective credit only, and only at the discretion of the DUS. If permitted, students may not count more than 2 courses pass/fail or SAT/UNS towards a concentration.
        IV. For more information about cross-registration, please visit the *Harvard College Student Handbook* at https://handbook.college.harvard.edu.
    b. Students participating in the joint studies program at Berklee College of Music or the dual degree program at the New England Conservatory of Music may transfer 16 credits (four courses) over four years, with a maximum of 8 credits towards a concentration in Music.
        I. Courses proposed for transfer must not compete with course offerings available in the Harvard Department of Music. Students should meet with the DUS to confirm course eligibility prior to petitioning for transfer credit.

II. To receive Harvard credit students must complete and submit the Proposal Form for Dual Programs of Study out of Residence. More information is available on the Dual Programs of Study website https://music.fas.harvard.edu/academics/undergraduate-study-in-music-information-for-prospective-students/about-the-dual-programs-of-study/.

ADVISING

Advising in the Department of Music is carried out by the Director of Undergraduate Studies (DUS) with support from the Undergraduate Program Coordinator (UPC). The DUS has overall responsibility for the academic progress of undergraduates and is available by appointment to review programs of study. All students are required to schedule an advising appointment with the Director of Undergraduate Studies prior to the declaration of a concentration or secondary in Music to develop a strategy for fulfillment of academic requirements. All concentrators will continue to be advised by the DUS prior to course registration.

More information on undergraduate advising in the Department of Music can be found by visiting the department website at https://music.fas.harvard.edu/academics/. Students may schedule advising sessions with either the DUS or UPC.

RESOURCES

The Eda Kuhn Loeb Music Library provides access to a comprehensive collection of books, musical scores, and audio and video recordings in a wide variety of disciplines including historical musicology, music theory, ethnomusicology, composition, and historically informed performance practice. Library staff are available to provide support for research and access to special collections.

The Shelemay Sound Media Lab allows students to experiment with sound production equipment and techniques. Workshops are offered regularly on various audio engineering topics, and a suite of professional field recording equipment is available for student use. Equipment may be checked out with a valid Harvard ID through the Music Lab Equipment Room.

Practice Rooms and Instrument Lockers are available to all Harvard students. 15 soundproof practice rooms are located in the Music Building and are equipped with either upright or grand pianos. Practice rooms are available on a first-come, first-served basis, using the sign-out process available in the Department of Music main office. A valid Harvard ID is required for practice room access. A limited number of instrument lockers are available for instrument storage. Lockers are available for the academic year only (including over winter break). Interested students should contact the Department of Music for more information.

Prizes and Fellowships are available through a variety of undergraduate funding sources. Travel fellowships are available to students who wish to pursue opportunities requiring travel away from Harvard University. Composition prizes are available to students who wish to create composed works of a wide variety. Interested students should contact the Department of Music for more information.

The Office for the Arts Music Lesson Subsidy Program provides support for instrumental and vocal instruction to qualified, full-time, enrolled Harvard College undergraduates currently receiving some financial aid. It is intended for students who, without financial help, could not make a sustained commitment to private music study. Students should contact the Office for

the Arts for more information.

HOW TO FIND OUT MORE

http://music.fas.harvard.edu/undergraduateThe Department of Music welcomes all students with an interest in pursuing musical studies. For further information, students should contact the Director of Undergraduate Studies or the Undergraduate Program Coordinator by scheduling an appointment by visiting the “Current Undergraduate Student” page on the department website at https://music.fas.harvard.edu/academics/

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Music	16	17	12	7	11	14	9	14	21	23
Music + another field	9	11	9	8	7	5	2	7	2	0
Another field + Music	7	7	10	10	16	19	7	12	5	7

Near Eastern Languages and Civilizations

The Department of Near Eastern Languages and Civilizations (NELC) introduces students to the ancient and modern peoples, languages, cultures, and societies of the Near/Middle East. Loosely defined as stretching from Morocco in the west to Iran and Afghanistan in the east, the region is home to some of the world's major religions and civilizations. Its languages, religions, literatures, and great works of art have continued to shape our world, from the earliest permanent human settlements to today's news headlines.

The department offers instruction in a range of thematic courses and languages—ancient and modern—including Akkadian, Arabic, Aramaic, Armenian, Egyptian, Hebrew, Persian, Sumerian, Syriac, Turkish, and Yiddish.

The concentration offers students a multifaceted and interdisciplinary perspective on Near Middle Eastern cultures and languages that have been so influential throughout the world. Undergraduate concentrators develop skills in one or more of the languages of the region on their way to choosing from a wide variety of directions of study. Concentrators choose one of four specific tracks: the Middle East in Antiquity, Jewish Studies, Histories and Cultures of Muslim Societies (Islamic Studies), or Modern Middle Eastern Studies.

- **The Middle East in Antiquity** explores the histories of the civilizations of ancient Western Asia and North Africa, which witnessed the first complex societies and the first major developments in social and political organization. The legacies of these ancient cultures, represented by Assyriology, Egyptology, Archaeology, and several other fields, remain a critical force in subsequent Middle Eastern—and world—history today. The goal of this track is to give students background in the history and culture of the principal civilizations of the region in order to analyze and synthesize linguistic, textual, artistic, and archaeological evidence.

- **Jewish Studies** explores many facets of Jewish religion, law, literature, philosophy, and culture, and the histories of the Jews in the Middle East and beyond. To prepare students for independent study in one or more areas of Jewish culture, the department offers courses at several levels in Hebrew and Yiddish. This track covers Jewish studies in ancient, medieval, and modern periods.

- **Histories and Cultures of Muslim Societies (Islamic Studies)** focuses on the literary, philosophical, and religious traditions of the Islamic world from the rise of Islam to the present day. The language areas covered are Arabic, Persian, Turkish, and Urdu. The program in Histories and Cultures of Muslim Societies is structured to allow students flexibility in their approach to the field, and students are encouraged to incorporate disciplinary perspectives currently available in the Harvard curriculum (for example, Comparative Literature, Philosophy, Politics, Religious Studies, and Sociology).

- **Modern Middle Eastern Studies** explores the cultures, histories, and politics of modern Middle Eastern societies and diasporas. Such study involves a combination of courses in a variety of fields drawn especially from the humanities and social sciences. The requirements are designed with sufficient flexibility so that students may pursue the field as an introduction to the region as a whole, or as a more narrowly focused exploration of a particular country or theme, depending on their interests.

The Director of Undergraduate Studies assists each student in making an informed choice among these options and assigns a faculty member to serve as the student's mentor/advisor,

advising on courses and other work as the student progresses. There is no set way to meet the requirements, and students will benefit from the close guidance of their assigned advisor. One of the strengths of the concentration in Near Eastern Languages and Civilizations is the individual attention students receive in pursuing their interests within the broader arena of Near/Middle Eastern Studies.

Undergraduate students also have the option of applying for an A.B./A.M. degree. For further information, students should consult with the Office of Undergraduate Education. Finally, the department offers secondary fields in the same four pathways listed above, as well as language citations in several Middle Eastern languages.

The NELC concentration is of interest to students who are considering careers in academia, government and Foreign Service, law, journalism, education, business, and divinity, among others, as well as those who anticipate graduate study in Near Eastern or related fields.

LEARNING OBJECTIVES

The concentration offers students a multifaceted and interdisciplinary perspective on Near Middle Eastern cultures and languages that have been so influential throughout the world. Undergraduate concentrators develop skills in one or more of the languages of the region on their way to choosing from a wide variety of directions of study. The department offers instruction in a range of ancient and modern languages including Akkadian, Arabic, Aramaic, Armenian, Egyptian, Hebrew, Iranian, Persian, Sumerian, Turkish (Ottoman and Modern), and Yiddish. The concentration provides a solid grounding in the student's area of focus and offers an in-depth look at how scholars explore these languages and their associated cultures, which have been so influential throughout the world.

REQUIREMENTS

Near Eastern Languages and Civilizations
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. Four courses in a language of the Near/Middle East. The language will be chosen in consultation with the student's mentor/advisor to fit each student's particular focus. If students can show evidence at the beginning of their concentration that they already have the equivalent of two years of knowledge of their language, they will be asked to take the two years at a more advanced level or in another language relevant to their focus. Students are encouraged to find ways to use their NELC language in other courses for their concentration.
    b. Five courses to be chosen in consultation with the student's mentor/advisor, in addition to the tutorials listed below. These courses should represent a coherent intellectual program. None of these courses may be taken pass/fail, with the possible exception of a First-Year Seminar (graded SAT/UNS) already taken by the student, providing that this seminar is accepted as relevant by the student's departmental mentor/advisor and the Director of Undergraduate Studies.
2. *Tutorials*:
    a. Sophomore year: NEC 101 (one course). A group tutorial required of all concentrators and taken in the spring term, NEC 101 comprises an introduction to the cultures, history, religion, literatures, and politics of the Near/Middle East in ancient, classical, and modern times, and also emphasizes major themes and problems that cut across individual cultures and historical periods. The tutorial is team-taught by NELC and affiliated faculty members. The student chooses the track in NELC by the end of the sophomore year.

b. Junior year: In the fall of the junior year, concentrators are assigned a departmental concentration advisor based on their concentration. To fulfill their concentration requirements, students meet with other department concentrators in a seminar every second week throughout their junior year. With the help of their advisor, they define a research topic, compile a bibliography, and write a research paper under their advisor's supervision during either the fall or the spring semester. The grade for the junior year tutorial (NEC 98R) is given in the spring semester.
c. Senior year: Concentrators meet for the biweekly concentration seminar to present and discuss their own work and that of their peers as they research, prepare, and write their senior thesis under the guidance of their academic advisor. Concentrators opting out of the senior thesis submit a shorter research paper under the supervision of their departmental concentration advisor and still attend the biweekly seminar.

3. *Thesis*: Not required.
4. *General examination*: Required. An oral examination based on the student's work, to be arranged under the supervision of the student's mentor and the Director of Undergraduate Studies.

Near Eastern Languages and Civilizations
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses*: Same as **Basic Requirements** above.
2. *Tutorials*: Same as **Basic Requirements** except, in the senior year, a full year (two courses) of NEC 99, focused on the writing of the senior thesis, is required.
3. *Thesis*: Required. For guidelines on writing the honors thesis, students should consult the departmental publication *A Guide to the Senior Honors Thesis*, available in the NELC office and on the website at https://nelc.fas.harvard.edu/.
4. *General examination*: Required. This examination will be based on the student's concentration courses and thesis, and it will be arranged under the supervision of the student's mentor/advisor and the Director of Undergraduate Studies.

Near Eastern Languages and Civilizations and Government or History
Joint Concentration Requirements: 14 courses (56 credits)

Possibilities for joint concentrations exist and are welcome in NELC. The department has formalized joint concentrations with the departments of Government and History, whose requirements are indicated below. For joint concentration with any other departments, the student must make a case for the joint concentration to both NELC, and the other department or program concerned. Joint concentrators take four terms of a language, the sophomore and junior tutorials, and at least one other course in Near/Middle Eastern studies, in addition to a senior tutorial in two terms focused on the writing of a senior thesis that combines the two fields.

1. *Required courses:*
    a. Near Eastern language courses: Four courses.
    b. Additional course work: Eight courses:
        i. HIST 97.
        ii. NEC 101.
        iii. Both tutorials are offered in the spring term only; students may choose to take both during their sophomore spring, or to take one in the sophomore spring and the other in the junior spring.
        iv. One seminar focused on Near Eastern history or an equivalent type of research seminar in NELC that meets with the approval of the

Undergraduate Office and culminates in a 20-page research paper involving primary source research. Must be completed by the end of the junior spring, in preparation for the senior thesis.

v. One course that focuses significantly on U.S. or European history.
vi. One course in premodern Near Eastern History.
vii. One course in modern Near Eastern History.
viii. Two additional electives within Near Eastern History.

2. *Thesis:* Senior Thesis. Two courses. Students who wish to pursue a joint concentration in Near Eastern history must write a senior thesis, which also requires enrollment in one of two yearlong senior thesis seminars: either HIST 99 or NEC 99. Students may select either seminar.
3. *Other information:*
    a. Two types of courses count automatically toward NELC/History joint concentration requirements:
        i. Courses listed in the course catalog's "History" section and approved courses in the catalog's "Near Eastern Languages and Civilizations" section, as determined in consultation with the History Department's Director of Undergraduate Studies.
        ii. Courses taught in the General Education and/or First-Year Seminar programs by full members of the History Department or NELC Department faculty. Students wishing to count such courses toward their concentration requirements should consult the Undergraduate Office, as they may need to file a petition requiring approval by the Director of Undergraduate Studies. Students may also apply to do an independent study, or HIST 91R, with a member of the department; HIST 91R can be used to fulfill one of the elective course requirements.
    b. The joint concentration also regularly accepts credit from study abroad toward concentration requirements. With the exception of certain First-Year Seminars taught by History or NELC faculty (see above), courses taken on a pass/fail basis may not be counted for concentration credit.

Near Eastern Languages and Civilizations and Other Departments
Joint Concentration Requirements: 9 courses

1. *Required courses*: Four courses in a language of the Near/Middle East, plus at least one other course in the Near/Middle East dealing with literature, religion, government, economics, or society, as approved by the student's NELC mentor/advisor and the NELC Director of Undergraduate Studies.
2. *Tutorials*:
    a. Sophomore year: NEC 101 (one course) required.
    b. Junior year: NEC 98 (one course) required.
    c. Senior year: NEC 99AB (two courses, one per each semester) or two terms of tutorial in the other concentration. The tutorial should be registered with the primary concentration and have the approval of the allied concentration.
3. *Thesis*: Required. The thesis must be related to both fields. Both concentrations will participate in the grading of the thesis.
4. *General examination*: Same as **Requirements for Honors Eligibility**; however, it will normally involve faculty from both concentration departments/programs.

ADVISING

Sophomores and other new concentrators meet first with the Director of Undergraduate Studies, with whom they discuss their interests and arrange to meet with a member of the faculty who will serve as mentor/advisor in the concentration. Junior and senior concentrators

meet with their mentors on a regular basis.

For up-to-date information on advising in Near Eastern Languages and Civilizations, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Harvard's library resources in the various fields of Near Eastern studies are virtually unparalleled. Widener Library, for example, has a large collection of materials in Akkadian, Arabic, Armenian, Egyptian, Hebrew, Persian, Sumerian, Turkish, and Yiddish, and has several reading rooms specifically assigned to field studies in NELC. The reading room of the Center for Middle Eastern Studies and the Andover-Harvard Library of the Harvard Divinity School also have excellent resources available to students. Students wishing to specialize in modern Near Eastern political or social studies should familiarize themselves with the resources and personnel of the Center for Middle Eastern Studies at 38 Kirkland Street. Those interested in Jewish Studies should become familiar with the resources and personnel of the Center for Jewish Studies, located on the second floor of the Semitic Museum. The Harvard Semitic Museum, in which the department is housed, has a superb collection of ancient and medieval manuscripts and artifacts representing many of the cultures of the Near East. In addition, as a University teaching museum, the Harvard Museum of the Ancient Near East (HMANE) is committed to providing access to these materials for study and teaching. For concentrators interested in the archaeology of the Near East, a variety of opportunities for archaeological work in the area are available.

HOW TO FIND OUT MORE

Students interested in a concentration in Near Eastern Languages and Civilizations should arrange to meet with the Acting Director of Undergraduate Studies, Christina Maranci, reachable at cmaranci@fas.harvard.edu.

Students are also encouraged to obtain a copy of our undergraduate handbook, *The Concentration in Near Eastern Studies at Harvard*, which is available online at http://nelc.fas.harvard.edu/concentration-requirements.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Near Eastern Languages and Civilizations	14	8	4	8	7	4	3	5	7	6
Near Eastern Languages and Civilizations + another field	2	4	5	2	2	2	2	2	6	7
Another field + Near Eastern Languages and Civilizations	3	4	7	7	10	8	8	11	11	9

Neuroscience

Neuroscience, the study of the nervous system, is a field that investigates the biological mechanisms that underlie behavior and how brains process information. To develop a comprehensive understanding, we study the nervous system at every level: from the macroscopic (behavior and cognition) to the microscopic (cells and molecules). Consequently, the questions that neuroscientists ask are wide-ranging. For example, how do electrical, chemical, and molecular signals allow neurons to process and transmit information from the environment? What guides the development of the immense number of precise connections in the nervous system? How can the complex signals of many thousands of active neurons be recorded, interpreted, and modeled? What causes the profound behavioral deficits in Alzheimer's disease or autism spectrum disorder?

To answer these kinds of questions, neuroscientists study a variety of model systems including cultured cells, fruit flies, zebrafish, mice, monkeys, and humans. Simpler systems allow experimental manipulations (for example, gene knockouts/knock-ins, drug treatments, activity silencing) and invasive recording techniques (for example, electrically/optically recording neurons and networks, electron microscopy of the synapses and circuits). Studies in humans often focus on characterizing patterns of brain activity during development or disease using noninvasive recording techniques (for example, fMRI and EEG).

Neuroscientists may also use approaches from computer science and mathematics to analyze signals that arise from the brain or to understand the computational properties of neural networks. Thus, the study of neuroscience provides both a broad scientific training and a deep understanding of the biology of the nervous system. Given the diversity of interests in this field, the only prerequisite for students entering this concentration is an intense curiosity about the brain.

The Neuroscience curriculum includes a series of fundamental courses in the life and applied sciences. A central course on the neurobiology of behavior, NEURO 80/MCB 80, lays out the body of knowledge in neuroscience. In advanced elective courses, students explore specific areas of neuroscience more deeply based on their interests. We now list more than 40 advanced courses on a range of topics: cells and circuits, physiology, learning and memory, cognitive science, development, genetics, computational modeling, and disease and therapeutics. In addition to these course offerings, Neuroscience is one of the most vibrant fields of research at Harvard, and students have many opportunities for hands-on laboratory experience and independent research projects to complement and deepen their studies.

We offer three tracks within the Neuroscience concentration. The first, the Neurobiology track, provides the greatest focus on biology course work and provides a flexible foundation in the life and physical sciences. For this track, an undergraduate thesis is optional. The second track, the Mind Brain Behavior track, allows students to look beyond the biology of the brain and see how other disciplines (for example, economics, computer science, history of science, linguistics, philosophy, psychology, etc.) approach the study of the mind. This track requires a thesis. The third track, the Computational Neuroscience track, allows students to develop skills in mathematics and computer science to analyze and model the signals of the brain. For this track, a thesis is optional.

LEARNING OBJECTIVES

The Neuroscience curriculum includes a series of fundamental courses in the life sciences and the applied sciences. In advanced elective courses, students explore specific areas of neuroscience on a range of topics including cells and circuits, physiology, learning and

memory, cognitive science, development, genetics, computational modeling, and disease and therapeutics. Students have many opportunities for hands-on laboratory experience and independent research projects to complement and deepen their studies.

REQUIREMENTS

Neuroscience

Basic Requirements: 13, 16, or 14 courses, depending on track

1. *Required courses:*
    a. **Neurobiology track**: 13 courses (52 credits).
        i. Three courses in biology:
            1. Two courses from LS 1A, LPS A, LS 1B, and LS50.
            2. One course chosen from the following: HEB 1420, LS 2, MCB 60, MCB 63, MCB 64, MCB 65, MCB 66, MCB 68, OEB 50, OEB 53, SCRB 50.
        ii. Five courses in neuroscience
            1. NEURO 80.
            2. One foundational course chosen from the following (recommended sophomore or junior year): NEURO 57, NEURO 105, NEURO 115, NEURO 120, or NEURO 125.
            3. Three advanced courses in neuroscience (chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=electives).
        iii. Three courses in the physical or applied science fields: Ordinarily, all courses in chemistry, physical sciences, and physics or applied physics fulfill this requirement; select courses in computer science, Earth and planetary sciences, engineering sciences, and mathematics/applied math/statistics may also fulfill this requirement.
        iv. Two courses in math (at or above the level of MATH 1A or MATH MA/B), applied math, statistics, or programming:
            1. All students must demonstrate a fundamental understanding of basic calculus. This can be accomplished by either having received an AP calculus score of 4 or 5 (AB or BC), having placed above MATH 1A on the Harvard placement exam, or having completed MATH 1A (or MATH MA and MATH MB).
            2. For students who have fulfilled the basic calculus requirement above, we recommend one course in computer programming (for example, APMTH 10, COMPSCI 32, COMPSCI 50, or SCIENCE 5) and/or one course in statistics (for example, STAT 102).
    b. **Mind Brain Behavior (MBB) track**: 16 courses (64 credits).
        i. Same as Neurobiology track, except as noted below:
            1. Two advanced courses in neuroscience (chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=electives) instead of three.
            2. Two courses in physical or applied science fields instead of three. Ordinarily, all courses in chemistry, physical sciences, and physics or applied physics fulfill this requirement; select courses in computer science, earth and planetary sciences, engineering sciences, and applied math/mathematics may also fulfill this requirement.

ii. Two approved Mind Brain Behavior course electives chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=mbbelectives. Not all of the courses listed in the Mind Brain Behavior course search at courses.my.harvard.edu are appropriate MBB electives for Neuroscience concentrators.
iii. MBB 980: Seminar in Mind, Brain, Behavior: One course, letter-graded, recommended junior year.
iv. Thesis: Required. (More information about theses is available under "Honors Eligibility Requirements" below).
v. Other information: Students pursuing the Mind Brain Behavior track are also expected to participate in key University-wide Mind Brain Behavior activities, including the all-day MBB junior symposium (https://mbb.harvard.edu/pages/junior-symposium) and a non-credit senior year workshop for MBB thesis writers. Students are encouraged to join the student organization the Harvard Society for Mind, Brain, and Behavior (HSMBB).

c. **Computational Neuroscience track**: 14 courses (56 credits).
i. Three courses in mathematics and statistics:
1. Multivariable calculus: MATH 19A, MATH 21A, MATH 22B, MATH 23B, MATH 25B, MATH 55B, APMTH 22B.
2. Linear algebra: MATH 18/19B, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, APMTH 22A.
3. STAT 110 or ENG-SCI 150.
ii. Two courses in computer science:
1. COMPSCI 32, COMPSCI 50, or APMTH 10. Students with prior coding background who skip APMTH 10, COMPSCI 32, or COMPSCI 50 (or take COMPSCI 50 non-letter-graded) must take both COMPSCI 51 or 61 and another approved programming course.
2. COMPSCI 51 or COMPSCI 61.
iii. Two courses in biology:
1. Any one of the following: LS 1A (or LPS A), LS 1B, LS 2, HEB 1420, MCB 60, MCB 63, MCB 65, MCB 66, MCB 68, OEB 50, OEB 53, OEB 58, SCRB 50.
2. One approved 100-level HEB, MCB, OEB, or SCRB course, or any second course from the list above.
iv. Five neuroscience courses:
1. NEURO 80.
2. One foundational Computational Neuroscience course: Ordinarily students must take NEURO 120.
3. One additional advanced quantitative Neuroscience course: APMTH 226, BE 129, BE 130, BE 131, NEURO 105, NEURO 115, NEURO 120, NEURO 130, NEURO 140, NEURO 141, NEURO 231, PSY 1401, PSY 1406, PSY 1451.
4. Two additional advanced courses in Neuroscience (chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=mbbelectives.
v. Any two courses in modeling and analysis from a restricted set of applied math, BE, COMPSCI, ENG-SCI, MCB, and statistics courses (chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-buttokn=compneurotrack).

2. *Pass/fail:* All concentration requirements must be taken for a letter grade.
3. *Tutorials*: Different NEURO 101-level courses are offered each term. Ordinarily, only one tutorial may count toward the advanced Neuroscience course requirement. Completion of a tutorial is encouraged but not required. Tutorial seminars that are offered each year are listed on the concentration website (https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=tutorials) and in the course search in courses.my.harvard.edu.
4. *Other information:*
    a. LS 50 (16 credits): Normally LS 50 can be counted as LS1A, LS1B, one "intermediate biology" course, and one course in mathematics (Multivariable Calculus).
    b. Other course credit: Only Harvard Summer School courses CHEM S-17 (Organic Chemistry) and BIOS S-50 (Introductory Neuroscience) automatically count toward the concentration; others may be accepted by petition. Courses taken through study abroad programs may be counted by petition. Courses taken at other Harvard faculties (for example, Harvard Medical School) may count for credit if the course is one of the approved advanced Neuroscience courses; otherwise, it may be counted by petition.

Neuroscience
Honors Eligibility Requirements: 14–16 courses (56–64 credits)

1. *Required courses:*
    a. Same as **Basic Requirements** for each track above.
    b. One course in independent research (NEURO 91, NEURO 99, or LS 100/MCB 100).
2. *Thesis*: Optional for the award of honors or high honors in field but required for highest honors in field. The thesis is based on original research in Neuroscience and is ordinarily conducted in a laboratory. In their final semester, students are encouraged to take NEURO 99, the thesis-writing tutorial. All students planning to submit a senior thesis must submit a thesis proposal, usually at the end of the sixth term. The thesis proposal form is available on the concentration website (https://www.mcb.harvard.edu/undergraduate/neuroscience/research-and-thesis/?course-button=91and99formsinformation). Members of the Committee on Degrees in Neuroscience evaluate theses based on input from the mentor and other faculty reviewers.

Joint Concentration in Neuroscience with Neuroscience as the Primary Field
Requirements: 14–16 courses (56 credits)

1. *Required courses:* Students must satisfy the requirements of one of the three tracks above.
2. *Thesis:* Required. The thesis must integrate both fields, and both disciplines' approaches must be used to address the same overarching research goal. The topic must be approved by advisors from both concentrations during the sixth semester.
3. *Other information:*
    a. Students interested in a joint concentration should consult the advisors in both concentrations before their sixth semester (i.e., junior spring).
    b. Students may double-count a maximum of two courses between concentrations.

Joint Concentration in Neuroscience with Another Concentration as the Primary Field
Requirements: 8 courses (32 credits)

1. *Required courses:*
    a. One course in statistics, computer science, applied math, or math (at or above the level of MATH 1A, or equivalent).
    b. Two courses in biology:
        i. One of the following: LS 1A (or LPS A), LS 1B, LS 2, HEB 1420, MCB 60, MCB 63, MCB 65, MCB 66, MCB 68, OEB 50, OEB 53, OEB 58, SCRB 50.
        ii. One approved 100-level HEB, MCB, OEB, or SCRB course, or any second course from the list above.
    c. NEURO 80.
    d. One course from the following: NEURO 57, NEURO 105, NEURO 115, NEURO 120, or NEURO 125.
    e. Three advanced courses in Neuroscience (chosen from a list maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/?course-button=electives.
2. *Thesis.* Required. The thesis must integrate both fields, and both disciplines' approaches must be used to address the same overarching research goal. The topic must be approved by advisors from both concentrations during the sixth semester.
3. *Other information:*
    a. Students interested in a joint concentration should consult the advisors in both concentrations before their sixth semester (i.e., junior spring).
    b. Students may double-count a maximum of two courses between concentrations.

ADVISING

Dr. Ryan Draft, Dr. Laura Magnotti, and Dr. Kristina Penikis, the Neuroscience concentration advisors, are available to provide guidance to concentrators and pre-concentrators on course selection, laboratory research, and concentration requirements. The Head Tutor and members of the Committee on Degrees in Neuroscience also provide mentoring on academic and career issues.

For up-to-date information on advising in Neuroscience, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations or the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-contact-us/.

HOW TO FIND OUT MORE

For additional information, students should contact the following:

- Head Tutor of Neuroscience: Professor Jeff Lichtman, NW 249.50 Northwest Building, 52 Oxford Street, 617-496-8943.
- Neuroscience concentration advisors: Dr. Ryan Draft, draft@fas.harvard.edu; Dr. Laura Magnotti, magnotti@fas.harvard.edu; Dr. Kristina Penikis, kpenikis@fas.harvard.edu
- More information about the Neuroscience concentration can also be found at https://www.mcb.harvard.edu/undergraduate/neuroscience.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Neuroscience*	206	203	187	194	218	229	206	266	304	301
Neuroscience + another field	1	2	0	0	11	19	18	14	15	10
Another field + Neuroscience	0	0	1	1	4	14	15	13	21	22

* Neuroscience began offering joint concentrations in 2018–19.

Philosophy

Philosophy studies many of humanity's fundamental questions: How should we live, what kind of society should we strive toward, what are the limits of human knowledge? What is truth? Justice? Beauty?

These questions are central to our lives, because in much of what we do, we at least implicitly assume answers to them.

Philosophy seeks to reflect on these questions and answer them in a systematic, explicit, and rigorous way—relying on careful argumentation and drawing from outside fields as diverse as economics, literature, religion, law, mathematics, the physical sciences, and psychology. And while most of the tradition of philosophy is Western, we seek to connect with non-Western traditions like Islam and Buddhism, as well.

Philosophy doesn't just operate at this most abstract of planes. We often investigate more specific issues in our classes.

- What is race, and what does justice require when it comes to race?
- What is gender?
- What are the ethical issues raised by technology in society?
- When and why is punishment justified?
- How should we interpret quantum mechanics?
- How does language play into the constitution of ourselves and our society?
- In what sense are various kinds of facts, like natural and social facts, objective?
- Is the mind best thought of as a computer?
- What are the ethical challenges of climate change?

Philosophical questions are everywhere. If you find yourself drawn to these questions, studying Philosophy in college is likely the best opportunity in your life to deeply engage with them. In fact, many concentrators find their way into Philosophy from other disciplines, where they encounter interdisciplinary or foundational questions that can only be addressed through philosophical reflection. And given the small size of the Philosophy Department, concentrators have the rare opportunity to closely engage with dedicated faculty at the top of their fields.

Whether they take just a course or two, or end up concentrating in Philosophy, students find studying philosophy to be among the most rewarding intellectual experiences of their college careers. The department offers a rich array of classes to choose from, and students develop their own responses to the philosophical problems that attract them in conjunction with their study of philosophical writing. The department's introductory courses help students develop their reading, writing, and reasoning skills while acquainting them with broad surveys of major areas and historical periods. The department's more advanced courses focus on more specific topics and allow students to explore their interests in the context of the broad foundation acquired in introductory courses. The department offers three concentration pathways: (1) Philosophy (Basic Requirements), (2) a Mind, Brain, and Behavior track, and (3) a joint concentration with Philosophy.

Harvard Philosophy concentrators have gone on to pursue diverse and fulfilling careers in law, finance and consulting, business, internet start-ups, medicine, journalism, the arts, nonprofit work, education, and academia. The skills that philosophy teaches students will always be in high demand: the ability to think and write clearly, to bring to light unnoticed presuppositions, to explain complex ideas clearly, to tease out connections and implications,

to see things in a broader context, to challenge orthodoxy. In short, philosophy gives students skills that they can apply to any line of work.

LEARNING OBJECTIVES

Students develop their own responses to the philosophical problems that attract them in conjunction with their study of philosophical writing. The department's introductory courses help students develop their reading, writing, and reasoning skills while acquainting them with broad surveys of major areas and historical periods. The department's more advanced courses focus on more specific topics and allow students to explore their interests in the context of the broad foundation they acquired in the introductory courses. The skills that philosophy teaches students will always be in high demand: the ability to think and write clearly, to bring to light unnoticed presuppositions, to explain complex ideas clearly, to tease out connections and implications, to see things in a broader context, to challenge orthodoxy.

REQUIREMENTS

Philosophy
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. One course in each of the following four areas, taken by the end of the first term of senior year and passed with a grade of C- or better:
        i. Logic.
        ii. Contemporary metaphysics, epistemology, philosophy of science, philosophy of mind, philosophy of language.
        iii. Ethics, political philosophy, aesthetics.
        iv. History of philosophy.
    b. Tutorials: Two courses. See "Tutorials" below.
    c. Five additional courses in philosophy.
2. *Tutorials*:
    a. Tutorial I: PHIL 97, group tutorials at the introductory level on different philosophical topics. Required. Letter-graded. A one-semester course typically taken in the spring of the sophomore year.
    b. Tutorial II: PHIL 98, group tutorials at the advanced level on different philosophical topics. Required. Letter-graded. A one-semester course typically taken in the fall or spring of the junior year. Under exceptional circumstances, and with permission of the Director of Undergraduate Studies, a student may substitute a 100-level course in philosophy to meet this requirement.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*:
    a. Philosophy courses may include courses listed under Philosophy in the course search in my.harvard.
    b. *Pass/fail*: All courses counted for the concentration must be letter-graded.
    c. No more than four courses numbered lower than 91 may be counted for the concentration.

Philosophy
Honors Eligibility (Thesis) Requirements: 11 courses, including thesis (44 credits)

1. *Required courses:*
    a. One course in each of the following three areas, taken by the end of the first term of senior year and passed with a grade of C- or better:
        i. Logic.

        ii. Contemporary metaphysics, epistemology, philosophy of science, philosophy of mind, philosophy of language.
        iii. Contemporary ethics, political philosophy, aesthetics.
    b. Two courses in philosophy
    c. Tutorials: Four courses. See “Tutorials,” below.
    d. Two additional courses in philosophy, up to two of which may be in approved related subjects. Related courses are approved individually by the Director of Undergraduate Studies, in many cases depending on the interests and overall program of the student. They count for concentration credit only if they are needed to reach the minimum number of concentration courses required.
2. *Tutorials*:
    a. Same as **Basic Requirements**.
    b. PHIL 99: Senior Tutorial, individual supervision of senior thesis. Permission of the Director of Undergraduate Studies is required for enrollment. Graded SAT/UNS. Honors candidates ordinarily enroll in both fall and spring terms. Enrolled students who fail to submit a thesis when due must, to receive a grade above UNSAT for the course, submit a substantial paper no later than the beginning of the spring term Reading Period.
3. *Thesis*: Required of all senior honors candidates. Due at the Tutorial Office on the Friday after spring recess. No more than 20,000 words (approximately 65 pages). Oral examination on the thesis, by two readers, during the first week of spring Reading Period.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**.

Philosophy
Honors Eligibility (Non-Thesis) Requirements: 12 courses (48 credits)
Students who earn honors through this track are only eligible to graduate with honors, not with high or highest honors.

1. *Required courses:*
    a. One course in each of the following five areas, taken by the end of the first term of senior year and passed with a grade of C- or better:
        i. Logic.
        ii. Contemporary metaphysics, epistemology, philosophy of science, philosophy of mind, philosophy of language.
        iii. Contemporary ethics, political philosophy, aesthetics.
    b. Two courses in philosophy.
    c. Tutorials: Two courses. See “Tutorials,” below.
    d. Seven additional courses in philosophy.
2. *Tutorials*: Same as **Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. Same as **Basic Requirements**.
    b. Students must have an honors GPA of 3.7 or above. A student’s honors GPA is computed as follows: All and only the courses that count toward concentration GPA count toward the honors GPA. Courses are weighted according to year in which they are taken.
        i. Courses in the first year are weighted normally.
        ii. Courses in the second year are weighted with a multiplier of 1.2.
        iii. Courses in the third year are weighted with a multiplier of 1.4.
        iv. Courses in the fourth year are weighted with a multiplier of 1.5.

Philosophy

Mind, Brain, and Behavior Track Requirements: 15 courses (60 credits)

Students interested in studying philosophical questions that arise in connection with the sciences of mind, brain, and behavior may pursue a program of study affiliated with the University-wide Mind Brain Behavior (MBB) Initiative (http://mbb.harvard.edu/), which allows them to participate in a variety of related activities. MBB track programs must be approved on an individual basis by the Philosophy MBB advisor. Further information can be obtained from the Undergraduate Coordinator.

1. *Required courses:*
    a. Three basic MBB courses:
        i. PSY 1 (previously SLS 20).
        ii. MCB 80/NEURO 80: Neurobiology of Behavior.
        iii. Junior year seminar in Mind, Brain, and Behavior.
    b. PHIL 156.
    c. One course in logic.
    d. Two further courses in contemporary metaphysics, epistemology, philosophy of science, philosophy of mind, or philosophy of language.
    e. Two courses drawn from ethics/political philosophy/aesthetics or the history of philosophy in any combination.
    f. Two further MBB-listed courses from outside the Philosophy Department, to be selected in consultation with the MBB advisor.
2. *Tutorials*:
    a. Tutorial I: Same as **Basic Requirements**.
    b. Tutorial II: Same as **Basic Requirements**.
    c. Senior Tutorial: Same as **Requirements for Honors Eligibility**.
3. *General examination*: None.
4. *Other information*: Same as **Basic Requirements**.

Joint Concentration with Philosophy as the Primary Field
Requirements: 8 courses in Philosophy (36 credits)

1. *Required courses:*
    a. One course in four of the four areas (see item 1a of **Basic Requirements**).
    b. Four additional courses in philosophy; tutorials count toward this requirement.
    c. At least four courses in the other field. Many departments require more; consult the Head Tutor or DUS of the other field.
2. *Tutorial*:
    a. Tutorial I: Same as **Basic Requirements**.
    b. Tutorial II: Same as **Basic Requirements**.
3. *Thesis*: Required as for honors eligibility in Philosophy but must relate to both fields. Oral examination by two readers, one from each department.
4. *General examination*: None required in Philosophy.
5. *Other information:*
    a. No more than two courses numbered lower than 91 may be counted for the concentration.
    b. Other requirements are the same as **Basic Requirements**.

Joint Concentration in Philosophy with Another Field as Primary Field
Requirements: 6 courses in Philosophy (24 credits)

1. *Required courses:*
    a. One course in three of the four areas (see item 1a of **Basic Requirements**).
    b. Three additional courses in philosophy; tutorial counts toward this requirement.

2. *Tutorial*: Tutorial I (PHIL 97), usually taken in the junior year.
3. *Thesis*: Required. Must relate to both fields. Directed in the primary field; one reader from Philosophy.
4. *General examination*: None required in Philosophy.
5. *Other information:*
    a. No more than two courses numbered lower than 91 may be counted for the concentration.
    b. Other requirements are the same as **Basic Requirements**.

ADVISING

Advising is done by the Director of Undergraduate Studies, Professor Ned Hall, and the Assistant Director of Undergraduate Studies Dr. Seth Robertson. Their office hours are posted on the Philosophy Department's website.

For up-to-date information on advising in Philosophy, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The Department of Philosophy is housed in Emerson Hall, which contains the department and tutorial offices, the offices of faculty members and teaching fellows, and the Robbins Library of Philosophy.

HOW TO FIND OUT MORE

Further information may be obtained from Michael Ricca, Undergraduate Coordinator, in the tutorial office, Room 308 Emerson Hall, at michael_ricca@harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Philosophy	45	52	51	58	58	58	44	52	63	70
Philosophy + another field	4	6	11	15	13	16	5	15	17	17
Another field + Philosophy	10	15	17	28	38	43	27	40	35	36

Physics

The concentration in Physics, administered by the Department of Physics, serves a variety of goals and interests. Many concentrators seek an understanding of the subtle, profound, and fundamental laws—relativity, quantum mechanics, and the basic force laws—that govern the behavior of all matter. Often these studies involve the smallest units of matter: molecules, atoms, nuclei, and subnuclear particles. A major interest of other Physics concentrators is the exploration and explanation of the diverse properties to which these laws give rise in macroscopic systems such as fluids and solids. Still others study aspects of more complex systems like oceans and atmospheres, stars, and living matter.

A concentration in Physics provides a foundation for subsequent professional work in physics, and also for work in computer science, astronomy, biophysics, chemical physics, engineering and applied physics, Earth and planetary sciences, geology, astrophysics, and the history and philosophy of science. Less obviously perhaps, the intellectual attitudes in physics—blending imagination, prediction, observation, and deduction—provide an excellent base for subsequent graduate work in professional schools of medicine, education, law, business, and public administration.

It should be emphasized that since all the physical sciences require basic training in physics and mathematics, an early choice of concentration need not be a final one. It is quite possible to design a program that will permit a change in concentration at the end of the sophomore year or even later. For example, a student who has satisfied most of the requirements for a concentration in Astronomy probably has also satisfied most of the Physics requirements as well, and vice versa.

The department tries to provide the essential content of undergraduate physics in concentrated form, leaving students sufficient time to develop interests through related courses offered by other science departments, to pursue more advanced and specialized aspects of physics through graduate-level courses and independent study or laboratory work, or to take advantage of the opportunities Harvard provides for a broad liberal arts education. Keeping the number of required courses small (12 courses in Physics and related fields; 13 courses for honors candidates) allows individual students to construct programs suited to their interests and career plans.

There are several basic avenues for entering Physics or one of the other concentrations in which it plays a major role. One track is with the PHYSICS 15A, PHYSICS 15B, PHYSICS 15C sequence of courses. Students may also begin with PHYSICS 19 instead of PHYSICS 15A. These options are recommended for those who have had a normal high school course in physics or no previous physics at all. Students who enter with the appropriate Advanced Placement background may begin their study of Physics with PHYSICS 16 instead of PHYSICS 15A or PHYSICS 19. The PHYSICS 15A, PHYSICS 15B, PHYSICS 15C courses are taught both terms so that those students who wish to begin Physics in the second term may do so. Students may also begin with PHYSCI 12A/B or APPHY 50A/B; see item 1a in the **Basic Requirements** below.

The Physics Department does not require that undergraduates take tutorials (i.e., individual instruction). This is not because independent study is considered unimportant, but rather because it has been deemed more important to keep the concentration requirements flexible enough to satisfy the differing goals of a great variety of students. There are programs that enable students to examine special fields and topics in some detail under the guidance of experts. We offer the following optional tutorial and independent study programs: (1)

PHYSICS 91R, individual study of material not covered in regular courses, supervised by a member of the department, and (2) PHYSICS 90R, individual research under the supervision of a faculty member interested in the field. The exact form of the project depends on the student's experience and interest, the nature of the particular field, and the availability of necessary facilities and funds. Concentrators desiring to write a senior thesis may do so under this program.

Physics does offer joint concentrations with other programs (for example, Physics and Mathematics, Physics and Astronomy, and Physics and History and Science) with the provision that the student's Plan of Study be approved by the Director or Associate Director of Undergraduate Studies. Students must complete the honors Physics track if Physics is the primary (first) field in the joint concentration; the Basic Physics track suffices if Physics is the allied (second) field. Within the Physics Department we provide an Applied Physics option, which emphasizes courses covering physical applications (see Requirements for the Applied Physics Option, below). We also offer a Biophysics option, which allows a limited substitution of Biology courses for Physics-related courses (see Requirements for Biophysics Option, below). See also the concentration in Chemistry and Physics. We collaborate in offering many of the courses required for concentrations in Astrophysics and in applied sciences.

No thesis or general examination is required for a degree with honors in Physics.

Three options are available in the Physics concentration:

- Physics.
- Physics with Applied Physics emphasis.
- Physics with Biophysics emphasis.

LEARNING OBJECTIVES

Learning a physical science has never been about memorizing a collection of facts from lectures. That is particularly true today because "facts," true and false, are as close as students' cell phones. Our learning objective is to give students the problem-solving skills to ask and answer quantitative questions for themselves. In their problem sets and labs they learn the power of mathematical metaphor applied to the physical world.

REQUIREMENTS

Physics
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. PHYSICS 15A, PHYSICS 15B, PHYSICS 15C. Students may take PHYSICS 19 instead of PHYSICS 15A. Students who have demonstrated sufficiently strong preparation in physics and mathematics may take PHYSICS 16 in place of PHYSICS 15A or PHYSICS 19. Students may also take PHYSCI 12A/B or APPHY 50A/B in place of PHYSICS 15A/B. These students should contact the Director or Associate Director of Undergraduate Studies, who will work with them to develop a coherent program.
    b. PHYSICS 143A.
    c. Two courses at the level of MATH 21A/B or above. While not required, taking one or more additional mathematics courses is strongly recommended. Students should give special consideration to the courses listed in item 1b of the **Honors Eligibility Requirements**.
    d. Two additional courses in Physics (see item 5a).

e. Additional courses in Physics, or a related field (see item 5b), to complete the requirement of 12 courses.

2. *Tutorial*: None.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. The following courses count as Physics courses. Other courses containing a significant amount of Physics may count but must be approved in a discussion with the Director or Associate Director of Undergraduate Studies.
        i. APMTH 201, APMTH 202.
        ii. ENG-SCI 120, ENG-SCI 123, ENG-SCI 125, ENG-SCI 128, ENG-SCI 151, ENG-SCI 153, ENG-SCI 154, ENG-SCI 170, ENG-SCI 173, ENG-SCI 175, ENG-SCI 181, ENG-SCI 190, and most 200-level courses. See the Director or Associate Director of Undergraduate Studies for approval.
        iii. CHEM 10, CHEM 160, CHEM 161, CHEM 163, CHEM 242.
        iv. ASTRON 120, ASTRON 130, ASTRON 140, ASTRON 151, ASTRON 191, and any 200-level course.
        v. APPHY (100- or 200-level).
    b. The following courses count as Related courses. Other courses may count but must be approved in a discussion with the Director or Associate Director of Undergraduate Studies.
        i. Applied mathematics.
        ii. Applied physics.
        iii. ASTRON 16, ASTRON 17, and courses numbered 100 or higher.
        iv. Chemistry.
        v. Computer science.
        vi. E-PSCI 50, E-PSCI 52, E-PSCI 112, E-PSCI 130, E-PSCI 140, E-PSCI 131, E-PSCI 132, E-PSCI 133, E-PSCI 135, E-PSCI 136, E-PSCI 141, E-PSCI 162, E-PSCI 166, and most 200-level courses. See the Director or Associate Director of Undergraduate Studies for approval.
        vii. Engineering sciences.
        viii. MATH 1B or any 100- or 200-level Mathematics course. Statistics (110 or higher).
    c. PHYSICS 90R and PHYSICS 91R can be used, together or individually, to satisfy at most two of the required courses.
    d. Satisfactory grades (C- or better) are required in PHYSICS 15A, PHYSICS 15B, and PHYSICS 15C (or higher-level substitutions).
    e. Pass/fail: Two courses may be taken pass/fail. These may not include PHYSICS15A, PHYSICS 15B, PHYSICS 15C, PHYSICS 16, or PHYSICS 19.
    f. Students with exceptional preparation in physics may wish to discuss the possibility of substituting more-advanced courses for some of the introductory courses. Written permission of the Director or Associate Director of Undergraduate Studies is required if this is done. Students who substitute more-advanced courses for PHYSICS 15A and/or PHYSICS 15B and/or PHYSICS 15C must complete the lab component of these courses, on a pass/fail basis. Students should contact the Associate Director of Undergraduate Studies for further information.

Physics
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Same as **Basic Requirements** items 1a and 1b.
    b. Mathematics courses including at least two courses above the level of MATH 21A/B. Students should consider especially PHYSICS 106; APMTH 104 or MATH 113; APMTH 105 or MATH 110; APMTH 115; STAT 110.
    c. The laboratory course PHYSICS 191 (see item 5d).
    d. Three additional courses in physics that should normally include PHYSICS 143B and PHYSICS 181.
    e. Additional courses in physics, or a related field, to complete the requirement of 13 courses (see item 5c).
2. *Tutorial*: None.
3. *Thesis*: Optional. Students wishing to submit a thesis should obtain a copy of the departmental regulations from the office of the Associate Director of Undergraduate Studies, Lyman 238.
4. *General examination:* None.
5. *Other information:*
    a. Same as **Basic Requirements** items a.-d., f.
    b. Pass/fail: Two courses may be taken pass/fail. These may not include PHYSICS15A, PHYSICS 15B, PHYSICS 15C, PHYSICS 16, PHYSICS 19, or PHYSICS 191.
    c. The total number of concentration courses taken during the student's college career (including study abroad or transfer credits) must be at least 13.
    d. With the permission (no later than the end of the student's seventh semester) of the Director of Undergraduate Studies, ASTRON 191 may be substituted for PHYSICS 191 by students who have demonstrated a serious academic interest in astrophysics by completing a number of appropriate courses in astronomy and astrophysics.
    e. Honors candidates are advised to obtain additional experience in experimental physics by undertaking research through PHYSICS 90R, or by working during the summer in an industrial, university, or government laboratory.

Physics with Applied Physics Emphasis
Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. Same as **Basic Requirements** items 1a and 1b.
    b. Mathematics courses including at least one course above the level of MATH 21A/B. Among courses to choose from, consider especially APMTH 104, APMTH 105, APMTH 115.
    c. The laboratory course PHYSICS 191.
    d. PHYSICS 175: Quantum Electronics and Modern Optics and ENG-SCI 173: Electronic and Photonic Semiconductor Devices.
    e. Additional courses in physics or a related field, to complete the requirement of 13 courses.
2. *Tutorial*: None.
3. *Thesis*: Optional.
4. *General examination:* None.
5. *Other information:*
    a. Same as **Basic Requirements** items a–d, f.
    b. Same as **Honors Requirements** items b–e.
    c. APPHY 195A: Solid State Physics and ENG-SCI 123: Fluid Mechanics are

highly recommended.
   d. Students taking this option are advised to take PHYSICS 113 or PHYSICS 123 and to obtain additional experience in experimental physics by taking PHYSICS 90R or ENG-SCI 91R, and/or by working during the summer in an industrial, university, or government laboratory.

Physics with Biophysics Emphasis
Requirements: 13 courses

1. *Required courses:*
   a. Same as **Basic Requirements** items 1a–1d.
   b. Two courses of PHYSICS 90R under the supervision of a member of the Committee on Higher Degrees in Biophysics or another biophysicist approved by the Director or Associate Director of Undergraduate Studies in Physics.
   c. Additional courses in physics or a related field to complete the requirement of 13 courses.
2. *Tutorial*: None.
3. *Thesis*: Optional.
4. *General examination*: None.
5. *Other information:*
   a. Same as **Basic Requirements** items a–f.
   b. Same as **Honors Requirements** item c.
   c. In fulfilling the requirement in item 1c, above, a student may take up to two courses from the following: LS 1A, LS 1B, MCB 52, MCB 54, MCB 56, and MCB 80, and Biophysics courses numbered above 100.
   d. Students choosing this option are advised to take PHYSICS 181 or CHEM 161, and PHYSICS 141 in completing the requirements for honors eligibility in Physics. They should also take steps to acquire a basic knowledge of organic chemistry in its relation to biochemistry, although they need not enroll in CHEM 20.

ADVISING

Students interested in concentrating in Physics should discuss their Plan of Study with the Director or Associate Director of Undergraduate Studies. When the Plan of Study is approved by the Associate Director of Undergraduate Studies, each undergraduate who elects to concentrate in Physics is assigned an additional faculty advisor. Students keep the same advisor until they graduate unless they request a change. It is expected that students will discuss their programs and review their progress with faculty advisors at the beginning of each term. Students are encouraged to seek advice at any time and can see their advisors at regularly scheduled office hours or by making an appointment. Students may also seek advice from the Director or Associate Director of Undergraduate Studies at any time.

For up-to-date information on advising in Physics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Science Center and the Godfrey Lowell Cabot Science Library

The Science Center houses many facilities for undergraduate instruction in Physics. For example, concentrators will find most of the books and journals needed for their undergraduate courses in the Godfrey Lowell Cabot Science Library, which is located in the Science Center. In addition, the instructional laboratories, the electronics laboratory, and the advanced physics laboratory are located in the Science Center.

Physics Laboratories on Campus
Students desiring to extend their research experience beyond the experiments available through the teaching laboratories may obtain access through the PHYSICS 90R program to facilities for ongoing research in atomic and molecular physics in the Lyman Laboratory, solid-state physics in the Gordon McKay Laboratory and the Laboratory for Integrated Science and Engineering, high-energy physics in the High Energy Physics Laboratory, astrophysics through the Center for Astrophysics, and in biophysics through the various Biological Laboratories.

HOW TO FIND OUT MORE

For further information about the Physics concentration, the Physics Department, and related departments with a major physics component, the best single reference is the pamphlet *The SPS Guide to Physics and Related Fields*. Copies are available from the Associate Director of Undergraduate Studies in Lyman 238. Information is also available at https://www.physics.harvard.edu/undergrad.

Advice and personal consultation concerning the concentration can be obtained from the Director or Associate Director of Undergraduate Studies (DUS@physics.harvard.edu).

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Physics	55	56	61	56	50	46	37	53	67	78
Physics + another field	45	49	49	60	65	70	54	59	60	51
Another field + Physics	22	27	32	21	23	25	19	31	40	37

Psychology

Psychology is the scientific study of the mind, and as such, we investigate the minds of humans and other species. We try to understand the mind at many different levels of analysis, from taking measurements from the brain, through learning about the individual, all the way to understanding groups and organizations.

The kinds of questions psychologists attempt to answer are: How do we perceive the physical world? Does our view of it coincide with reality? How do we make sense of the social world? Can we really understand the minds of others? Which others, and do the groups “they” belong to matter? Why do we pay attention to some things and not others? How do memories form and how do we forget? Can we be said to have a memory even if we can’t “remember”? What are the rules by which we reason and think? What’s the role of emotion as expressed in the joy, surprise, sadness, anger, and fear of everyday life as well as in depression, schizophrenia, and other disorders? What are the causes of these kinds of disorders, and how can they be treated? Are we rational beings or only boundedly so? Why do we believe in religion, do we have unshakable feelings of morality, and how best should we study our own consciousness? How do all these processes develop from infancy to adulthood?

To answer these and other questions about the mind, psychologists pay attention to evolutionary factors, biological bases, and cultural and social inputs, as well as the day-to-day situations in which individuals find themselves. Most of the research conducted in Harvard’s Department of Psychology concerns basic psychological processes such as attention, perception, memory, categorization, reasoning, decision-making, language, cognitive and social development, social cognition, intergroup relations, and morality. In addition, some members of the department conduct research on the etiology, development, and treatment of psychopathology. All members of the department share the common goal of understanding mind, brain, and behavior through empirical investigation, and their teaching and research reflect this goal.

As part of a liberal arts education, the primary goal of the Psychology concentration is to provide students with a fundamental understanding of the human mind. In the process of doing so, other goals will also be achieved: the skill to critically assess quantitative evidence from experimental and correlational data, to learn to take difficult and previously unstudied problems of mind and society and bring them under experimental scrutiny, and to learn to speak and write about questions of great theoretical and social importance that involve the mind. Knowledge of human psychology informs students to be good practitioners of law, education, medicine, business, and life in general. Thus, the ultimate goal of the concentration is to engage students in the very exciting life of the mind.

The department seeks to serve undergraduates with a diverse set of goals. It understands that a small number of concentrators seek to prepare themselves for graduate work in psychology or neuroscience; many plan to attend professional schools of law, medicine, public health, or business; and some see a concentration in Psychology as interesting and valuable intellectually but do not base their future vocational plans upon it. The department has kept all these reasons in mind in designing its concentration requirements. The requirements have been structured so that students start with an introductory course that provides a broad introduction to the field, progress to foundational courses that each provide a more focused examination of a sub-area of psychology, and then take advanced courses in more specialized areas of interest.

LEARNING OBJECTIVES

The primary goal of the Psychology concentration is to provide students with a fundamental understanding of the human mind. In the process of doing so, other goals will also be achieved: the skill to critically assess quantitative evidence from experimental and correlational data, the ability to take difficult and previously understudied problems of mind and society and bring them under experimental scrutiny, and the skills to speak and write about questions of great theoretical and social importance that involve the mind.

REQUIREMENTS

Psychology
General Track in Psychology
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. Introductory course: PSY 1: Introduction to Psychological Science (formerly SLS20), one course, recommended during the first year and required by the end of the sophomore year, or an approved substitute (see below). Letter-graded.
        i. PSYC S-1, offered in the Harvard Summer School.
        ii. It may be possible to substitute a Psychology AP score of 5 or an IB score of 7, in which case an extra advanced course will be required. Students should contact the Psychology Undergraduate Office at psychology@wjh.harvard.edu to learn more.
    b. Sophomore tutorial: PSY 971, one course, required by end of sophomore year. Letter-graded. (See item 2.)
    c. Statistics: PSY 1900, one course, required by end of sophomore year. Must be passed with a grade of C- or higher.
    d. Foundational courses: Two courses, recommended by the end of sophomore year. Letter-graded. Select two of PSY 11, PSY 14, PSY 15, PSY 16, PSY 18, SLS 15; or NEURO 80 (formerly MCB 80) or MCB 81 (only one of these last two courses may be taken).
    e. Research methods: PSY 1901, one course, required by end of the first semester of junior year. Letter-graded. (Prior to fall 2020, PSY 1901 or one lab course selected from a list on the concentration's website at https://undergrad.psychology.fas.harvard.edu/lab-courses. If returning from leave, students should consult with the Psychology Undergraduate Office).
    f. Advanced courses: Six courses. All letter-graded. (See items "Other Information," items 5a–d, below). The website https://undergrad.psychology.fas.harvard.edu/advanced-courses lists advanced courses.
2. *Tutorial*: Sophomore tutorial: PSY 971 is a semester-long tutorial required for concentrators by the end of sophomore year. Sophomores planning to concentrate in Psychology may enroll in the fall semester. Students who enter the concentration late should enroll in PSY 971 upon entering the concentration. The sophomore tutorial will examine issues and phenomena addressed in contemporary psychological research.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information:*
    a. Counting non-departmental courses toward the advanced course requirement: Up to two non-departmental courses may be taken in partial fulfillment of the advanced course requirement (see item 1f above). These courses may either come from a list of preapproved expedited non-departmental courses from the concentration website (https://undergrad.psychology.fas.harvard.edu/non-

departmental-advanced-courses), or students may petition for approval to count a non-departmental course not already on the preapproved list.

b. Petitioned courses are other non-departmental courses that students believe will contribute significantly to their study of Psychology. These courses must include significant psychological content and relate directly to their own concentration program. A petition is required (forms available on the department website at https://undergrad.psychology.fas.harvard.edu/forms) and must be submitted by the appropriate deadline.
c. Expedited courses are non-departmental courses that include a significant psychological content and could be a useful component of one's concentration in Psychology. These courses are automatically approved but require students to designate them for non-departmental advanced course concentration credit by emailing psychology@wjh.harvard.edu by the appropriate deadline. These courses vary each year; a current list and relevant deadlines are available on the concentration website (https://undergrad.psychology.fas.harvard.edu/non-departmental-advanced-courses).
d. Advanced course requirement and limits on lab-based courses: Students may count up to two lab-based courses (any combination of PSY 910R, lab courses [https://undergrad.psychology.fas.harvard.edu/lab-courses], or PSY 985) toward the advanced course requirement. Additional research courses may be taken for College elective credit. Students may enroll in PSY 910R up to a total of three times for any combination of concentration credit and College credit.
e. Graded course requirement: All courses taken for concentration credit must be letter-graded. The only exceptions are PSY 985 and the specific First-Year Seminars designated on the departmental Advanced Course list at https://undergrad.psychology.fas.harvard.edu/advanced-courses.

Psychology
Honors Eligibility (Non-Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **General Track in Psychology: Basic Requirements**.
2. *Tutorial*: Same as **General Track in Psychology: Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: Same as **General Track in Psychology: Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a minimum concentration GPA of 3.850. Concentration grade-point averages are calculated from a student's best 12 courses that meet the requirements (for example, introductory courses, foundational courses, research methods and statistics, and advanced courses), including final semester grades.
    b. Admissions requirement: No application or notification to the department is required. Students who meet the requirements as listed in items 1–5 above at the end of their final semester will receive an honors recommendation. (See item 5c.)
    c. Determination of departmental honors: A degree recommendation of honors will be awarded to students who meet these requirements. Students who appear eligible for honors will receive an award letter from the department prior to graduation.

Psychology
Honors Eligibility (Thesis) Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Introductory courses: Same as **General Track in Psychology: Basic Requirements.**
    b. Sophomore tutorial: Same as **General Track in Psychology: Basic Requirements**.
    c. Statistics: Same as **General Track in Psychology: Basic Requirements**.
    d. Foundational courses: Same as **General Track in Psychology: Basic Requirements**.
    e. Research methods: Thesis students must complete two courses, both letter-graded:
        i. PSY 1901, required by the end of the first semester of junior year.
        ii. Lab course from list on the department's website (https://undergrad.psychology.fas.harvard.edu/lab-courses), required by end of junior year. (See item 5b below).
    f. Advanced courses: Thesis students must complete five courses. All letter-graded. (See items 5a–c, below).
    g. PSY 991A and PSY 991B: Senior Tutorial, yearlong eight-credit course. Graded SAT/UNS. (See item 2c below).
2. *Tutorials*:
    a. Sophomore tutorial: Same as **General Track in Psychology: Basic Requirements**.
    b. Junior tutorial: Honors Thesis Preparation (PSY 985): Optional but strongly recommended. PSY 985 consists of individual reading and research leading to a thesis prospectus, under the supervision of a departmental faculty member, supplemented by occasional required group meetings. Graded SAT/UNS. Prospectus or paper required. Application must be made to the Psychology Undergraduate Office prior to enrolling in courses.
    c. Senior tutorial: The honors thesis (PSY 991A and 991B): Yearlong eight-credit individual tutorial consisting of research leading to submission of the thesis, supplemented by required spring departmental presentation and occasional, required group meetings. Graded SAT/UNS.
3. *Thesis*: Required. A thesis application is normally due in March of the junior year, but preparation for this application begins in the fall of the junior year. To apply to the thesis program, students must have completed Research Methods and Statistics. A thesis prospectus is due in April of the junior year, and a prospectus meeting giving thesis committee approval of the prospectus is normally required no later than October of the senior year. The completed thesis is due the Thursday before spring recess of the senior year. Required departmental presentation and defense occur during the spring of senior year.
4. *General examination*: None.
5. *Other information:*
    a. Counting non-departmental courses toward the advanced course requirement: Same as item 5a in **General Track in Psychology: Basic Requirements**.
    b. Advanced course requirement, research courses: Students may count one additional research course (PSY 910R, PSY 985, or a lab course [https://undergrad.psychology.fas.harvard.edu/lab-courses]) toward concentration requirements in partial fulfillment of the advanced course requirement. Additional research courses may be taken for College elective credit; students may enroll in PSY 910R up to a total of three times for any combination of concentration and College credit.
    c. Graded course requirement: All concentration courses except PSY 985, PSY

991A and 991B, and the specific First-Year Seminars designated on the departmental Advanced Course list (https://undergrad.psychology.fas.harvard.edu/advanced-courses) must be letter-graded.

d. Admissions requirement: A thesis application is required, normally in March of the junior year. To apply to the thesis program, students must have completed Research Methods and Statistics and ordinarily must have a 3.5 College grade-point average.
e. Determination of departmental honors: Honors degree recommendations are normally determined by a combination of the concentration grade-point average and the thesis evaluation. Departmental recommendations can range from no honors to highest honors under this option.
f. Joint concentrations: Ordinarily, the Psychology Department does not participate in joint concentrations.

Psychology
Cognitive Science Track
Honors Eligibility (Thesis) Requirements: 14 courses (56 credits)

The Cognitive Science track is affiliated with the University-wide Mind Brain Behavior (MBB) Interfaculty Initiative (http://mbb.harvard.edu/) and is administered through the Psychology Undergraduate Office. A thesis is required. MBB tracks are also available in Computer Science, History and Science, Human Evolutionary Biology, Linguistics, Neuroscience, and Philosophy.

1. *Required courses:*
    a. Introductory course: PSY 1: Introduction to Psychological Science (formerly SLS20). One course, recommended during the first year and required by the end of the sophomore year, or an approved substitute (see below). Letter-graded.
        i. PSY S-1, offered in the Harvard Summer School.
        ii. It may be possible to substitute a Psychology AP score of 5 or an IB score of 7, in which case an extra advanced course will be required. Students should contact the Psychology Undergraduate Office at psychology@wjh.harvard.edu to learn more.
    b. Sophomore tutorial: PSY 971. One course, required by the end of sophomore year. Letter-graded.
    c. Statistics: PSY 1900. One course, required by the end of sophomore year. Must be passed with a grade of C- or higher.
    d. Foundational courses: Two courses. One course from NEURO 80 (formerly MCB 80) or MCB 81, sophomore year, and one other course from PSY 11, PSY 14, PSY 15, PSY 16, PSY 18, or SLS 15, recommended by the end of sophomore year. Letter-graded.
    e. Seminar in Mind Brain Behavior: One course, junior year. Letter-graded. Select one from a list that varies each year, found at https://undergrad.psychology.fas.harvard.edu/mbb-seminars.
    f. Research methods: Two courses, both letter-graded:
        i. PSY 1901, required by the end of the first semester of junior year.
        ii. Lab course from the list on the department's website (https://undergrad.psychology.fas.harvard.edu/lab-courses). Required by the end of junior year.
    g. MBB track advanced courses: Four courses. Letter-graded. See "Advanced courses" under "Other information," below.
    h. Senior tutorial: PSY 991A and PSY 991B. Full course, senior year. Graded

SAT/UNS. (See item 2c of **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**). Students must also participate in MBB thesis activities.

2. *Tutorials*: Same as **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**.
3. *Thesis*: Required. Same as **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**.
4. *General examination*: None.
5. *Other information:*
    a. Advanced courses: Advanced courses are selected in consultation with a concentration advisor and faculty advisor of the MBB program and should include courses from participating MBB concentrations. Ordinarily, at least three of these advanced courses should come from one of the other MBB areas (https://undergrad.psychology.fas.harvard.edu/mbb-advanced-courses). One of these three courses may be non-departmental by petition. Course selection will be reviewed and approved by the MBB Head Tutor in Psychology. Students typically do not count additional research courses toward track advanced course requirements. Additional research courses may be taken for College elective credit; students may enroll in 910R up to a total of three times for any combination of concentration and College credit.
    b. Graded course requirement: All concentration courses except PSY 985, PSY 991A, and PSY 991B, and the specific First-Year Seminars designated on the departmental advanced course list (https://undergrad.psychology.fas.harvard.edu/advanced-courses) must be letter-graded.
    c. Admission requirements: Students should plan to declare entry to the track no later than November 1 of the first semester of junior year. A thesis application is required, normally in March of the junior year.
    d. Determination of departmental honors: Honors degree recommendations are normally determined by a combination of the concentration grade-point average and the thesis evaluation. Departmental recommendations can range from no honors to highest honors under this option.

Psychology
Cognitive Neuroscience and Evolutionary Psychology Track
Basic Requirements: 12 courses (48 credits)

Cognitive Neuroscience and Evolutionary Psychology is a specialized track within the Psychology concentration and part of the life sciences cluster of concentration options. As such, it is one of the major paths toward bridging the social and life sciences at Harvard. The track reflects the increasingly interdisciplinary nature of learning and research in psychology, emphasizing integration across the subdisciplines within psychology (social psychology, cognitive psychology, development, psychopathology) as well as connections between psychology and the other life sciences. Students in this track have the opportunity to study the interplay between traditional interests in psychology such as vision, memory, language, emotion, intergroup relations, cooperation, and psychological disorders, and recent developments in neuroscience and evolutionary science.

To support this learning, the track will provide a strong foundation of basic knowledge in psychology and the life sciences, as well as analytical, quantitative, and research skills scientists in these areas employ. Students will also take more-advanced courses in social and cognitive neuroscience and/or evolutionary psychology and can choose to work in a faculty lab. A thesis option is available for students with strong interests in the research component of the program.

1. *Required courses:*
    a. Introductory course: PSY 1: Introduction to Psychological Science (formerly SLS 20). One course, recommended during the first year and required by the end of the sophomore year, or an approved substitute (see below). Letter-graded.
        i. PSY S-1, offered in the Harvard Summer School.
        ii. It may be possible to substitute a Psychology AP score of 5 or an IB score of 7, in which case an extra advanced course will be required. Students should contact the Psychology Undergraduate Office at psychology@wjh.harvard.edu to learn more.
    b. Sophomore tutorial: PSY 975. One course, required by the end of the sophomore year. This tutorial examines issues and phenomena addressed in contemporary psychological and life science research from a variety of perspectives. Letter-graded. (See item 2).
    c. Statistics: PSY 1900. One course, required by the end of sophomore year. Must be passed with a grade of C- or higher.
    d. Foundational courses: Two courses, one course from either NEURO 80 (formerly MCB 80), MCB 81, or PSY 14, and one from PSY 11, PSY 15, PSY 16, PSY 18, or SLS 15, recommended by the end of sophomore year. Letter-graded.
        i. Students interested in neurobiology course work or neuroscience graduate school are encouraged to take NEURO 80 (formerly MCB 80) or MCB 81 to meet this requirement.
        ii. Although it is not advisable due to the overlap in content, students can take both PSY 14 and one of NEURO 80 (formerly MCB 80) or MCB 81 to meet the foundational course requirement of two courses.
    e. Life sciences courses (related to cognitive neuroscience and evolutionary psychology): Three courses selected from a list on the concentration website (https://undergrad.psychology.fas.harvard.edu/related-life-science-courses). One of these courses must be either LPS A, LS 1A, LS 1B, or LS 50A. Letter-graded.
    f. Research methods: PSY 1901, one course, required by end of first semester of junior year. Letter-graded. (Prior to fall 2020, PSY 1901 or one lab course selected from a list on the concentration's website at https://undergrad.psychology.fas.harvard.edu/lab-courses. If returning from leave, students should consult with the Psychology Undergraduate Office).
    g. Psychology advanced courses: Three courses. All letter-graded. Only one approved non-departmental course can be used toward this requirement. (See item 5a).
2. *Tutorial:* Sophomore tutorial: PSY 975 is a semester-long tutorial required for concentrators by the end of their sophomore year.
3. *Thesis:* None.
4. *General examination:* None.
5. *Other information:*
    a. Counting non-departmental courses toward the Psychology advanced course requirement: One non-departmental course may be taken in partial fulfillment of the Psychology advanced course requirement (see item 1g above). These courses may come from a list of preapproved expedited non-departmental courses from the concentration website (https://undergrad.psychology.fas.harvard.edu/non-departmental-advanced-courses), or students may petition for approval to count a non-departmental course not already on the preapproved list. (See items 5b–c in **General Track in Psychology: Basic Requirements**).

b. Advanced course requirement and limits on lab-based courses: Students may count up to two lab-based courses (any combination of PSY 910R, lab courses [https://undergrad.psychology.fas.harvard.edu/lab-courses], or PSY 985) toward the advanced course requirement. Additional research courses may be taken for College elective credit. Students may enroll in PSY 910R up to a total of three times for any combination of concentration credit and College credit.
c. Graded course requirement: All courses taken for concentration credit must be letter-graded. The only exceptions are PSY 985, and the specific First-Year Seminars designated on the departmental advanced course list at https://undergrad.psychology.fas.harvard.edu/advanced-courses.

Psychology
Cognitive Neuroscience and Evolutionary Psychology
Honors Eligibility (Non-Thesis) Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
2. *Tutorial*: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**, plus the following:
    a. Minimum concentration GPA: Students must have a minimum concentration GPA of 3.850. Concentration grade-point averages are calculated from a student's best 12 courses that meet the requirements (for example, Introductory Courses, Foundational Courses, Research Methods and Statistics, Life Science Courses, and Psychology Advanced Courses), including final semester grades.
    b. Admissions requirement: No application or notification to the department is required. Students who meet the requirements as listed in 1-5 above at the end of their final semester will receive an honors recommendation. (See item c.)
    c. Determination of departmental honors: A degree recommendation of honors will be awarded to students who meet these requirements. Students who appear eligible for honors will receive an award letter from the department prior to graduation.

Psychology
Cognitive Neuroscience and Evolutionary Psychology Track
Honors Eligibility (Thesis) Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Introductory courses: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
    b. Sophomore tutorial: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
    c. Statistics: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
    d. Foundational courses: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
    e. Life science courses: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
    f. Research methods: Thesis students must complete two courses, both letter-graded:

i. PSY 1901, required by the end of the first semester of junior year.
ii. Lab course from list on the department's website (https://undergrad.psychology.fas.harvard.edu/lab-courses), required by the end of junior year. (See item 5b below).

g. Psychology advanced courses: Thesis students must complete two courses, both letter-graded. Only one approved non-departmental course can be used toward this requirement. (See items 5a–c below).
h. PSY 991A and PSY 991B: Senior tutorial, yearlong eight-credit course. Graded SAT/UNS. (See item 2c below).

2. *Tutorials*:
   a. Sophomore tutorial: Same as **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
   b. Junior tutorial: Same as **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**.
   c. Senior tutorial: Same as **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**.
3. *Thesis*: Required. Same as **General Track in Psychology: Honors Eligibility Requirements: Thesis Option**.
4. *General examination*: None.
5. *Other information:*
   a. Counting non-departmental courses toward the advanced course requirement: Same as item 5a in **Cognitive Neuroscience and Evolutionary Psychology Track: Basic Requirements**.
   b. Advanced course requirement, research courses: Students may count one additional research course (PSY 910R, PSY 985, or a lab course [https://undergrad.psychology.fas.harvard.edu/lab-courses]) toward concentration requirements in partial fulfillment of the advanced course requirement. Additional research courses may be taken for College elective credit; students may enroll in PSY 910R up to a total of three times for any combination of concentration and College credit.
   c. Graded course requirement: All concentration courses except PSY 985, PSY 991A, and PSY 991B, and the specific First-Year Seminars designated on the departmental advanced course list (https://undergrad.psychology.fas.harvard.edu/advanced-courses) must be letter-graded.
   d. Admissions requirement: A thesis application is required, normally in March of the junior year. To apply to the thesis program, students must have completed Research Methods and Statistics and ordinarily must have a 3.5 College GPA.
   e. Determination of departmental honors: Honors degree recommendations are normally determined by a combination of the concentration grade-point average and the thesis evaluation. Departmental recommendations can range from no honors to highest honors under this option.
   f. Joint concentrations: Ordinarily, the Psychology Department does not participate in joint concentrations.

ADVISING

The Department of Psychology offers numerous opportunities for students to obtain advice about the field and concentration. The first stop for information should be the undergraduate website (https://undergrad.psychology.fas.harvard.edu), which is a comprehensive collection of requirements, departmental policies, and advice about navigating through the concentration. House-based concentration advisors are available to students throughout the academic year (a list of concentration advisors by residential House is available at https://undergrad.psychology.fas.harvard.edu/advisors). Concentration advising includes

discussing concentration requirements, signing Crimson Carts in my.harvard and Plans of Study, helping plan future courses, discussing research opportunities, considering possible career options, and answering other related questions students may have. Students may also get advice and information throughout the year from program staff in the Psychology Undergraduate Office, William James Hall, Room 218. Students may email brief questions to psychology@wjh.harvard.edu.

Pre-concentrators should read the “Advising” and “Requirements” sections of the undergraduate website (links to those sections are on the home page at https://undergrad.psychology.fas.harvard.edu/).

Posted pre-concentration drop-in advising hours can also be found at https://undergrad.psychology.fas.harvard.edu/declaring-psychology. Students can also email psychology@wjh.harvard.edu or stop by the Psychology Undergraduate Office with questions.

RESOURCES

The Department of Psychology is situated in William James Hall, at the corner of Kirkland Street and Divinity Avenue. Copying machines are available in the basement of the building. Special facilities exist for individual interviews, group studies, observation of infants and children, and for work in the areas of vision and perception, and neuroscience. These laboratories are directed by individual faculty members and access is arranged through them.

The Psychology Undergraduate Office is located on the second floor of William James Hall (Rooms 218–222), and students can come by during business hours (https://undergrad.psychology.fas.harvard.edu/contact) or make an appointment. Students are welcome to visit the office for general information about the concentration and related matters. The Psychology undergraduate website (https://undergrad.psychology.fas.harvard.edu) includes information on concentration requirements, prizes, awards, and volunteer and job opportunities.

The Department of Psychology has long been committed to active student involvement in departmental activities. Each year, several concentrators serve as student representatives to the departmental Committee on Undergraduate Instruction (CUI). The CUI considers a wide variety of policy matters, and student participation in its deliberations allows concentrators to help plan and review aspects of the undergraduate curriculum and programs.

HOW TO FIND OUT MORE

The Psychology concentration has an extensive website (https://undergrad.psychology.fas.harvard.edu) that includes information about basic and honors concentration requirements and the Psychology General, Cognitive Science (MBB), and Cognitive Neuroscience and Evolutionary Psychology (Life Science) tracks. The website contains information about departmental research opportunities, potential non-departmental thesis advisors, course petitions, and other forms. Students can also contact the Undergraduate Office at psychology@wjh.harvard.edu or 617-495-3712.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Psychology	302	270	255	249	246	234	164	217	269	272
Psychology + another field*	0	0	0	0	0	0	0	0	0	0
Another field + Psychology*	0	0	0	0	0	0	0	0	0	0

* Ordinarily, Psychology does not participate in joint concentrations.

Comparative Study of Religion

The concentration in the Comparative Study of Religion at Harvard invites students to explore the most consequential and momentous questions relevant to the understanding of individual and communal human life. Concentrators consider topics such as the significance of ritual and practice; differing conceptions of human nature and the nature of the divine; and the comparative study of how people understand the meaning of life, suffering, and death. The program is unique in allowing students to ponder these and other “big” questions in rigorous and critical ways. The concentration attracts creative, versatile students willing to learn different ways of thinking about and interpreting human life, community, and culture.

The Study of Religion as an academic field draws upon social scientific and humanistic methods to interpret religious phenomena worldwide. Scholars of religion use a range of tools: historical methods to think about how religions change over time; comparative methods to analyze rituals or texts in different religions; anthropological methods to study how religion shapes human cultures and societies; and literary-critical methods to interpret and understand religion texts. It is a diverse, creative field in which scholars talk across disciplinary boundaries. Due to this interdisciplinary approach, the concentration attracts creative, versatile students willing to learn different ways of thinking about and interpreting human life, community and culture.

Concentrators draw up an individual concentration Plan of Study under the supervision of the Director of Undergraduate Studies (DUS), their concentration advisor, and at times also in consultation with appropriate members of the Standing Committee on the Study of Religion. There are four options for the concentration: (1) a focus on two religious traditions or geographical areas, or one tradition/geographical area and one thematic focus, (2) a focus on a single tradition or geographical area in a comparative context, (3) a joint concentration with Religion as the primary field of study, and (4) a joint concentration with another field as the primary field of study. All four programs require general, methodological, or comparative courses outside of the selected major religious tradition(s). These courses provide analytical tools and knowledge of other traditions that enable students to think with comparative and theoretical imagination about diverse religious phenomena. Concentration credit for study abroad is possible in consultation with the Director of Undergraduate Studies.

LEARNING OBJECTIVES

The Study of Religion as an interdisciplinary, academic field draws upon both social scientific and humanistic methods to interpret religious phenomena worldwide. Students studying religious traditions focus on sacred texts, rituals, and symbols; philosophy and theology; and the history and lived experience of participants in the traditions. The program stresses the acquisition of skills: (1) the arts of reading and interpreting texts, practices, and societies; (2) clear writing (essays are a substantial part of the requirements of the sophomore and junior tutorials), and (3) knowledge of the fundamental literature on theories of religion, and on various methods of study. Competency in religious studies indicates the ability to think critically and with historical and cultural learning about the complicated place of religious history, imagination, motivation, and memory in national and international affairs. Such skills have become one marker of an educated person, an individual who is appropriately prepared for the responsibilities and pleasures of democratic citizenship and leadership.

REQUIREMENTS

Comparative Study of Religion
Non-Honors Track Requirements: 12 courses (48 credits)
Honors Track Requirements: 14 courses (56 credits)

1. *Required courses*: These vary with the concentration option chosen, as detailed below. All Plans of Study are tailored to individual student interests, in consultation with concentration advisors.
2. *Tutorials*: The tutorial program under each option is integrated closely into the student's Plan of Study as detailed below. In Options A, B, and C, the required tutorial courses are as follows:
    a. Sophomore year: RELIGION 97, tutorial seminar (one term), required. Letter-graded.
    b. Junior year: RELIGION 98R, an individual or small-group tutorial, required. Letter-graded.
3. *Honors candidates:*
    a. Thesis: To be eligible to write a thesis, a student must maintain a minimum GPA average of B+ in the concentration through the first term of the junior year.
    b. Senior Seminar: RELIGION 99A and 99B (two terms), required only of students writing a thesis. Graded SAT/UNS.
4. *Other information*:
    a. Traditions: The "tradition" can be either a religious tradition (such as, for example, Judaism, Buddhism, Christianity, or Islam) or a historical complex, such as East Asia or the Modern West. The traditions listed are those for which there are ordinarily sufficient course offerings at Harvard. Other traditions may be possible, depending on the availability of faculty and course offerings. The option of incorporating a particular approach into the Plan of Study allows students to focus their work on a closely affiliated discipline.
        i. Ancient Near Eastern and Israelite.
        ii. Buddhism.
        iii. Christianity.
        iv. East Asian Religions.
        v. Greek, Hellenistic, and Roman Religions.
        vi. Hinduism.
        vii. Islam.
        viii. Judaism.
        ix. Modern West and Religions of the Americas.
        x. South Asian Religions.
    b. Interdisciplinary approaches:
        i. Philosophy of Religion.
        ii. Religion and Social Science.
        iii. Religion, Race, and Gender.
        iv. Religion, Literature, and the Arts (for example, music, fine arts, creative writing).
        v. Religion and Science.
    c. Language instruction: In the evaluation of an honors thesis, the student's ability to demonstrate an awareness of primary texts in their original language, when such considerations are relevant to the development of the thesis project, is ordinarily a consideration. Honors candidates are thus advised to study the language(s) they will need to interpret texts from the tradition(s) they choose. In general, students may count language courses toward concentration credit when the primary texts they are reading in the course are either from a

religious tradition or relevant to the study of a religious tradition, beginning with the second year of a given language track.

d. Pass/fail: In addition to RELIGION 99A and RELIGION 99B (see above), one additional course taken pass/fail or SAT/UNS at Harvard can be counted for concentration credit. A relevant First-Year Seminar may count therefore for concentration credit, pending approval by the Director of Undergraduate Studies. Consult with the Director of Undergraduate Studies regarding pass/fail credit for courses taken abroad.
e. Joint concentration: The Comparative Study of Religion may be combined with another field in the overall framework of a joint concentration; indeed, many of our concentrators do so. Ordinarily, students wishing to combine Religion as the primary field will do so in the context of Option 3 below. Students interested in a joint concentration involving Religion should consult the Director of Undergraduate Studies.

Option 1: Two religious traditions/geographical areas; or one tradition/geographical area and a particular approach:

1. *General: Comparative and methodological studies:* Three courses.
    a. One comparative course. Comparative courses vary from term to term; students should consult the Director of Undergraduate Studies (DUS) for yearly options.
    b. RELIGION 97 (one term).
    c. One other course outside the student's major tradition or geographical area.
2. *Major tradition or geographical area*: Five courses.
    a. Four courses focusing on a particular era or cultural/geographical area important in the tradition.
    b. RELIGION 98R (one term).
3. *Second tradition or approach*: Four courses focusing on a particular era or cultural/geographical area, or four courses in a particular interdisciplinary approach (see above).
4. *For honors candidates*: RELIGION 99A and RELIGION 99B.

Option 2: One religious tradition/geographical area (in comparative context):

1. *General: Comparative and methodological studies*: Four courses.
    a. One comparative course. Comparative courses vary from term to term; students should consult the DUS for yearly options.
    b. RELIGION 97 (one term).
    c. Two other courses ordinarily in a tradition and/or geographical area other than the major one.
2. *Major tradition*: Eight courses.
    a. Seven courses, of which normally three focus on a particular era or cultural geographical area important in the tradition.
    b. RELIGION 98R (one term).
3. *For honors candidates*: RELIGION 99A and RELIGION 99B.

Option 3: Joint concentration with Religion as the primary field:

1. *General*: *Comparative and methodological studies:* Three courses.
    a. One comparative course. Comparative courses vary from term to term. Students should consult the DUS for yearly options.
    b. RELIGION 97 (one term).
    c. Two courses outside of the student's major tradition or geographical area.

2. *Major tradition*: Five courses.
    a. Four courses focusing on a particular era or cultural/geographical area important in the tradition. For thesis writers, one of these courses will be RELIGION 99A.
    b. RELIGION 98R (one term).
3. *Allied field*: At least four courses. As all joint concentrators must write a senior thesis, one of these courses will typically be RELIGION 99B, although in some instances, a senior tutorial in the other field may be substituted for RELIGION 99B or combined with it. One term of a junior tutorial in the other field is often required. Precise course requirements are subject to concentration requirements of the department or committee that administers the program in the other field.

Option 4: Joint concentration with Religion as allied field: 7 courses (28 credits)

1. *General: Comparative and methodological studies*: Three courses.
    a. RELIGION 97 (one term).
    b. Two other courses, at least one of which is outside the major tradition.
2. *Major tradition*: Four courses focusing on a religious tradition or geographical area. RELIGION 98R is strongly recommended, though not required.

ADVISING

Following concentration declaration, each student is assigned a concentration advisor who will meet with the student regularly to discuss the concentration plan. In most cases, the concentration advisor will also serve as the special field advisor who counsels the student on issues related to the major tradition(s). When these two advisors are not the same, a special field advisor will be appointed in addition to the concentration advisor.

For up-to-date information on advising in the Comparative Study of Religion, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Faculty members from a range of Faculty of Arts and Sciences departments and from the Harvard Divinity School share in the teaching and administration of the concentration. For study resources, concentrators draw not only on the collections at Widener Library, the Harvard Art Museums, and the undergraduate libraries, but also on the Andover-Harvard Library and area studies libraries, such as the Harvard-Yenching and Tozzer libraries.

HOW TO FIND OUT MORE

The *Handbook for Concentrators* and names of current concentrators willing to discuss the program are available at the office of the Study of Religion, 302 Barker Center. For more information, contact the Director of Undergraduate Studies, Courtney Bickel Lamberth, at lamberth@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Comparative Study of Religion	12	16	19	17	14	13	5	9	7	6
Comparative Study of Religion + another field	2	1	2	2	4	7	6	4	1	1
Another field + Comparative Study of Religion	5	5	3	3	6	5	5	7	13	8

Romance Languages and Literatures

In the Department of Romance Languages and Literatures (RLL), undergraduates discover the literatures, cultures, and critical approaches of societies worldwide whose approximately 920 million people speak French, Italian, Portuguese, Spanish, and Catalan. The heart of the concentration consists of courses about literature and society taught in French, Italian, Portuguese, and Spanish. Advanced courses in English on special topics that involve more than one language tradition are listed as Romance Studies and count toward the concentration. RLL also offers language courses at all levels for students who wish to begin or build on their previous study of a Romance language. RLL encourages and facilitates opportunities for study abroad and research to deepen students' experiences with Romance languages and cultures.

Courses in RLL invite undergraduates to engage deeply and critically with all kinds of texts and questions—from Don Quixote to the legacies of colonialism and the politics of postwar Europe—in a language other than English. Students develop an understanding of the ways in which rhetorical devices like metaphor and hyperbole make cultural artifacts—from everyday materials to works of art—richer, more complex, and more demanding of in-depth analysis. RLL offers a challenging and supportive environment in which students can strengthen their capacity to interact in meaningful ways with people in dozens of countries in Africa, the Americas, Asia, and Europe. Students in RLL develop skills in analysis, critical thinking, and communication that prepare them to act as informed and sophisticated global citizens.

Undergraduates who arrive at Harvard with advanced language skills take courses that provide a panoramic introduction to the literature, film, and culture of different regions and eras, all taught in the original Romance language. They continue with more specialized courses on specific topics including the study of genre, theory, and history in fiction and film; human rights; gender; environmental humanities; linguistic and cultural identity; and migration.

Students with some foundation in a Romance language enroll in the appropriate intermediate course in language and culture, where they focus on perfecting communication skills and cultural understanding in preparation for the advanced courses described above. Many undergraduates begin a new language at Harvard and may go on to complete the concentration or a secondary field in RLL.

At all levels of courses in French, Italian, Portuguese, Spanish, and Catalan students learn to communicate accurately and effectively. Equally importantly, they become more attuned listeners. As they develop an understanding of how people in different communities in the Romance-speaking world conceive of artistic, social, ethical, and political issues, their own sense of self evolves. In RLL, undergraduates achieve the cultural and linguistic fluency so crucial in today's globalized world.

RLL also offers summer programs taught by our own faculty in Paris, Buenos Aires, Madrid, and Milan/Siena. Students enjoy intensive, in-depth, location-specific curricula while earning credits that count as two term-time Harvard courses. Many find these programs to be an enriching and useful component of completing the concentration.

Concentrators in RLL work closely with faculty to develop and carry out research projects. Senior theses and independent studies address a wide range of topics, including, for example, evolving images of the Basques in Spanish popular culture; self-representation and political struggles of Chinese immigrants in Mexico; code-switching, identity-creation, and the rise of Spanglish in poetry; lived and literary resistance to gender in French; migrant

motherhoods in Latinx literature and ethnography; a collection of bilingual short stories about family on the Mexican-U.S. border; choreography and dance performance influenced by Calvino's fiction; pessimism and misogyny in French science fiction; autofiction in Borges and Barthes through the lens of social media; and ambiguities in medicine and fiction in 20th-century Latin America.

An undergraduate degree in RLL prepares students for work in the following areas, among others:

- Medicine: internships and residencies abroad; international medical humanitarian organizations; public health in the U.S. and overseas.
- Arts: museum curation; filmmaking; publishing; journalism; and creative writing.
- Law: foreign service and diplomacy; human rights organizations; U.S. firms based abroad; international firms in the U.S.
- Teaching and scholarship: one-year assistantships in France, Spain, and Italy; Harvard fellowships in France and the United Kingdom; teaching in bilingual and secondary schools; doctoral programs leading to careers in teaching and research at colleges and universities.
- Business and public administration: consulting; international banking and investment firms; non-governmental organizations; foundations; advertising; import/export of specialty foods and wine.

Concentrating in Romance Languages and Literatures
A student concentrating in RLL will choose one of five special fields as the focus for work in the concentration, as follows:

- French and Francophone Studies.
- Italian Studies.
- Portuguese and Brazilian Studies.
- Spanish, Latin American, and Latino Studies.
- Romance Studies (study of two or more Romance languages and literatures).

Concentrators either begin with courses in language and culture or place directly into seminars in literature, film, and culture and society in their chosen Romance field. (General requirements are outlined below.) In consultation with the Special Field Advisor and the Director of Undergraduate Studies (DUS), concentrators develop and submit a Plan of Study that reflects both the scope of the special field and their individual interests and goals.

Small classes, faculty-taught tutorials and faculty-advised honors theses teach students to read and think critically and creatively, as well as to develop individual thematic interests and/or research questions. Concentration requirements include upper-level language courses to ensure that concentrators acquire advanced oral, written, and cultural proficiency. Courses specifically for undergraduates build on this foundation, introducing major periods in the Romance literatures or offering hands-on work in translation, creative writing, and dramatic performance.

LEARNING OBJECTIVES

Students in Romance Languages and Literatures learn to speak and write clearly and persuasively, think critically and creatively, and carefully analyze all kinds of materials in depth. Concentrators will develop these skills at a professional level *in one or more* of the following language traditions: French, Italian, Portuguese, Spanish, and Catalan, in addition to English. They will also learn in depth about literary and cultural traditions, political and intellectual contexts, and core beliefs across the world. Geographical areas of study range

across societies in the Caribbean, Latin America, West Africa, North Africa, the Indian Ocean, North America, and Europe. Postgraduate opportunities for RLL concentrators exist in almost any field imaginable. Employers and graduate programs highly value their cross-cultural perspective and knowledge.

REQUIREMENTS

Romance Languages and Literatures
Basic Requirements: 12 courses (48 credits)

For a simple, graphic version of requirements, students should see the worksheets available for each RLL field under "Special Fields" at https://rll.fas.harvard.edu/pages/concentrations.

1. *Required courses:*
    a. Language and culture courses: Two courses at the 40-, 50-, or 60-level. A maximum of two courses at this level may be counted toward the concentration requirement. *A student who places out of language courses must replace the two required courses* with courses in literature, film, and culture and society, or approved gateway courses. See 4 below, for information about the concentration language requirement.
    b. Literature, film, and culture and society: Two courses at the 70-level.
    c. Sophomore tutorial in Romance studies: ROM-STD 97. Letter-graded.
    d. Four courses at levels 80, 100, and 200 taught in Romance Languages and Literatures: At least two must be at the 100-level or above. At least three must be taught in the special field language.
    e. Two courses in related fields: A maximum of two courses in related fields may be counted toward the concentration requirement. In consultation with the faculty advisor and/or DUS, students choose courses related to the study of Romance Languages and Literatures from such fields as Anthropology, Classics, Comparative Literature, Economics, Government, History, History of Art and Architecture, History of Science, Linguistics, Music, Philosophy, Psychology, Sociology, and Women, Gender and Sexuality, and Art, Film and Visual Studies, among others.
    f. One elective course: An elective either from the categories above or a First-Year Seminar or General Education course taught by RLL faculty at levels 80, 100, and 200 may be counted toward the concentration requirement; these must be approved by the concentration advisor and/or DUS.
2. *Thesis*: Optional (see below).
3. *Other information:*
    a. Study abroad: Though not a requirement, study abroad during the summer or the academic year is strongly encouraged. Summer courses taught in a Romance language may be approved for up to two courses of concentration credit. RLL faculty offer summer courses that automatically count as eight Harvard credits. Term-time study abroad courses are eligible for a maximum of three courses for one semester (12 credits), or six courses for a full year (24 credits). The department works closely with the Office of International Education to recommend particular programs based on each student's specific needs and academic and cultural interests.
    b. At least one course should deal with literature and culture before 1800.
    c. Residence requirement: RLL concentrators must take a minimum of six courses counted for the concentration in residence; honors concentrators must take a minimum of eight concentration courses in residence.
    d. Pass/fail: Courses taken for concentration credit may not be taken pass/fail (with the exception of an approved First-Year Seminar).

e. Substitutions of work not specifically listed above must be approved by the faculty advisor or DUS.
f. Concentration language requirement: By the end of the junior year, concentrators are expected to demonstrate advanced oral and written proficiency in one Romance language (two for Romance Studies concentrators). Advanced proficiency may be demonstrated by a score of 780 or above on the SATII or on the Harvard Placement Test, or by completion of a course at the 50-level or above with a grade of B or higher.

Romance Languages and Literatures
Honors (Thesis) Requirements: 14 courses (56 credits)

1. *Required courses*: Same as **Basic Requirement**, above, plus:
2. *Tutorials:*
    a. Sophomore year: ROM-STD 97.
    b. Junior year: Junior essay written as a longer final project for a 100- or 200-level course in RLL.
    c. Senior year: French, Italian, Portuguese, Spanish, or Romance Studies 99A and 99B (two terms).
3. *Thesis*: Required.
4. *Senior honors oral examination*: Required.
5. *Other information*:
    a. Same as **Basic Requirements**, above.
    b. Residence requirement: Honors concentrators must take a minimum of eight concentration courses in residence.

Romance Languages and Literatures
Honors (Non-Thesis) Requirements: 14 courses (56 credits)

1. *Required courses:* Same as **Basic Requirements**, above, plus two additional courses: at the 100-level or above, completed with grade of A or A-.
2. *Tutorial:* ROM-STD 97: Sophomore Tutorial in Romance Studies.
3. *Thesis*: None.
4. *Oral examination*: None.
5. *Other information:*
    a. Same as **Basic Requirements**, above.
    b. Residence requirement: Honors concentrators must take a minimum of eight concentration courses in residence.

Honors Eligibility: Concentrators with a minimum concentration GPA of 3.45 are eligible to participate in the honors program.

Students who take two additional courses at the 100-level, or one additional course at the 100-level and one at the 200-level, with a minimum grade of A- in each, can be recommended for a departmental degree of honors (but not high or highest honors). Students who take two additional courses at the 200-level with a minimum grade of A- in each can be recommended for a departmental degree of honors or high honors (but not highest honors). To be considered for highest honors, students must pursue the Thesis Option.

Romance Languages and Literatures
Joint Concentration with Romance Languages and Literatures as Primary Field
Requirements: 8 courses (32 credits)

1. *Required courses:*
    a. Language and culture courses: One course at the 40-, 50-, or 60-level. See notes in **Basic Requirements** for information about placement and substitution.
    b. Literature, film, and culture and society: One course in introductory field survey at the 70-level.
    c. Three courses taught in Romance Languages and Literatures at the 70-level or above. At least two must be at the 100-level or above. At least one course should deal with literature and culture before 1800.
    d. At least three courses must be taught in the special field language.
2. *Tutorials*
    a. Sophomore year: ROM-STD 97.
    b. Junior year: Junior essay written as a longer final project for a 100- or 200-level course in RLL.
    c. Senior year: French, Italian, Portuguese, Spanish or Romance Studies 99A and 99B (two terms) and successful completion of the thesis.
3. *Thesis*: Required.
4. *Senior honors oral examination*: Required.
5. *Other information*: Course substitutions as approved by the Undergraduate Advisor and/or DUS.

Romance Languages and Literatures
Joint Concentration with Romance Languages and Literatures as Allied Field
Requirements: 6 courses (24 credits)

1. *Required courses:*
    a. Language and culture courses: One course at the 40-, 50-, or 60-level. See notes in **Basic Requirements**, above, for information about placement and substitution.
    b. Literature, film, and culture and society: One course in introductory field at the 70-level.
    c. Three courses taught in Romance Languages and Literatures at the 70-level or above. At least two must be at the 100-level or above. At least one course should deal with literature and culture before 1800.
    d. At least three of these courses must be taught in the special field language.
2. *Tutorials*
    a. Sophomore year: ROM-STD 97.
    b. Junior year: Junior essay written as a longer final project for a 100- or 200-level course in RLL.
    c. Senior year: Students take 99A and 99B in their primary concentration, i.e. English 99A.
3. *Thesis*: Required.
4. *Oral examination*: None.
5. *Other information*: Course substitutions as approved by the Undergraduate Advisor/DUS.

ADVISING

Close consultation with faculty is essential for planning and completing a rich and successful concentration in Romance Languages and Literatures. Concentrators are invited to meet

regularly with the Director of Undergraduate Studies, with advisors in each special field, and with the Undergraduate Program Coordinator:

- Director of Undergraduate Studies: Dr. Kathy Richman, Boylston 422, richman@fas.harvard.edu, 617-495-1929.
- Special Field Advisors for 2023–24:
  - French and Francophone Studies: Professor Annabel Kim, Boylston 427, annabel_kim@fas.harvard.edu, 617-496-0486.
  - Italian: Professor Ambrogio Camozzi Pistoja, acpistoja@fas.harvard.edu.
  - Spanish, Latin American, and Latino Studies: Dr. María Luisa Parra, Boylston 326, parra@fas.harvard.edu, 617-495-1868.
  - Portuguese and Brazilian Studies: Professor Josiah Blackmore, Boylston 322, jblackmore@fas.harvard.edu, 617-495-1931.
  - Romance Studies: Dr. Kathy Richman, Boylston 422, richman@fas.harvard.edu, 617-495-1929.
- Undergraduate Program Coordinator: Cathy Downey, Boylston 405, cdowney@fas.harvard.edu.
- Language Citation Approval: Katherine Killough, Language Program Coordinator, Boylston 436, killough@fas.harvard.edu, 617-495-2524.

For up-to-date information on advising in Romance Languages and Literatures, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The combined holdings of Widener, Lamont, and Houghton libraries constitute one of the major collections of Romance literatures in the world. Other important resources available to RLL concentrators include research and internship opportunities at the Harvard Art Museums, the Harvard Film Archive, the Center for European Studies, the Lauro de Bosis Committee, Villa I Tatti: The Harvard University Center for Italian Renaissance Studies, the David Rockefeller Center for Latin American Studies, the Real Colegio Complutense at Harvard, the Mignone Center for Career Success, the Office of International Education, and numerous other centers.

HOW TO FIND OUT MORE

The department's offices are located on the fourth floor of Boylston Hall. Faculty offices may be found on the third, fourth, and fifth floors of Boylston Hall.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Romance Languages and Literatures	25	16	14	9	12	4	5	2	6	7
Romance Languages and Literatures + another field	1	3	3	4	3	2	2	2	7	8
Another field + Romance Languages and Literatures	4	2	6	5	7	19	14	13	13	9

Slavic Languages and Literatures

The Slavic languages, including Russian, Ukrainian, Polish, Czech, Bosnian, Croatian, and Serbian, are spoken in a vast cultural space that stretches from Europe to Asia and includes large diaspora communities across the world. In the Department of Slavic Languages and Literatures, we study the cultural traditions, the great works of literature and film, and the turbulent and fascinating politics and history of Russia, Ukraine, and the other Slavic countries, as well as the migrants and exiles who have brought Slavic traditions to the United States and other countries. In the Slavic concentration, students can develop proficiency in Russian or another Slavic language such as Ukrainian, Czech, or Polish; learn to read literary works in the original language; gain valuable experience for working and traveling abroad; and come to understand these cultures and the important role they have played in shaping the modern world.

The concentration requirements are a minimum of four courses in Russian or another Slavic language; a tutorial (to be taken as a sophomore or junior) that will introduce students to comparative work in literature, politics, and history across the Slavic world; two 100-level courses in Slavic; three electives from among our Slavic language, literature, and culture courses or from a related department; and a senior project in the final year. (Native speakers and students with advanced language preparation must still take at least one language course in the department and have the option of testing out of the other three courses, which they would take as electives instead.) Study abroad, whether a summer or a semester, is strongly encouraged and easily accommodated within the concentration.

The Slavic tutorial introduces students to literary and cultural works from Russia, Ukraine, the Czech Republic, Poland, and Bosnia, Serbia, and Croatia. Between two and five of the other required courses will come from the Slavic Department's 100-level courses, which teach a range of classic works of literature, film, and art; literary, cultural, and media theory; and history, politics, and culture. Indeed, many of our concentrators combine a love of literature with a strong interest in other disciplines, and our courses highlight the interdisciplinary nature of Slavic studies. We welcome students who hope to include related courses in other departments. In the senior year, non-honors concentrators design a fall-term or spring-term capstone project in consultation with the Director of Undergraduate Studies (DUS), allowing them to study with a faculty member from the department and write a 25- to 30-page senior project. Honors candidates will work with a faculty member for the entire senior year and write a thesis.

In addition to the tutorial and two 100-level courses, students are encouraged to use their three elective courses to advance their language skills or to explore a broad variety of subjects offered by the department or related departments. Our courses range over literature, culture, history, and politics, and include single-author seminars on Tolstoy, Dostoevsky, Nabokov, Pushkin, and Chekhov, as well as courses on 20th-century Ukrainian literature and its political contexts; the Russian Revolution and the interwar avant-gardes in literature, art, and film; the Cold War and the East European experience of Communism; and the traditions of Slavic intellectual history from anarchism to Communism and political dissent.

Study abroad, though not required, is encouraged by the department, and many of our concentrators spend time abroad, typically during their junior year or in the summer after their sophomore or junior year. Although many study abroad programs have relocated since Russia's full-scale invasion of Ukraine in 2022, there are still many opportunities to study Russian in Georgia, Latvia, Kazakhstan, Kyrgyzstan, and other countries. Slavic Department faculty also run two Harvard summer abroad programs, one in Prague, Czech Republic, and

the other in Tbilisi, Georgia, each year, and there are many opportunities to study in Poland, Bosnia, Serbia, Croatia, and elsewhere. The Slavic Department sponsors Jurzykowski Summer Language grants to support undergraduate study of Polish at a range of programs in Poland each summer. Credit toward concentration requirements is granted to those who successfully complete such programs; in order to receive concentration credit for this or any other external study, the student must receive permission in advance from the DUS.

The department welcomes all students with an interest in Slavic languages and cultures and is happy to accept late transfers. We encourage students to begin language study as soon as possible, normally in their first or second year at Harvard. We also welcome double concentrators and joint concentrators; indeed, many students who want to study the politics and history of Russia, Eastern Europe, and Central Asia will find that a joint degree with Slavic deepens their cultural understanding of the region and greatly expands their career opportunities after graduation. We also welcome students from all concentrations who may not have studied a Slavic language but are interested in a five-course secondary field in Russian Studies or Central European Studies. Although the undergraduate concentration can prepare students for graduate study in Slavic, government, history, and other programs, most of our students follow careers in other areas, including medicine, law, business, and government; they find that the experience of learning a language and getting to know a foreign culture greatly expands their opportunities for work and travel.

LEARNING OBJECTIVES

The Slavic concentration encourages creativity and initiative, and teaches students to understand works of film, literature, theater, and journalism while placing these works in their historical, political, and cultural context. The language requirement helps students develop proficiency in Russian or another Slavic language (such as Ukrainian, Czech, Polish, or Bosnian-Serbian-Croatian); our advanced language classes provide students the tools to understand social media, political discourse, and contemporary journalism in Russia, Ukraine, and the Slavic world, and to read great works of world literature like *War and Peace*, *Crime and Punishment*, and *The Master and Margarita*.

REQUIREMENTS

Slavic Literatures and Cultures
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. Four courses in Russian language, or four courses in another Slavic language (Ukrainian, Polish, Czech, or Bosnian, Croatian, Serbian [BCS]). With DUS permission, students may combine course work in two languages. Native speakers, or students with advanced language preparation, must still take at least one language course in the department; they have the option of testing out of the other three courses, which they would take in literature instead.
    b. Introduction to Slavic Literature and Culture, a tutorial to be taken in either the sophomore or the junior year.
    c. Two 100-level courses in Slavic literature or culture.
    d. Three additional electives from the Slavic Department or in related departments (see item 3).
2. *Capstone project:* The non-honors capstone project (SLAVIC 99A) will be a 25- to 30-page research paper or annotated translation, developed in consultation with the DUS and written under the guidance of a faculty advisor. Graded SAT/UNS.
3. *Other information:*
    a. The three elective courses may include any Slavic Department language, literature, or linguistics course; Slavic-related General Education courses; a

First-Year Seminar or relevant courses in Comparative Literature, Linguistics, Art, Film, and Visual Studies, Music, History, Government, History of Science, or other Departments (if approved by the Director of Undergraduate Studies); or an independent study approved by the Director of Undergraduate Studies.

b. All courses for the concentration must be letter-graded, except approved First-Year Seminars and SLAVIC 99A, which are graded SAT/UNS.

Slavic Literatures and Cultures
Honors Eligibility Requirements: 12 courses (48 credits)

1. *Required courses*: Same as **Basic Requirements**.
2. *Thesis*: Two terms (SLAVIC 99A and SLAVIC 99B) required. Graded SAT/UNS. (Progression to SLAVIC 99B will be contingent on satisfactory completion of SLAVIC 99A.)
3. *Other information*: Same as **Basic Requirements**.

Slavic Languages and Literatures
Joint Concentration with Slavic Languages and Literatures as Primary Field
Requirements: 9 courses (36 credits)

1. *Required courses:*
    a. Two semesters in Russian language, or two semesters in another Slavic language (Ukrainian, Polish, Czech, or Bosnian, Croatian, Serbian [BCS]); must be taken in the same language. Native speakers, or students with advanced language preparation, must still take at least one language course in the department; these students have the option of testing out of the other course, which they would take in literature instead.
    b. Introduction to Slavic Literature and Culture, a tutorial to be taken in either the sophomore or the junior year.
    c. Two 100-level courses in Slavic literature or culture.
    d. Two additional courses from the Slavic Department or in related areas.
2. *Thesis*: Two terms (SLAVIC 99A and SLAVIC 99B) required. Graded SAT/UNS. (Progression to SLAVIC 99B will be contingent on satisfactory completion of SLAVIC 99A.)

Slavic Languages and Literatures
Joint Concentration with Slavic Languages and Literatures as Allied Field
Requirements: 6 courses (24 credits)

1. *Required courses:*
    a. Two semesters in Russian language, or two semesters in another Slavic language (Ukrainian, Polish, Czech, Bosnian, Croatian, Serbian [BCS]); must be taken in the same language). Native speakers, or students with advanced language preparation, must still take at least one language course in the department; these students have the option of testing out of the other course, which they would take in literature instead.
    b. Introduction to Slavic Literature and Culture, a tutorial to be taken in either the sophomore or the junior year.
    c. Two 100-level courses in Slavic literature or culture.
    d. One additional course in the Slavic Department or in related areas.
2. *Thesis:* 99A and 99B courses should be taken in the student's primary department. Students will also be able to consult with Slavic Department faculty as they write their theses; theses should engage substantially with students' course work and interests in

Slavic studies. In addition to evaluation of the thesis by the student's primary department, one reader from the Slavic Department will be assigned to evaluate and grade the thesis.

ADVISING

The Director of Undergraduate Studies (DUS) is responsible for advising the concentrators in all three years. Concentrators meet with the DUS individually at the beginning of each term to discuss their Plans of Study and their progress through the concentration, and thereafter as desired.

For up-to-date information on advising in Slavic Languages and Literatures, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

Consult the Slavic Department Director of Undergraduate Studies at SlavicDUS@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Slavic Languages and Literatures	3	5	6	4	5	4	1	0	1	10
Slavic Languages and Literatures + another field	0	1	0	0	0	1	0	1	2	1
Another field + Slavic Languages and Literatures	1	1	3	8	7	4	3	4	5	4

Social Studies

Social Studies was founded in 1960 by a distinguished group of faculty who believed that the study of the social world requires an integration of the disciplines of History, Political Science, Economics, Sociology, and Anthropology. For more than six decades, Social Studies has brought together outstanding teachers and intellectually engaged students who share a fascination with social science research and theory and a deep interest in applying social science to contemporary social, economic, and political problems.

The common introduction to Social Studies is Social Studies 10, which introduces students to some of the thinkers who have durably shaped the way we understand modern society. Students examine the development of modern moral, political, and economic ideas, and they consider the role of the individual in modern society, studying foundational texts by Rousseau, Smith, Douglass, Marx, Weber, Du Bois, Beauvoir, Foucault, and Fanon. Throughout Social Studies 10, students are taught to read theoretical arguments carefully and critically, and to juxtapose them against historical developments and social experience. Social Studies 10 is taught both in lecture and in small-group tutorials where discussion and writing skills are emphasized.

The purpose of the junior tutorials in Social Studies is to immerse students in a detailed and focused study of an empirical, theoretical, or historical topic in the social sciences. Junior tutorials also teach social science and historical methodology, providing students with instruction on research techniques and offering them experience in conducting primary research in preparation for their senior theses.

Students develop an individualized Focus Field in consultation with their academic advisors. A Focus Field is a group of four to six classes organized around a particular social phenomenon, a pressing question, or an intellectual concern that a student makes the focus of their academic plan. Some examples are “Inequality and US education,” “Migration and Transnationalism in Asian America,” and “Technology and the Future of Work”. Focus Fields normally draw from at least two social science departments and include at least one historical course. Students may petition to take social science courses taught in non-social science departments, and a fifth and/or sixth course may be taken at one of Harvard’s professional schools. For example, a student who is studying education and inequality might take two courses in Sociology, one course in Economics, one course in History, and one course at the Harvard Kennedy School. A student who is studying state violence in Latin America might take two courses in History, one course in Government, and one course in Anthropology.

In the senior year, all Social Studies concentrators enroll in a one-on-one tutorial (Social Studies 99) in preparation for researching and writing a senior thesis. This is a requirement for all concentrators.

All sophomores considering concentrating in Social Studies must take Social Studies 10A: Introduction to Social Studies, in the fall term. This course is a prerequisite for submitting a Declaration of Intent and declaring Social Studies in October.

Students who did not initially declare Social Studies as first semester sophomores may still declare Social Studies by the beginning of their fifth semester, but must wait until junior year to take Social Studies 10A and 10B. If you are a transfer student, a second semester sophomore, or a rising junior, please contact our pre-concentration advisor.

LEARNING OBJECTIVES

Social Studies students develop excellent analytical, research, and writing skills, and they devote their senior year to thesis writing, which serves both as a capstone to their undergraduate education and a chance to develop and complete a major independent project. We expect our students to engage with a range of ideas and opinions in the classroom and to explore their own values and beliefs in relation to empirical evidence and in relation to the values and beliefs of others.

REQUIREMENTS

Social Studies
Basic Requirements: 13 courses (52 credits)

1. *Required courses:*
    a. SOC-STD 10A and SOC-STD 10B.
    b. SOC-STD 98, the junior tutorial. Students must take two junior tutorials.
    c. SOC-STD 99A and SOC-STD 99B (off sequence students may take two terms of SOC- STD 99A or two terms of SOC-STD 99B).
    d. One course in economics. This requirement can be fulfilled by taking ECON 10A and/or ECON 10B, ECON 50, or by taking one course in economics for which ECON 10 is recommended preparation. The economics requirement must be completed by the end of the junior year.
    e. One course in elementary statistics. The statistics requirement must be completed by the end of the junior year.
    f. A course in a methodology appropriate to the focus field. This requirement may be fulfilled by taking SOC-STD 50 or SOC-STD 60, or by taking an appropriate substitute. Students must complete this requirement by the end of the junior year.
    g. Four to six courses in the student's Focus Field. These courses will be selected in consultation with the student's advisor and must be approved by the Social Studies Board of Instruction. The focus field should be drawn from at least two social science departments and must include at least one historical course. A fifth or sixth focus field course may be taken outside of the Faculty of Arts and Sciences (FAS).
2. *Tutorials*:
    a. Sophomore year: SOC-STD 10A and SOC-STD 10B (two terms). Letter-graded. Weekly lectures and discussion sections in groups of eight students.
    b. Junior year: SOC-STD 98. Two terms required.
    c. Senior year: SOC-STD 99A and SOC-STD 99B. The writing of a senior thesis. Graded SAT/UNS. Each thesis has two independent readers.
3. *Thesis*: Required.
4. *General examination*: An oral examination taken at the end of the senior year that includes a defense of the thesis and a general exam, which emphasizes the themes and thinkers taught in SOC-STD 10 discussed in relation to the student's work in Social Studies.

Social Studies
Joint Concentrations
Social Studies allows joint concentrations with interdisciplinary programs that include social science faculty: generally, African and African American Studies, East Asian Studies, Environmental Science and Public Policy, Near Eastern Languages and Civilizations, Comparative Study of Religion, South Asian Studies, Philosophy, and Studies of Women, Gender, and Sexuality. We do not allow joint concentrations with science or humanities departments or with social science departments that we share faculty with (Anthropology, Economics, Government, History, or Sociology).

ADVISING

Each student entering the concentration is assigned an advisor who sits on the Social Studies Board of Advisors and is responsible for helping the student plan their course of study. In the first semester of the concentration, the advisor is that student's sophomore tutor. Whenever possible, the same advisor continues to serve in this capacity until the student graduates. When this is not possible, another advisor is assigned who, to the extent possible, shares interests with the student. Students must meet with their advisors at least three times a year to discuss course selection and their Focus Field; more frequent meetings are strongly encouraged. The Director of Studies heads the Board of Advisors. In addition, the Social Studies Peer Counseling Advisors (current juniors and seniors in Social Studies) offer additional advising and support.

For up-to-date information on advising in Social Studies, students should visit https://socialstudies.fas.harvard.edu/pre-concentration.

HOW TO FIND OUT MORE

For more information, students should contact the Associate Director of Studies for First-Years and Sophomores or the Undergraduate Program Administrator. Their contact information and office hours are on the Social Studies website at https://socialstudies.fas.harvard.edu/pre-concentration.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Social Studies	255	230	246	217	251	237	138	200	198	206
Social Studies + another field	19	16	10	15	27	34	27	28	27	32
Another field + Social Studies	0	0	0	0	0	0	0	0	1	1

Sociology

All social life is patterned. By studying these patterns, sociologists help us better understand—and influence—social outcomes. Students who are interested in how social systems like race, gender, sexuality, class, nationality, governance, education, culture, crime, the economy, the workplace, or the natural environment shape individual lives and life chances might consider a concentration in Sociology.

The Sociology concentration requires students to take 12 courses that provide instruction in both social theory and research methods, and that engage a variety of substantive areas within the discipline. Some students choose to focus their classes on a relatively narrow topic (for example, poverty and inequality), while others choose to engage a wide number of topics. All students are required to produce an independent research project in their junior tutorial, but senior theses are always optional.

Harvard Sociology introduces all concentrators to both qualitative and quantitative research methods. Students who want a deeper engagement with sociological research may choose the Sociology and Data Analytics concentration. Because studying social processes requires a broad range of approaches, we offer instruction in statistical modeling, in-depth interviewing, ethnographic observations, archival investigations, and computational analyses. These courses train students to think carefully about every stage of research, from the development of a sociological question, to the definition and operationalization of social variables like “poverty” and “health,” to the process of ethically and accurately collecting data, to the analysis and interpretation of research findings, and ultimately, to the communication of those findings to diverse audiences. The Harvard Sociology program also offers opportunities to gain hands-on research experience through course projects, research assistantships, community-engaged scholarship, and senior theses.

A Harvard Sociology degree prepares students for a wide range of careers in medicine, law, public service, education, research, consulting, public health, journalism, and government. Students pursuing medical careers, for example, will use their sociological training to better understand the social determinants of health, while students working in government, nonprofit organizations, or consulting will use their training to clearly identify and assess social problems, then develop effective policies and programs to address them. By educating students on the complexities of existing social problems, and requiring students to develop independent projects to address these problems, our program also helps students develop “softer” skills such as innovation, critical thinking, problem solving, adaptability, and powerful oral and written communication.

The Harvard Sociology Department takes pride in its advising system, which allows for personal attention to students and supports the development of a vibrant student community. Students engage their peers through study sessions, invited speakers, social events, and activities with departmental alumni. Student input is sought through the Sociology Student Advisory Council, and students are encouraged to explore the community outside of Harvard through engaged scholarship and study abroad opportunities.

LEARNING OBJECTIVES

The Harvard Sociology Department aims to instill undergraduates with a sociological perspective, to introduce them to the various subfields within sociology, and to give them a foundation in understanding, evaluating, designing, and implementing research on a variety of social problems and processes.

REQUIREMENTS

Sociology
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. SOCIOL 1000: Introduction to Sociology. Students may petition to have this requirement satisfied with another course in the SOCIOL 1000–1089 range. Normally taken during the first year.
    b. SOCIOL 1128: Methods of Social Science Research, a basic introduction to methods. Course offered during the spring term. Normally taken sophomore year.
    c. SOCIOL 97: Tutorial in Social Theory, a basic introduction to sociological theory and the social construction of knowledge. Course offered both terms. Normally taken sophomore year. See item 2a below.
    d. SOCIOL 1156: Statistics for Social Sciences. Students may petition to have this requirement satisfied with STAT 100, STAT 102, STAT 104, or STAT 139. Normally taken sophomore year.
    e. SOCIOL 98: Junior Tutorial. Course offered both terms. See item 2b.
    f. Two courses in related social science fields: African and African American Studies; Anthropology; East Asian Studies; Economics; Government; History; History and Science; Psychology; Social Studies; Studies of Women, Gender, and Sexuality. Courses with a GHHP and EMR prefix will also satisfy related fields. (The related field requirement can also be met with Sociology courses.)
    g. Five additional courses in Sociology.
2. *Tutorials*:
    a. Sophomore year: SOCIOL 97. One term. Required. Small seminars made up of eight to 12 students. An intensive introduction to sociological theory and the social production of knowledge.
    b. Junior year: SOCIOL 98. One term. Required. Small seminars made up of eight to 10 students who work on original research projects under the direction of a faculty member. The purpose of this tutorial is to give students experience with independent inquiry and in many cases to develop a senior thesis topic.
3. *Thesis*: Optional.
4. *General examination*: None.
5. *Other information:*
    a. Pass/fail: The five specifically required courses (as outlined in 1a–1e above) may not be taken pass/fail or SAT/UNS. Up to two of the remaining seven elective courses may be taken pass/fail or SAT/UNS. Letter-graded courses must receive a passing grade of C- or higher in order to receive credit toward completion of the concentration.
    b. Course credit: Study abroad, Harvard Summer School, and courses offered by other Harvard faculties may count toward concentration credit in some cases. First-Year Seminars taught by department faculty may also count. Students should contact the Undergraduate Program and Advising Administrator with questions about the approval process.

Sociology
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Same as 1a–1h in **Basic Requirements**.
    b. SOCIOL 99A and SOCIOL 99B: Senior Tutorial. (See item 2c below.)

2. *Tutorials:*
    a. Sophomore year: Same as **Basic Requirements**.
    b. Junior year: Same as **Basic Requirements**.
    c. Senior year: SOCIOL 99 (two terms). Senior thesis workshop; close supervision of thesis. Graded SAT/UNS.
3. *Thesis*: Honors candidates must write a thesis and submit it to the Undergraduate Office in the spring of senior year. Students are urged to choose thesis topics and select an advisor by February of Junior Year. Course credit for thesis work is obtained through enrollment in SOCIOL 99 in the fall and spring of senior year.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**.

Sociology
Sociology and Data Analytics Track
Basic Requirements: 12 courses (48 credits)

1. *Required courses:*
    a. SOCIOL 1000: Introduction to Sociology. Students may petition to have this requirement satisfied with another course in the SOCIOL 1000–1089 range. Normally taken during the first year.
    b. SOCIOL 1128: Methods of Social Science Research, a basic introduction to methods. Course offered spring term. Normally taken sophomore year.
    c. SOCIOL 97: Tutorial in Social Theory, a basic introduction to sociological theory and the social construction of knowledge. Course offered both terms. Normally taken sophomore year. See item 2a.
    d. SOCIOL 1156: Statistics for Social Sciences. Students may petition to have this requirement satisfied with STAT 100, STAT 102, STAT 104, or STAT 139. Normally taken sophomore year.
    e. SOCIOL 98: Junior Tutorial. Course offered both terms. See item 2b.
    f. Two courses in related social science fields: African and African American Studies; Anthropology; East Asian Studies; Economics; Government; History; History and Science; Psychology; Social Studies; Studies of Women, Gender, and Sexuality. Courses with a GHHP and EMR prefix will also satisfy related fields. (The related field requirement can also be met with Sociology courses.)
    g. Three additional courses in Sociology.
    h. Two additional courses in sociological methods.
2. *Tutorials:*
    a. Sophomore year: SOCIOL 97. One term. Required. Small seminars made up of eight to 12 students. An intensive introduction to sociological theory and the social production of knowledge.
    b. Junior year: SOCIOL 98. One term. Required. Small seminars made up of eight to 10 students who work on original research projects under the direction of a faculty member. The purpose of this tutorial is to give students experience with independent inquiry and in many cases to develop a senior thesis topic.
3. *Thesis:* Optional
4. *General examination:* None
5. *Other information:*
    a. Pass/fail or SAT/UNS: The five specifically required courses (as outlined in 1a–1e above) may not be taken pass/fail or SAT/UNS. The two additional methods electives (1h above) may not be taken pass/fail or SAT/UNS. Up to two of the remaining five elective courses (1f and 1g) may be taken pass/fail or SAT/UNS. Joint concentrators may not take any course pass/fail or SAT/UNS. Letter-graded courses must receive a passing grade of C- or higher in order to receive credit toward completion of the concentration.

b. Course credit: Study abroad, Harvard Summer School, and courses offered by other Harvard faculties may count toward concentration credit in some cases. First-Year Seminars taught by department faculty may also count. Students should contact the Undergraduate Program and Advising Administrator with questions about the approval process.

Sociology
Sociology and Data Analytics Track
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses:*
    a. Same as 1a–1h in **Basic Requirements**.
    b. SOCIOL 99A and SOCIOL 99B: Senior Tutorial. See item 2c below.
2. *Tutorials:*
    a. Sophomore year: Same as **Basic Requirements**.
    b. Junior year: Same as **Basic Requirements**.
    c. Senior year: SOCIOL 99. Two terms. Senior thesis workshop; close supervision of thesis. Graded SAT/UNS.
3. *Thesis*: Honors candidates must write a thesis and submit it to the Undergraduate Office in the spring of senior year. Students are urged to choose thesis topics and select an advisor by February of Junior Year. Course credit for the thesis work is obtained through enrolling in SOCIOL 99 in the fall and spring of senior year.
4. *General examination*: None
5. *Other information*: Same as **Basic Requirements**.

Sociology
Joint Concentrations
Joint concentrations are permitted with selected fields by application, and always require a thesis. Sociology can serve as either the primary or allied field. There is no option for a data analytics track with a joint concentration. For more information, visit http://sociology.fas.harvard.edu/pages/joint-concentration-sociology.

1. *Required courses when Sociology is the primary field:* Nine courses.
    a. One Sociology course from the introductory series: (SOCIOL 1000–1089).
    b. SOCIOL 97: Tutorial in Social Theory. Course offered in both the fall and spring term.
    c. SOCIOL 98: Junior Tutorial. Course offered in both the fall and spring term.
    d. SOCIOL 1128: Models of Social Science Research. Course offered in the spring term.
    e. SOCIOL 1156: Statistics for Social Sciences. Students may petition to have this requirement satisfied with STAT 100, STAT 102, STAT 104, or STAT 139.)
    f. Two courses in sociology.
    g. SOCIOL 99: Senior Tutorial. Two terms.
2. *Required courses when Sociology is the allied field:* Six courses.
    a. One Sociology course from the introductory series (SOCIOL 1000–1089).
    b. SOCIOL 97: Tutorial in Social Theory. Course offered in both the fall and spring term.
    c. SOCIOL 1128: Models of Social Science Research. Course offered in the fall term.
    d. SOCIOL 1156: Statistics for Social Sciences. Students may petition to have this requirement satisfied with STAT 100, STAT 102, STAT 104, or STAT 139.)
    e. Two courses in sociology.
3. Other information: Joint concentrators may not take any course pass/fail or SAT/UNS.

Letter-graded courses must receive a C- or higher in order to receive credit toward completion of the concentration.

ADVISING

The Sociology Advising Team consists of the Associate Director of Undergraduate Studies, Undergraduate Program and Advising Administrator, Director of Undergraduate Studies, and House Concentration Advisors. Complete contact information for each member of the team and a set of advising resources can be found on the department website at https://sociology.fas.harvard.edu/pages/advising

Students writing a thesis are expected to select a thesis advisor by February of Junior Year. Students may choose from among current Sociology faculty, department affiliates, and eligible graduate students. The Director of Undergraduate Studies offers workshops for and is available to meet with juniors thinking of writing a senior thesis.

HOW TO FIND OUT MORE

Further information may be obtained from the Undergraduate Advising and Program Administrator, reachable at rrussell@fas.harvard.edu, in William James Hall 650, or at 617-495-3713. Additional information is also available on the department's website at http://sociology.fas.harvard.edu/pages/undergraduate.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Sociology	148	135	116	140	152	136	90	109	118	119
Sociology + another field	9	5	8	0	1	6	2	5	7	6
Another field + Sociology	3	3	5	3	2	3	2	4	9	9

South Asian Studies

A concentration in South Asian Studies enables students to develop a critical understanding of the diverse cultures, histories, languages and literatures of South Asia, which includes Bangladesh, India, Nepal, Pakistan, Sri Lanka, and Tibet. South Asia is home to more than a billion people and some of the world's most fascinating and important civilizations. Its influence has extended historically from Central, East, and Southeast Asia to Europe and North America, which today have vibrant South Asian diasporas. The study of South Asia is an increasingly important area of academic inquiry, especially in recent decades as the region emerges as a global cultural, economic, and political power.

The concentration in South Asian Studies offers a range of possibilities for students interested in studying South Asia. Students interested in the arts and humanities may choose to study modern and/or premodern South Asia from the disciplinary perspectives of history, history of art, literature, music, philosophy, and/or religion.

Students interested in the social sciences may create academic programs that combine the study of languages, literatures, and cultures with course work in anthropology, economics, government, public health, sociology, and/or urban planning.

In addition, joint concentrations with South Asian Studies and another department are possible with the approval of both departments. The department also offers a secondary field in South Asian Studies, as well as language citations in Hindi-Urdu, Sanskrit, Tamil, and Tibetan.

Two Concentration Options
The two concentration options are South Asian Languages, Literatures, and Cultures and South Asian Studies.

- **South Asian Languages, Literatures, and Cultures** (11 courses [44 credits]; 13 courses for honors [52 credits]) is for students who wish to focus intensively on learning a major South Asian language, its textual traditions, and broad sociocultural contexts. The most common choices here are Hindi-Urdu, Sanskrit, Tamil, or Tibetan.

  Students who choose Hindi-Urdu as their primary focus should take a full year of HIND-URD 101 no later than their sophomore year. In subsequent years, they will continue their study of Hindi-Urdu and work out a Plan of Study with the Director of Undergraduate Studies or a designated advisor that draws upon a range of courses in South Asian Studies and related fields.

  Students who choose Sanskrit as their primary focus should take introductory Sanskrit (SANSKRIT 101A and SANSKRIT 101B) no later than their sophomore year. Beyond the study of Sanskrit, students will work out a Plan of Study with the Director of Undergraduate Studies or a designated advisor that draws upon a range of courses in South Asian Studies and related fields.

  Students who choose Tamil as their primary focus should take TAM 101A and TAM 101B no later than their sophomore year. In subsequent years, they will continue their study of Tamil and work out a Plan of Study with the Director of Undergraduate Studies or a designated advisor that draws upon a range of courses in South Asian Studies and related fields.

Students who choose Tibetan as their primary focus should take TIBET 101A and TIBET 101B no later than their sophomore year. In subsequent years, they will continue their study of Tibetan and work out a Plan of Study with the Director of Undergraduate Studies or a designated advisor that draws upon a range of courses in South Asian Studies and related fields.

- **South Asian Studies** (11 courses [44 credits]; 13 for honors [52 credits]) is for students who wish to gain a broad understanding of South Asia. While students may develop a particular area of focus or expertise, the emphasis in this option is on wide-ranging and interdisciplinary studies that are essential to understanding this increasingly important part of our contemporary world.

  In this option, language study in Hindi-Urdu, Sanskrit, Tamil, or Tibetan is required. In special cases, another language may be substituted if it is directly related to South Asian Studies and offered by an academic program approved by the department. In addition to the study of a South Asian language, students will work out a Plan of Study with the Director of Undergraduate Studies or a designated advisor that draws upon courses in South Asian Studies offered by various departments within the Faculty of Arts and Sciences.

Other Options within South Asian Studies
Three other options are possible:

- A **Joint Concentration** (nine courses [36 credits]) allows students to combine training in South Asian languages and cultures with a particular discipline in another department. The Plan of Study is jointly agreed upon by both departments.

- The **Secondary Field in South Asian Studies** (five courses [20 credits]) is a more flexible way for students to study South Asia. It maintains the structure of the concentration, with an emphasis on South Asian Languages, Literatures, and Cultures or South Asian Studies, without the obligation of a joint thesis or culminating project. More information is available under “Secondary Fields” in this document.

- **Language Citations** are awarded in Hindu-Urdu, Sanskrit, Tamil, and Tibetan upon completion of four courses (16 credits) beyond the introductory year. More information is available under “Language Citations” in this document.

REQUIREMENTS

South Asian Languages, Literatures, and Cultures
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
   a. Six courses in Hindi-Urdu, Sanskrit, Tamil, or Tibetan, including at least two courses beyond the second year.
   b. Four additional courses in South Asian Studies, of which at least two must be 100-level non-language courses. Courses for this requirement may include departmental offerings and courses with a South Asia emphasis that are offered in other departments or as General Education courses. The approval of the Director of Undergraduate Studies is required for these courses.
2. *Tutorial*: SAS 98R: Junior Tutorial. One term. Individual or group tutorial. Letter-graded.
3. *Thesis*: None.

4. *General examination*: None.
5. *Other information*: One course taken pass/fail or SAT/UNS may be counted for concentration credit with the approval of the Director of Undergraduate Studies.

South Asian Languages, Literatures, and Cultures
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses*: Same as **Basic Requirements**, with the addition of a yearlong senior tutorial (SAS 99) leading to a thesis.
2. *Thesis*: Required of all senior honors candidates.
3. *General examination*: Honors candidates must take an oral examination based on the work in the concentration and on the thesis.
4. *Other information*: Same as **Basic Requirements**.

South Asian Studies
Basic Requirements: 11 courses (44 credits)

1. *Required courses:*
    a. Four courses in Hindi-Urdu, Sanskrit, Tamil, or Tibetan.
    a. Six additional courses in South Asian Studies, of which at least two must be 100-level non-language courses. Courses for this requirement may include departmental offerings and courses with a South Asia emphasis offered in other departments or as General Education courses. The approval of the Director of Undergraduate Studies is required for these courses.
2. *Tutorial*: SAS 98R: Junior Tutorial. One course. Individual or group tutorial. Letter-graded.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: One course taken pass/fail or SAT/UNS may be counted for concentration credit with the approval of the Director of Undergraduate Studies.

South Asian Studies
Honors Eligibility Requirements: 13 courses (52 credits)

1. *Required courses*: Same as **Basic Requirements**, with the addition of a yearlong senior tutorial (SAS 99R) leading to a thesis.
2. *Thesis*: Required of all senior honors candidates.
3. *General examination*: Honors candidates must take an oral examination based on the work in the concentration and on the thesis.
4. *Other information*: Same as **Basic Requirements**.

Joint Concentration Requirements: 9 courses (36 credits)

1. *Required courses:*
    a. Four courses in Hindi-Urdu, Sanskrit, Tamil, or Tibetan.
    b. Two 100-level non-language courses in South Asian Studies. This requirement may be satisfied by departmental offerings and by courses with a South Asia emphasis offered in other departments. The approval of the Director of Undergraduate Studies is required for these courses.
2. *Tutorials*:
    a. Junior year: SAS 98R or other tutorial as jointly arranged between the two departments. One term.
    b. Senior year: SAS 99R if South Asian Studies is the primary field, or two terms

of tutorial in the other concentration if South Asian Studies is not the primary field. Two terms.

4. *Thesis*: Required.
5. *General examination*: Honors candidates must take an oral examination based on the work in the concentration and on the thesis.

ADVISING

Students are assigned a faculty advisor based on their area of study. Students continue with the same advisor throughout their three years unless there is a reason for making a change. Students meet with their advisor at least twice a term and at other times as needed.

For up-to-date information on advising in South Asian Studies, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

The University-wide South Asia Institute (SAI) facilitates scholarly exchanges among Harvard faculty and students, specialists in South Asian studies from the U.S. and abroad, and visiting academics and prominent public figures from South Asia. Encouraging the work of Harvard faculty and students, the SAI also provides grants for language study and thesis research.

Harvard College Library contains one of the largest collections of Sanskrit manuscripts and printed texts in the West, and strong collections in Urdu and Sindhi literatures and South Asian studies in general. Together with the Harvard-Yenching Library, Harvard's holdings of Buddhist texts are perhaps the finest in the world.

STUDY ABROAD

The department strongly encourages concentrators to spend either a summer or term in South Asia as part of their studies. For advice on study abroad programs eligible for concentration credit, students should see the Director of Undergraduate Studies.

HOW TO FIND OUT MORE

Questions about the concentration should be discussed with the Director of Undergraduate Studies, Parimal Patil, reachable at ppatil@fas.harvard.edu and 617-384-8938.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
South Asian Studies*	4	4	2	1	0	0	0	0	0	4
South Asian Studies* + another field	1	0	2	1	0	0	0	0	0	1
Another field + South Asian Studies*	0	0	1	0	2	3	3	2	0	2

* Prior to the 2011–12 academic year, this concentration was named Sanskrit and Indian Studies.

Special Concentrations

The option of petitioning for a Special Concentration was established by the Faculty in 1971 for the serious student whose academic interests cross departmental lines. Special Concentrations offer students the opportunity to design their own program of concentration with the advice and consent of the various members of the faculty and administration. With this option, the faculty addressed special educational objectives not accommodated by existing concentrations. Special Concentrations is not intended to encourage students either to avoid particular departmental requirements or to create a broad, unfocused concentration that could be described as “general studies.”

The Standing Committee on Special Concentrations, which is composed of faculty from a wide range of disciplines, sets the general policies and educational guidelines for the program, and considers individually each petition submitted. The detailed administration of each student’s program is supervised by the student’s faculty advisor and by the Director of Studies.

Although most special concentration proposals include a full tutorial program culminating in a senior thesis for honors candidates, Special Concentrations is also open to students who prefer a basic course of study. Basic concentrators submit a 14-course program (56 credits); 16 courses (64 credits) are required of honors candidates. To the extent that there are similar requirements in the existing concentrations most closely related to the proposed special concentration, an honors-eligible Plan of Study must ordinarily include provision for tutorials in both the junior and senior years, and completion and evaluation of a senior thesis or equivalent. A written or oral general examination, administered by the faculty advisor plus one other faculty member, is required.

Seniors completing the basic program are expected to enroll in SPC-CONC 96R during their final or pre-final term. This course focuses on the production of a substantial piece of writing or special project related to issues or themes of the student’s Special Concentration. The form of the composition is not prescribed and can range from an interpretative essay to a critical review of the bibliography in the field, to a research paper on a particular topic. The Director of Studies and faculty advisor must approve the project. A written or oral general examination, administered by the faculty advisor plus one other faculty member, is required.

There are no a priori minimum grade averages that an applicant must achieve to qualify for Special Concentrations or to obtain approval of a Plan of Study. It is necessary, however, that the standing committee be convinced not only of the quality, rigor, and legitimacy of the topic, but also of the applicant’s high level of self-motivation, perseverance, and conscientiousness, since the success of each Special Concentration depends on the drive and determination of the student more than in a regular departmental concentration. From time to time the committee has rejected applications for concentrations that were unquestionably valid areas of academic inquiry but could not be accommodated within existing resources of the University.

The process of development from interest and idea to a detailed and approved special concentration may seem long and complicated, but most students have found it constructive and illuminating.

Seeking out a faculty advisor and tutors provides the occasion to meet and talk with a number of faculty members, and not infrequently it turns out that a student discovers that their plan can be accommodated within an existing department. In other cases, it is clear that Special

Concentrations is an appropriate vehicle to assist a student to pursue some interdisciplinary interest in depth. The role of the faculty advisor in a special concentration is crucial. The principal faculty advisor must ordinarily be a member of the Faculty of Arts and Sciences and must agree to supervise and oversee the student's entire program of concentration from the development of the initial course structure through any necessary revisions of the Plan of Study to the general examination required of all senior concentrators.

Each approved Special Concentration exists as a small committee within our program. Plans of Study for the individual concentrations are unique, but all are interdisciplinary. For example, several recent programs have dealt with food and the environment, while others have addressed topics relating to technology and society. There have also recently been concentrations focusing on issues of health and society, and geography and identity.

Special Concentrations represents a small but significant portion of undergraduate concentrators. It seems best for those students who not only have an unusual interest, but also have a clear grasp of the direction in which they are heading. Although there are exceptions, most successful Special Concentrations applications have been submitted by upperclassmen who have spent one or two terms studying in one of the College's established concentrations.

Special Concentrations are not available for joint- or double-concentration plans.

LEARNING OBJECTIVES

Students establish their own learning objectives as part of their individual Special Concentration. These programs are typically highly interdisciplinary and often include some combination of content knowledge, command of theory, and methodological competence in a combination of fields. Special Concentrators bring the threads of their studies together in a general exam, as well as a culminating work, either a thesis (for honors concentrators) or a capstone project (for non-honors concentrators).

REQUIREMENTS

Special Concentrations
Basic Requirements: 14 courses (56 credits)

1. *Required courses*: Each concentrator's individual Plan of Study is approved as part of the process of admission to the special concentration. If there is a substitution of courses for more than 25 percent of the original courses proposed, the program must be reviewed by the Standing Committee on Special Concentrations. All individual substitutions or changes in courses to be counted for the concentration must be approved by the individual's faculty advisor and by the Director of Studies of Special Concentrations. Any special requirement for a Special Concentration is established at the time the original Plan of Study petition is approved.
2. *Tutorials*:
    a. Sophomore year: SPC-CONC 97R. Optional. One or two terms. Letter-graded.
    b. Senior year: SPC-CONC 96R. Required. One term. Letter-graded.
3. *Thesis*: None.
4. *General examination*: Required of all seniors.
5. *Other information:*
    a. Pass/fail: No courses counted for the concentration may be taken pass/fail, with the following exceptions:
        i. One First-Year Seminar may be counted for concentration credit if permission to do so is obtained from the Director of Studies and if the student receives a positive evaluation.

ii. Courses at other Harvard Schools that are offered pass/fail may be counted for concentration credit with the approval of the Director of Studies and if the student receives a positive evaluation.

b. Each letter-graded course for concentration must be passed with a grade of C or higher.

Special Concentrations
Honors Eligibility Requirements: 16 courses (64 credits)

1. *Required courses:* Same as **Basic Requirements**.
2. *Tutorials*:
    a. Sophomore year: Same as **Basic Requirements**.
    b. Junior year: SPC-CONC 98R. Ordinarily required. Two terms. Letter-graded.
    c. Senior year: SPC-CONC 99. Required. Two terms. Graded SAT/UNS.
3. *Thesis*: A thesis or its equivalent is required of all honors candidates.
4. *General examination*: Required of all seniors.
5. *Other information*: Same as **Basic Requirements**.

ADVISING

Because of the nature of this program, advising is highly personalized. Students ordinarily have frequent meetings with their faculty advisor during the academic year, and they discuss their programs with the Director of Studies at least once at the beginning of each term. The Director of Studies also offers guidance to students interested in preparing a Special Concentration proposal for review by the Special Concentrations faculty committee. For up-to-date information on advising in Special Concentrations, students should see the Special Concentrations website at https://specialconcentrations.fas.harvard.edu/.

RESOURCES

Although in one sense students in Special Concentrations have no particular resources reserved for them such as special libraries or laboratories, in another and very real sense all the resources of the University are available for the support of special concentrators in completing their programs. Since faculty advisors and tutors in Special Concentrations may come from different Harvard faculties, it may be the case that special concentrators in health and society, for example, would have the facilities of the Harvard T.H. Chan School of Public Health available to them, or those with a focus on urban studies might have available the facilities of the Graduate School of Design or the Harvard Kennedy School.

HOW TO FIND OUT MORE

Inquiries may be addressed to the Director of Studies at specialconc@fas.harvard.edu. While the Special Concentrations staff may host an information session for prospective students during the academic year, they also welcome direct inquiries and often meet one-on-one with students to discuss opportunities. Students should contact specialconc@fas.harvard.edu to learn more.

For more information or to download an application form, students should visit the Special Concentrations website at https://specialconcentrations.fas.harvard.edu/. The Director of Studies also maintains a current list of concentrators with the titles of their programs and the addresses and names of their faculty advisors. This list is available to prospective concentrators for the purpose of seeking advice from students currently in the program.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Special Concentrations*	6	7	8	7	6	8	7	7	9	9

* Special Concentrations does not participate in joint or double concentrations.

Statistics

Statistics is a relatively young discipline, focusing on principled methods for collecting and learning from data in order to describe a phenomenon, make predictions, or draw causal conclusions. Statistics has a methodological core surrounded by a large number of domains of application in fields such as anthropology, artificial intelligence, astronomy, biology, business, chemistry, computer science, economics, education, engineering, environmental sciences, epidemiology, finance, forensic science, geophysical sciences, government, law, linguistics, machine learning, medicine, physics, psychology, sociology, and many others. A basic goal of the concentration in Statistics is to help students acquire the conceptual, computational, and mathematical tools for quantifying uncertainty and making sense of complex data arising from many applications. The mathematical preparation required includes multivariable calculus and linear algebra. The computational preparation required includes COMPSCI 50, or equivalent or above.

A basic introduction to the field is provided by any courses of STAT 100 through STAT 104, which introduce statistical principles (without any mathematical or statistical prerequisite) with different areas of application emphasized as indicated in the descriptions. STAT 100, STAT 102, STAT 104, and STAT 111 fulfill the College's Quantitative Reasoning with Data (QRD) requirement, as do several other Statistics courses. (The website https://oue.fas.harvard.edu/quantitative-reasoning-data provides additional information about the QRD requirement.) A theoretical introduction is provided by STAT 110: Introduction to Probability, together with STAT 111: Introduction to Statistical Inference. These courses provide grounding in traditional and modern approaches to statistical modeling and inference. They are prerequisites for most of the department's more advanced courses, which study specific methods, models, and applications.

The Statistics concentration is a flexible program that permits as many as half of the 14 courses required for honors eligibility to be taken in departments other than Statistics. A concentration in Statistics prepares a student for many careers in industry (in technology companies, finance, and elsewhere) and government, for graduate study in a very broad collection of engineering, social and natural sciences, and for professional study in law, medicine, business, or public administration. The demand for people with statistical training is rising in most areas.

The Statistics concentration requirements can be fulfilled via any of four tracks: a general track in core statistical principles and methods, a track in Data Science, a track in Bioinformatics and Computational Biology (BCB), and a track in Quantitative Finance. These tracks all lead to a degree in Statistics. The Data Science, BCB, and Quantitative Finance tracks provide interdisciplinary education combining Statistics with computer science, biology, and finance, respectively.

- The **general track** is the most flexible track, and it provides a foundation for statistical theory, methods, and applications. Aside from the required theoretical courses STAT 110 and STAT 111 and the required applied course STAT 139, the general track allows many options in how theoretical or applied a student makes the course of study, and which aspects of statistics and areas of application a student focuses on.

- The **Data Science track** explores the interface of statistics, computer science, and application areas, emphasizing topics such as prediction, machine learning, and analysis of massive data sets. By placing the generation and analysis of data at the center of modern analytics, data science is having a major impact in a vast array of areas, including

business, government and politics, science and engineering, medicine and public health, journalism, sports, law, and education.

- The **Bioinformatics and Computational Biology track** is aimed at undergraduates with interest in quantitative methods and modeling applied to data from the biological, medical, and life sciences. The recent explosion of size and complexity of data in the biological and life sciences, such as the human/animal/plants genome projects with gene and protein sequences, has motivated the development of new statistical methodologies and models, such as models for gene and protein motifs search, phylogenetic reconstruction, and gene expression analysis. Core requirements in Statistics emphasize statistical modeling, especially as it relates to biological systems. Additional courses in biology allow students to obtain a strong foundation in molecular and cellular biology, evolutionary biology, or ecology.

- The **Quantitative Finance track** is designed as a specialization for concentrators in Statistics with interest in quantitative issues that arise in financial and insurance modeling. The focus is on the stochastic analysis that is relevant in these fields. The specific topics addressed include statistical inference of stochastic models that arise in financial/insurance modeling, computational techniques that have become standard in pricing, risk assessment of complex financial/insurance instruments, and analysis and predication for time series.

The Department of Statistics welcomes students interested in pursuing a joint concentration with any other concentration that allows joint concentrations. A joint concentration can provide strong preparation for drawing conclusions from data and quantifying uncertainty to address relevant questions for the other field. Concentrators have frequently pursued joint degrees with fields in the sciences and social sciences, most commonly computer science and mathematics. Joint concentrations with fields in the arts and humanities have also been successful, with especially careful planning needed. A joint degree culminates in a senior thesis that integrates the two fields. Students should consult the Directors of Undergraduate Studies of both fields to ensure that all requirements are met.

The Department of Statistics also offers a secondary field. With its strong methodological and applications focus, Statistics has consequently attracted students with a primary focus in another discipline, such as psychology, economics, sociology, government, Earth and planetary sciences, and life sciences. The secondary field in Statistics will provide students with a solid background in statistics that they can apply in their primary field or fields of interest. More information on the secondary field in Statistics is available in the “Secondary Fields” section of this handbook.

Students should visit http://statistics.fas.harvard.edu/pages/undergraduate-statistics-general-information for more information about the Statistics concentration.

LEARNING OBJECTIVES

A basic goal of the concentration in Statistics is to help students acquire the conceptual, computational, and mathematical tools for quantifying uncertainty and making sense of complex data arising from many applications.

REQUIREMENTS

Statistics

Basic Requirements: 12 courses (48 credits)

1. *Required courses*: Students must fulfill the requirements from one of the following four tracks.
    a. **General Track:**
        i. STAT 110, STAT 111, and STAT 139.
        ii. Four additional Statistics courses numbered between 100 and 299 (inclusive). STAT 98 and COMPSCI 181 may also be counted toward this requirement. Only one Statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit.
        iii. One multivariable calculus, differential equations, optimization, or real analysis course: MATH 18A, MATH 19A, MATH 21A, MATH 22B, MATH 23B, MATH 23C, MATH 25B, MATH 55B, MATH 112, MATH 114, MATH 116, APMTH 22B, APMTH 105, APMTH 121, or COMPSCI 128.
        iv. One linear algebra course: MATH 18B/19B, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, MATH 121, or APMTH 22BA, APMTH 120.
        v. One computer science course: COMPSCI 32, COMPSCI 50, COMPSCI 51, or COMPSCI 61.
        vi. Two additional related courses, chosen from item 5a below.
    b. **Data Science Track:**
        i. STAT 110, STAT 111, and STAT 139.
        ii. COMPSCI 109A/STAT 109A or APCOMP 209A.
        iii. One multivariable calculus, differential equations, optimization, or real analysis course: MATH 18A, MATH 19A, MATH 21A, MATH 22B, MATH 23B, MATH 23C, MATH 25B, MATH 55B, MATH 112, MATH 114, MATH 116, APMTH 22B, APMTH 105, APMTH 121, or COMPSCI 128.
        iv. One linear algebra course: MATH 18B/19B, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, MATH 121, APMTH 22A, APMTH 120.
        v. Two additional Statistics courses, chosen from STAT 98, STAT 108, STAT 115, STAT 117, STAT 120, STAT 109B (or APCOMP 209B), STAT 131, STAT 140, STAT 141, STAT 143, STAT 149, STAT 160, STAT 171, STAT 175, STAT 183, STAT 184, STAT 185, STAT 186, STAT 195, STAT 210, STAT 211, STAT 212, STAT 213, STAT 220, STAT 221, STAT 230, STAT 234, STAT 236, STAT 240, STAT 242, STAT 244, STAT 288.
        vi. Three additional Computer Science courses, chosen from COMPSCI 32, COMPSCI 50, COMPSCI 51, COMPSCI 61, COMPSCI 73, COMPSCI 79, COMPSCI 96, COMPSCI 105, COMPSCI 107, COMPSCI 108, COMPSCI 109B (or APCOMP 209B), COMPSCI 120, COMPSCI 121, COMPSCI 124, COMPSCI 125, COMPSCI 126, COMPSCI 134, COMPSCI 136, COMPSCI 143, COMPSCI145, COMPSCI 161, COMPSCI 165, COMPSCI 171, COMPSCI 178, COMPSCI 179, COMPSCI 181, COMPSCI 182, COMPSCI 187, COMPSCI 197, COMPSCI 205, COMPSCI 207, COMPSCI 222, COMPSCI 223, COMPSCI 224, COMPSCI 226R, COMPSCI 229BR, COMPSCI 229R, COMPSCI 236R, COMPSCI 242, COMPSCI 243, COMPSCI 249R, COMPSCI 262, COMPSCI 263, COMPSCI 265,

COMPSCI 271, COMPSCI 281, COMPSCI 282BR, COMPSCI 282R, COMPSCI 286, COMPSCI 287, COMPSCI 288, or APCOMP 215 or ECON 2355.

vii. One additional related course, chosen from item 5a below.

c. **Bioinformatics and Computational Biology (BCB) Track:**
   i. STAT 110, STAT 111, and STAT 139.
   ii. Two of the following four courses: STAT 115, STAT 117, STAT 171, STAT 186, BST 281. MCB 112 can substitute for STAT 114; STAT 286 can substitute for STAT 186.
   iii. One additional Statistics course numbered between 100 and 299 (inclusive). STAT 98 or COMPSCI 181 may also be counted toward this requirement. Only one Statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit.
   iv. One multivariable calculus, differential equations, optimization, or real analysis course: MATH 18A, MATH 19A, MATH 21A, MATH 22B, MATH 23B, MATH 23C, MATH 25B, MATH 55B, MATH 112, MATH 114, MATH 116, or APMTH 22B, APMTH 105, APMTH 121, or COMPSCI 128.
   v. One linear algebra course: MATH 18B/19B, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, MATH 121, or APMTH 22A, APMTH 120.
   vi. One Computer Science course: COMPSCI 32, COMPSCI 50, COMPSCI 51, COMPSCI 61, COMPSCI 107, COMPSCI 153, COMPSCI 161, COMPSCI 165, COMPSCI 178, or APMTH 10, or APCOMP 207, or STAT 108, STAT 221.
   vii. Two Life Sciences courses: LS 1A (or LPS A), LS 1B.
   viii. One additional related course, chosen from item 5a below.

d. **Quantitative Finance Track:**
   i. STAT 110, STAT 111, and STAT 139.
   ii. Two additional statistics courses, chosen from STAT 123, STAT 131, STAT 149, STAT 170, STAT 171, STAT 212, STAT 242, and MIT 15.4371.
   iii. One additional statistics course numbered between 100 and 299 (inclusive). STAT 98 or COMPSCI 181 may also be counted toward this requirement. Only one statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit.
   iv. One multivariable calculus, differential equations, or real analysis course: MATH 18A, MATH 19A, MATH 21A, MATH 22B, MATH 23B, MATH 23C, MATH 25B, MATH 55B, MATH 112, MATH 114, or APMTH 22A, APMTH 105, or COMPSCI 128.
   v. One linear algebra course: MATH 18B/19B, MATH 21B, MATH 22A, MATH 23A, MATH 25A, MATH 55A, MATH 121, or APMTH 22A, APMTH 120.
   vi. One computer science course: COMPSCI 32, COMPSCI 50, COMPSCI 51, COMPSCI 61, COMPSCI 107, COMPSCI 153, COMPSCI 161, COMPSCI 165, COMPSCI 178, or APMTH 10, or APCOMP 207, or STAT 108, STAT 221.
   vii. Two economics courses: Either ECON 1010A or ECON 1011A, and one of the following courses: ECON 980Z, ECON 1723, ECON 1745, ECON 1759.
   viii. One additional related course, chosen from item 5a below.

2. *Tutorials:*
   a. Junior year: STAT 98. Optional. Letter-graded.
   b. Senior year: STAT 99R. Optional. SAT/UNS.

3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*:
    a. Related courses:
        i. APCOMP 209A, APCOMP 209B, APCOMP 211, APCOMP 215, APCOMP 221, APCOMP 295.
        ii. APMTH 21A, APMTH 21B, APMTH 22B, APMTH 22A, APMTH 104, APMTH 105, APMTH 106, APMTH 107, APMTH 108, APMTH 111, APMTH 115, APMTH 120, APMTH 121, APMTH 126, APMTH 201, APMTH 202, APMTH 203, APMTH 205, APMTH 207, APMTH 210, APMTH 216, APMTH 220, APMTH 221, APMTH 222, APMTH 225, APMTH 226, APMTH 231.
        iii. APPHY 284, APPHY 286.
        iv. ASTRON 100, ASTRON 193.
        v. BST 232, BST 233, BST 234, BST 235, BST 238, BST 244, BST 245, BST 249, BST 250, BST 251.
        vi. COMPSCI 20, COMPSCI 32, COMPSCI 50, COMPSCI 51, COMPSCI 61, COMPSCI 73, COMPSCI 79, COMPSCI 96, COMPSCI 105, COMPSCI 108, COMPSCI 109A, COMPSCI 109B, COMPSCI 120, COMPSCI 121, COMPSCI 124, COMPSCI 125, COMPSCI 126, COMPSCI 127, COMPSCI 134, COMPSCI 136, COMPSCI 143, COMPSCI 145, COMPSCI 161, COMPSCI 165, COMPSCI 171, COMPSCI 178, COMPSCI 181, COMPSCI 182, COMPSCI 187, COMPSCI 197, COMPSCI 205, COMPSCI 207, COMPSCI 208, COMPSCI 222, COMPSCI 223, COMPSCI 224, COMPSCI 226R, COMPSCI 227R, COMPSCI 228, COMPSCI 229BR, COMPSCI 229R, COMPSCI 236R, COMPSCI 238, COMPSCI 242, COMPSCI 243, COMPSCI 249R, COMPSCI 262, COMPSCI 265, COMPSCI 271, COMPSCI 281,COMPSCI 282BR, COMPSCI 282R, COMPSCI 286, COMPSCI 287R, COMPSCI 288.
        vii. E-PSCI 102,E-PSCI 139, E-PSCI 168.
        viii. ECON 50, ECON 980Z, ECON 1011A, ECON 1011B, ECON 1030, ECON 1034, ECON 1036, ECON 1042, ECON 1051, ECON 1052, ECON 1057, ECON 1078, ECON 1080, ECON 1123, ECON 1126, ECON 1152, ECON 1460, ECON 1820, ECON 2030, ECON 2057, ECON 2070, ECON 2110, ECON 2120, ECON 2140, ECON 2142, ECON 2144, ECON 2146, ECON 2150, ECON 2355, ECON 2723, ECON 2725, ECON 2728.
        ix. ENG-SCI 155, ENG-SCI 157, ENG-SCI 201, ENG-SCI 202, ENG-SCI 203, ENG-SCI 250.
        x. GOV 51, GOV 52, GOV 1002, GOV 1003, GOV 1005, GOV 1006, GOV 1010, GOV 1016, GOV 1347, GOV 1430, GOV 2000, GOV 2001, GOV 2002, GOV 2003, GOV2018, GOV 2430.
        xi. MATH 18, MATH 19A, MATH 19B, MATH 21A, MATH 21B, MATH 22A, MATH 22B, MATH 23A, MATH 23B, MATH 23C, MATH 25A, MATH 25B, MATH 55A, MATH 55B, MATH 101, MATH 106, MATH 110, MATH 112, MATH 113, MATH 114, MATH 115, MATH 116, MATH 119, MATH 121, MATH 122, MATH 123, MATH 124, MATH 136, MATH 155R, MATH 212A, MATH 212BR, MATH 213, MATH 259Y, MATH 271, MATH 278Y.
        xii. MCB 60, MCB 111, MCB 112, MCB 131, MCB 198, MCB 199.
        xiii. NEURO 130, NEURO 140.
        xiv. OEB 152, OEB 242.
        xv. PHIL 150.

xvi. PHYSICS 131, PHYSICS 181, PHYSICS 262, PHYSICS 286.
xvii. PSY 1019, PSY 1406, PSY 1950, PSY 1952, PSY 2030, PSY 2080, PSY 2085.
xviii. HGSE EDU A164.
xix. HKS DIP 617
xx. MIT 6.0001+6.0002 (as a substitute for COMPSCI 50), 6.036 or 6.390 (as a substitute for COMPSCI 181), 6.441, 6.867, 15.097, 15.501/15.516.
xxi. STAT 91R (may be taken at most once for concentration credit; graded SAT/UNS), STAT 98, any 100-level or 200-level Statistics courses. Only one Statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit.
xxii. Other relevant courses if approved by the Directors of Undergraduate Studies.

b. Pass/fail and SAT/UNS: STAT 110, STAT 111, and STAT 139 must be taken for letter grades for concentration credit. One course other than STAT 110, STAT 111, and STAT 139 may be taken pass/fail or SAT/UNS and counted for concentration credit. Additionally, STAT 99R is graded SAT/UNS and does not use up the one pass/fail or SAT/UNS course allowed for concentration credit. However, STAT 91R is graded SAT/UNS and, if taken for concentration credit, would be the one pass/fail or SAT/UNS course allowed for concentration credit.
c. STAT 110 and STAT 111 must be completed by the end of the junior year. The graduate-level courses STAT 210, STAT 211, and STAT 244 can substitute for STAT 110, STAT 111, and STAT 139, respectively.
d. MIT 6.0001+6.0002 (if both of these courses are taken) can substitute for COMPSCI 50, and MIT 6.036 or 6.390 can substitute for COMPSCI 181.

Statistics
Honors Eligibility (except for Joint Concentrations) Requirements: 14 courses (56 credits)

1. *Required courses*: Same as **Basic Requirements** for all tracks.
2. *Related courses*: Two additional courses, which may be from the list of related courses (see item 5a above). Only one Statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit. For students writing a senior thesis, STAT 99R can count as one of the two additional courses for honors eligibility.
3. *Tutorial*: Same as **Basic Requirements**.
4. *Honors*: Eligibility for honors requires either a senior thesis (see item 5 below) or following the advanced course option (see item 6 below). Eligibility for high honors or highest honors requires a senior thesis.
5. *Thesis*: A substantial statistical analysis of a real-life problem, a critical review of statistical methods in some problem areas, or the solution of an open statistical research problem are equally acceptable. There must be a thesis advisor or co-advisor from the Statistics Department, unless approved otherwise by the Directors of Undergraduate Study.
6. *Advanced course option*: Statistics course work that includes a set of at least seven letter-graded Statistics courses numbered between 110 and 299 (inclusive), with STAT 110 (or STAT 210), STAT 111 (or STAT 211), and STAT 139 (or STAT 244) in this set. At least one of STAT 210, STAT 211, STAT 220, STAT 230, or STAT 244 must be in the set, and a GPA of at least 3.5 in the set is required.
7. *General examination*: None.
8. *Other information*: Same as **Basic Requirements**.

Statistics
Joint Concentration Requirements: 10, 11, or 12 courses (40, 44, or 48 credits)

Students interested in a joint concentration should consult the Directors of Undergraduate Studies in both concentrations at an early date.

1. *Statistics as the Primary Field*: 12 courses (48 credits).
    A. Same as **Basic Requirements** for all tracks, except that a senior thesis is also required. The senior thesis must strongly relate to both fields. There must be a co-advisor or secondary advisor from the Statistics Department, unless approved otherwise by the Directors of Undergraduate Study.
2. *Another Concentration as the Primary Field*: 10–11 courses (40–44 credits).
    A. Same as **Basic Requirements** for all tracks, except that a senior thesis is also required, and the "two additional related courses" (for the general track) or "one additional related course" (for the other tracks) are not required. The senior thesis must strongly relate to both fields. There must be a co-advisor or secondary advisor from the Statistics Department, unless approved otherwise by the instructor of STAT 99R or one of the Directors of Undergraduate Study or Associate Directors of Undergraduate Study.

ADVISING

Concentrators are assigned an individual concentration advisor and are also welcome to discuss the program and their progress with the Directors of Undergraduate Studies or any of the concentration advisors in the department. It is expected that concentrators will meet with their advisor at least once per semester.

For up-to-date information on advising in Statistics, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

For more information, students should consult with the Undergraduate Program Administrator, Lorna Blocksma, Science Center 400E (reachable at lblocksma@fas.harvard.edu and 617-496-1184) and/or the Directors of Undergraduate Studies, and should visit the concentration webpage at http://statistics.fas.harvard.edu/pages/undergraduate-statistics-general-information.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Statistics	154	168	163	154	145	136	88	93	107	154
Statistics + another field	8	10	11	19	17	28	26	31	29	34
Another field + Statistics	14	18	16	26	39	44	30	49	55	69

Theater, Dance & Media

Theater, Dance & Media (TDM) combines historical and theoretical study of live and digital arts with the practice of those arts. Taught by Faculty of Arts and Sciences (FAS) faculty, and by practitioners from the American Repertory Theater (A.R.T.) and numerous visiting artists/scholars each year, students are introduced to the rigor and discipline required to participate in professional theater, dance, and media practices. The goal of the concentration is to foster the imagination and intellect using a broad range of arts-based research and practice techniques that offer strong training in creating expressive culture. Students are strongly encouraged to work across art forms, including literature, music, and the visual arts, and beyond the humanities, in order to incorporate new ideas and forms of knowledge into their work in the performing arts.

TDM emphasizes collaboration. The concentration explores the many ways to act, design, direct, compose, choreograph, dance, write, produce, and organize live art and digital media. Our studio courses model and study the many forms of arts collaboration; similarly, scholarly courses look to the history and theory of culture as a complement to the skills gained in studio practice.

In addition to the required course work, students pursuing the Theater, Dance & Media concentration are required to meaningfully participate in at least two TDM concentration production studio courses led by professional directors, choreographers, and designers. Concentrators will also obtain valuable technical skills through both working on the crew for at least one concentration show and supporting the work of their peers.

LEARNING OBJECTIVES

The goal of the concentration is to foster the imagination and intellect using a broad range of arts-based research and practice techniques. TDM offers training in a variety of methods to create expressive culture. Students are strongly encouraged to work across art forms—including literature, music, and the visual arts as well as with and beyond the other disciplines in the humanities—to incorporate new ideas and forms of knowledge into their work in the performing arts.

REQUIREMENTS

Theater, Dance & Media
Basic Program Requirements: 12 courses (48 credits)

1. *Required Courses:*
    a. Four courses focused on critical and scholarly approaches to theater, dance, and media offered through the Standing Committee on Degrees in Theater, Dance, and Media or by faculty in allied fields, including, but not limited to, the departments of Comparative Literature, English, Music, History of Art and Architecture, Art, Film, and Visual Studies, and Folklore and Mythology. These courses should not all be taken in a single discipline, for example dramatic literature, but rather should give the student a range of experience in the various aspects of theater making. At least one of these courses must focus on pre-20th century performance and must include various genres and forms of theater, dance, and media. The student will consult with the Director of Undergraduate Studies (DUS) for course approval and to compile a sound Plan of Study to meet this requirement.
    b. Four courses that are practice-based or studio. Courses can include directing, design, acting, dance, choreography, playwriting, dramaturgy, and work in

newer media. The student should take courses in more than one discipline. The choice of courses will require the approval of the Director of Undergraduate Studies (DUS).
    c. Two TDM production studios (TDM 90AR/BR/CR/DR). These studio courses frame and focus on TDM professionally directed, choreographed, and designed productions each term. Students are expected to assume major artistic roles, such as actors, dancers, apprentice directors, choreographers, designers, dramaturges, or producers.
    d. Note: One of the eight courses in either scholarly or practice-based approaches must be in non-U.S. theater/dance or nontraditional performance.
2. *Tutorials*:
    a. Sophomore year: TDM 97: Foundational Concepts in Theater, Dance & Media. One term. Required. Letter-graded.
    b. Junior year: TDM 98. One term. Required. Letter-graded. The goal of the junior tutorial is to test insights generated from critical reading in the context of studio practice. The result of the junior tutorial can be a final performance combined with a written account of the relation between reading, research, and studio practice that has occurred over the course of the semester, or a written project that includes reflections on studio work.
3. *Thesis*: None.
4. *General examination*: None.
5. *Other information*: The following additional requirements will be graded SAT/UNS and must be approved by the DUS.
    a. The Samuel Becket Crew Assignment: Students must complete one production crew assignment by working on one TDM production or TDM thesis production.
    b. One mandatory workshop on theater safety completed by the end of first senior semester.

Theater, Dance & Media
Honors Eligibility Requirements: 14 courses (56 credits)

1. *Required courses*: Same as **Basic Requirements.**
2. *Tutorials*: Same as **Basic Requirements**, plus two terms of TDM 99: Senior Tutorial. Yearlong, eight-credit course. Required. Graded SAT/UNS.
3. *Thesis*: Honors candidates may complete a performance-based or critical thesis. Thesis ideas are proposed in the second semester of the junior year and must be approved by the Executive Committee on Theater, Dance & Media, and the DUS.
4. *General examination*: None.
5. *Other information*: Same as **Basic Requirements**.

Theater, Dance & Media
Joint Concentration Requirements
For information on joint concentrations, students should consult the Director of Undergraduate Studies and see the TDM website at https://tdm.fas.harvard.edu/.

ADVISING

The Director of Undergraduate Studies (DUS) advises all students when they enter the concentration, eventually assigning to them additional faculty and professional advisors, based on the students' particular interests and their work in or on specific productions. Together with the DUS, these advisors will support students in developing a coherent course of study and a solid body of artistic work that is suited to each student's goals and interests.

For up-to-date information on advising in Theater, Dance & Media, students should see the

Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

HOW TO FIND OUT MORE

For more information about the concentration, students should visit the department website at https://tdm.fas.harvard.edu/ or email tdm@fas.harvard.edu.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Theater, Dance & Media	12	17	18	17	5	9	13	23
Theater, Dance & Media + another field	2	9	11	12	4	8	8	4
Another field + Theater, Dance & Media	6	8	8	10	7	9	8	1

Studies of Women, Gender, and Sexuality

The Study of Women, Gender, and Sexuality has long constituted a vibrant and engaging arena for interdisciplinary work and intellectual inquiry. At the heart of this field is the assertion that gender and sexuality are fundamental categories of social organization and power that are inseparable from race, ethnicity, class, nationality, and other categories of difference.

The concentration in Studies of Women, Gender, and Sexuality (WGS) brings together a wide range of academic fields in the humanities, social sciences, and sciences (including history, literature, visual studies, anthropology, sociology, ethnic studies, political science, psychology, and biology, to name just a few). As an interdisciplinary field of study, WGS pays close attention to how social norms have changed over time and how they vary across cultures. The concentration also actively investigates the ways in which ideas about gender and sexuality have shaped public policy, civil rights, health care, religion, education, and the law, as well as the depiction of women and men in art, literature, and the popular media. WGS courses are characterized by a strong commitment to critical thinking, as well as by a spirit of open and sustained intellectual inquiry.

WGS prides itself on the intense intellectual engagement of its students and its close collaboration between students and faculty. Beginning with the small-group sophomore tutorial (WOMGEN 97), WGS provides students with a rigorous grounding in the theory and methodology of gender and sexuality studies, helping students hone their skills in critical analysis, close reading, and effective research and writing. All full concentrators must enroll in the two foundation courses numbered WOMGEN 1200: Historical Approaches and WOMGEN 1210: Theories of Gender and Sexuality, and two WGS or WGS-related seminars numbered 1400 and above or relevant courses in “engaged scholarship” (described at https://publicservice.fas.harvard.edu/courses-0). Joint concentrators may choose one of the foundation courses. Concentrators may also fulfill concentration requirements by taking courses on WGS-related topics in other programs and departments. (A list of preapproved courses from other departments is available on the WGS website at http://wgs.fas.harvard.edu/.)

Students may pursue honors recognition by entering the thesis track during their junior year, or they may combine WGS in a joint concentration with a range of other concentrations including African and African American Studies, Anthropology, English, History and Literature, History of Science, Literature, Music, Philosophy, Comparative Study of Religion, Romance Languages and Literatures, Social Studies, Sociology, and Statistics. Students also have the option to pursue a secondary field in WGS. Requirements for these concentration options appear under “Requirements” below, and information about the secondary field can be found in the “Secondary Fields” section of this handbook.

LEARNING OBJECTIVES

Students concentrating in WGS receive rigorous training in interdisciplinary approaches to analyzing urgent social issues and questions of identity and power. They develop a powerful skill set of analytical, synthetic, and collaborative approaches to problem-solving alongside excellent research and communication skills that prove essential in the world beyond college.

REQUIREMENTS

Studies of Women, Gender, and Sexuality
Concentration Requirements: 12 courses (48 credits)

1. Sophomore tutorial: WOMGEN 97.
2. History foundation course: WOMGEN 1200.
3. Theory foundation course: WOMGEN 1210.
4. Two WGS courses numbered 1400 and above; one of these courses may be an approved “engaged scholarship” course.
5. Seven courses drawn from WGS offerings or from the list of courses that count for concentration credit presented on the WGS website at http://wgs.fas.harvard.edu/.

Studies of Women, Gender, and Sexuality Thesis Track
Honors Eligibility Requirements: 13 courses (52 credits)

1. Sophomore tutorial: WOMGEN 97.
2. History foundation course: WOMGEN 1200.
3. Theory foundation course: WOMGEN 1210.
4. Any WGS course numbered 1400 and above, or approved “engaged scholarship” course.
5. Six courses drawn from WGS offerings or from the list of courses that count for concentration credit presented on the WGS website at http://wgs.fas.harvard.edu/.
6. Junior tutorial: WOMGEN 98: Research and Methods.
7. Senior tutorial: WOMGEN 99A and 99B, for writing the senior thesis.

Studies of Women, Gender, and Sexuality
Joint Concentration with Women, Gender, and Sexuality as the Primary Field
Requirements: 8 courses, including thesis (32 credits)

1. Sophomore tutorial: WOMGEN 97.
2. Either the history foundation course WOMGEN 1200 or the theory foundation course WOMGEN 1210.
3. Three courses drawn from WGS offerings or from the list of courses that count for concentration credit presented on the WGS website at http://wgs.fas.harvard.edu/.
4. Junior tutorial: WOMGEN 98: Research and Methods.
5. Senior tutorial: WOMGEN 99A and 99B, for writing the senior thesis.

Studies of Women, Gender, and Sexuality
Joint Concentration with Women, Gender, and Sexuality as the Allied Field
Requirements: 5 courses, including thesis (20 credits)

1. Sophomore tutorial: WOMGEN 97.
2. Either the history foundation course WOMGEN 1200 or the theory foundation course WOMGEN 1210.
3. Two courses drawn from WGS offerings or from the list of courses that count for concentration credit presented on the WGS website at http://wgs.fas.harvard.edu/.
4. Junior Tutorial: WOMGEN 98: Research and Methods.
5. Note: Joint concentrators with WGS as the allied field take the senior tutorial (99A and 99B) in the primary concentration.

ADVISING

Whether they are full or joint concentrators, all students receive individual attention and advising from a core group of dedicated and highly engaged faculty. The Director of

Undergraduate Studies is the primary academic advisor for sophomores and juniors, and the Associate Director of Undergraduate Studies is the primary academic advisor for seniors. In consultation with their faculty advisors, students develop individual, cohesive Plans of Study tailored to their specific intellectual interests. Faculty members are closely involved with students' academic development at every stage of the concentration. Many of the courses offered by WGS are seminars, allowing for an exciting and productive exchange of ideas between students and faculty.

For up-to-date information on advising in Studies of Women, Gender, and Sexuality, students should see the Advising Programs Office website at https://advising.college.harvard.edu/concentrations.

RESOURCES

Arthur and Elizabeth Schlesinger Library on the History of Women in America
The Arthur and Elizabeth Schlesinger Library on the History of Women in America is the leading research library in the field. The library holds more than 35,000 volumes, 800 collections of personal and organizational papers, 50,000 photographs, oral histories, videotapes, and other historical materials. The library collects information on women's rights, suffrage, social welfare and reform, pioneers in the professions, and the family. Carol J. Pforzheimer Student Fellowships are awarded annually to undergraduates to use the resources of the library.

Henry A. Murray Research Archive
The Henry A. Murray Research Archive is a multidisciplinary research center whose focus is the study of lives over time. It is also a national archive for social science data on human development and social change, especially data that illuminate women's lives and issues of concern to women. Students and researchers at all levels, from undergraduates to scholars, use the center's resources. These include studies of family life, careers, psychological development, political participation, and mental health.

Open Gate Foundation
The Open Gate Foundation, "A Fund for Gay and Lesbian Life at Harvard University," is a private charitable foundation established by members of the Harvard Gay and Lesbian Caucus, which gives grants to student groups and faculty to help finance a variety of events and activities, including speakers, symposia, and film festivals. Further information may be obtained from the Open Gate website at https://hgsc.sigs.harvard.edu/article.html?aid=109

STUDY ABROAD

With good planning, a term abroad or out of residence can be a very meaningful educational experience. In the past, our concentrators have spent terms in countries such as South Africa, Kenya, Chile, Australia, Spain, and France. Most concentrators who study abroad do so in the fall term of junior year, which allows them to return to campus in time to take WOMGEN 98: Junior Tutorial the following spring. Thesis track concentrators who wish to study abroad during the spring term of junior year must make special arrangements to complete the junior tutorial. Concentrators considering a term abroad should consult their concentration advisor as well as the Office of International Education as soon as possible. Plans for study out of residence must be approved by the University significantly in advance of the term in which a student plans to be away.

HOW TO FIND OUT MORE

For further information, students should contact the main office at wgs@fas.harvard.edu or 617-495-9199. The office of the Committee on Degrees in Studies of Women, Gender, and Sexuality is located on the ground floor of Boylston Hall. A description of WGS concentration

options, a list of current course offerings, and thesis track application materials are available from the office and at https://wgs.fas.harvard.edu/concentration.

ENROLLMENT STATISTICS

Number of Concentrators as of December 2023

Concentrators	AY 2014–2015	AY 2015–2016	AY 2016–2017	AY 2017–2018	AY 2018–2019	AY 2019–2020	AY 2020–2021	AY 2021–2022	AY 2022–2023	AY 2023–2024
Studies of Women, Gender, and Sexuality	14	12	14	14	9	8	8	12	19	18
Studies of Women, Gender, and Sexuality + another field	2	2	2	4	7	5	5	6	5	3
Another field + Studies of Women, Gender, and Sexuality	16	9	15	10	26	30	25	31	31	20

SECONDARY FIELDS

African and African American Studies

The secondary field in African and African American Studies enables students whose concentration is outside the field of African and African American Studies to gain a basic understanding of the history, cultures, politics, and social problems of Africans and peoples of African descent. Africans and peoples of African descent have developed cultural forms and traditions that are worthy of study in their own right and that also have profoundly shaped the fine arts and popular culture in the Americas and all around the planet. Black struggles for freedom, both on the continent of Africa and throughout the Western hemisphere, have served as a model for other oppressed groups throughout the world. Comparative and cross-cultural studies of Africa and its diaspora contribute enormously to our understanding of race and ethnicity; and in addressing the ethical, social, and political consequences of racial and ethnic antagonism, the field of African and African American Studies raises questions relevant to the experiences of all peoples. The Department of African and African American Studies (AAAS) offers two secondary field pathways African Studies and African American Studies.

REQUIREMENTS

African Studies: 5 courses (20 credits)

1. One introductory course in African Studies.
2. One course in African history.
3. Three additional courses in African Studies, two of which may primarily be focused on language study.
4. At least one of the five courses must be at the 100-level.

African American Studies: 5 courses (20 credits)

1. One introductory course in African American Studies.
2. One course in African American history.
3. Three additional courses in African American Studies.
4. At least one of the five courses must be at the 100-level.

OTHER INFORMATION

With the exceptions of First-Year Seminars and courses taken abroad, only one course can be taken pass/fail or SAT/UNS. All grades must be passing grades.

Students may petition the Director of Undergraduate Studies to have a relevant course taken in another Faculty of Arts and Sciences (FAS) department or in General Education count toward the secondary field requirements. (Note: Courses cross-listed with AAAS automatically count toward the secondary field requirements.) Students may also petition to have a First-Year Seminar, a course taken abroad, a Harvard Summer School course, or a Harvard course outside of FAS count toward the secondary field requirements. However, at least three of the five courses must be drawn from regular AAAS course offerings.

After concentrators, students who are signed up for the secondary field will receive priority in limited-enrollment courses.

ADVISING RESOURCES AND EXPECTATIONS

Students considering a secondary field in AAAS should contact the Assistant Director of Undergraduate Studies, Dr. Carla Martin (cdmartin@fas.harvard.edu), or the Graduate and Undergraduate Studies Coordinator, Keirsten Melbourne (Keirsten_melbourne@fas.harvard.edu).

Anthropology

Social Anthropology is concerned with the social and cultural diversity of contemporary human communities and groups. Social anthropologists study topics including gender, race, and ethnicity; religion and belief; economic development; illness, healing, and global health; human rights and political violence; popular culture and the role of media in society; food and consumption; and the impact of globalization. Ethnographic research methods emphasize intensive participant observation of community life over an extended period of time in settings such as urban neighborhoods, college campuses, global markets, refugee camps, hospitals, government offices, and courtrooms, as well as in rural towns and backcountry settlements.

A secondary field in Social Anthropology can be a valuable complement to many concentrations, especially for students who are interested in an international career or simply wish to become informed citizens of a globalized world. Social Anthropology courses emphasize skills that enable students to operate in different cultural environments and skills that can be transferred to careers in education, journalism, law, business, medicine, politics, and public service, as well as in humanitarian and development fields.

There are several options to consider in planning a secondary field in Social Anthropology. Students may wish to explore the wide range of departmental offerings in order to gain a general sense of the field. Or they may prefer to focus on a particular world region, such as Asia, Latin America, or Africa and the African diaspora, or specialize in a particular topic or approach. Some popular areas of specialization include:

- **Medical anthropology**, which concerns the social dimensions of healing and illness, issues of global and community health care, and the culture of biomedicine.
- **Anthropology of human rights**, which focuses on issues of conflict and violence, economic and political inequality, indigenous rights, truth and reconciliation, and humanitarianism and social justice. Related topics of inquiry also include social stratification and distinction, race, ethnicity, inequality, and gender.
- **Political ecology and development**, which examines human social relationships with the natural and built environment, including social, political, and economic dimensions of resource utilization and control; the politics of environmental conservation and degradation; and the impact of economic and technological interventions on local social worlds.
- **Media anthropology**, which covers both training in the use of documentary media (such as film, photography, and sound recordings in ethnographic settings) and study of art, mass media, and, more broadly, the sensuous elements of human experience—sight and images, sound, taste, tactility, dance, and movement.

Whether a student chooses a general or a focused approach, the Social Anthropology advising team (Director of Undergraduate Studies, Assistant Director of Undergraduate Studies, and Undergraduate Program Coordinator) can help with planning and course selection for the secondary field. In some cases, students may also wish to discuss their plans for a focused secondary field with an appropriate member of the department faculty. More information about the Secondary Field in Anthropology and some model study plans are available on our department website.

Whichever approach is chosen, transcripts will indicate that students have taken a Secondary Field in Anthropology.

REQUIREMENTS

Anthropology: 4 courses (16 credits)

Four courses in Social Anthropology are required to complete the secondary field. There is no fixed sequence in which these courses must be taken, but students are strongly encouraged to enroll in ANTHRO 1610: Ethnographic Research Methods or another course that provides a broad overview of the discipline of Social Anthropology. Consult the Director of Undergraduate Studies or Assistant Director of Undergraduate Studies for appropriate courses.

Courses can be drawn from any departmental or formally cross-listed courses offered by regular Social Anthropology faculty. One of these may be a First-Year Seminar. Graduate courses offered by Social Anthropology faculty may, with the instructor's permission, be taken for secondary field credit. One course in Archaeology taught by a member of the department faculty can be counted for credit toward the Social Anthropology secondary field.

OTHER INFORMATION

All four courses must be taken for a letter grade, with the exception of the First-Year Seminar, which must receive a grade of SAT. Letter-graded courses must receive a grade of C or better to count for the secondary field.

Under ordinary circumstances, courses taken abroad or in the Harvard Summer School will not be counted toward a secondary field unless they are taught by a regular member of the Social Anthropology faculty.

ADVISING RESOURCES AND EXPECTATIONS

To discuss the secondary field in Social Anthropology or for specific questions about secondary field requirements, students should contact the Department of Anthropology Director of Undergraduate Studies (DUS) or Assistant Director of Undergraduate Studies (ADUS). For general information, students should contact anthrouc@fas.harvard.edu.

Archaeology

Archaeology explains when, how, and why things happened in the past. Archaeologists document patterns of change and variability through time and space, and relate these changes to the world around us today. In broader terms, archaeological research involves the discovery, description, and analysis of technological adaptation, social organization, artistic production, ideology, and other forms of human expression through the study of material remains recovered from the excavation of sites that were used or settled by past peoples. Analyses may be peculiarly archaeological in nature—the classification of broken pieces of pottery is an example—or they may involve the use of methods, analytical techniques, and information from fields as diverse as art history, astronomy, biological anthropology, botany, chemistry, genetics, history, linguistics, materials science, philology, physics, social anthropology, and zoology.

The formal study of archaeology prepares students to evaluate critically the record of human material production and to develop informed perspectives on the ways the past is presented, interpreted, and dealt with by a wide range of actors—from interested individuals to nation-states—in societies around the world today. Archaeologists carry out basic research in the field and in museum collections, and they increasingly deal with such topics as cultural resource management (including the recovery, documentation, conservation, and restoration of ancient artifacts); cultural tourism; nationalistic uses and abuses of the past; the depiction of the past in the media (including film, television, and the internet); the illegal trade in antiquities; repatriation of cultural patrimony; and environmental and climatic change.

REQUIREMENTS

Archaeology: 5 courses (20 credits)

1. One introductory course selected from:
    a. GENED 1105: Can We Know Our Past?
    b. ANTHRO 1010: The Fundamentals of Archaeological Methods & Reasoning.
    c. ANTHRO 1130: Archaeology of Harvard Yard.
    d. Introductory course in the archaeology of ancient Greece and/or Rome or in medieval archaeology, as available.
    e. In addition to the required introductory course, a student may count only one additional introductory course from the above list for the secondary field.
2. Four additional courses selected from those listed under the course search "Archaeology" in courses.my.harvard.edu and approved by the secondary field advisor.

OTHER INFORMATION

Up to three approved courses in General Education may be counted toward fulfillment of the requirements for the secondary field. In addition, one approved course in the student's concentration and a maximum of two ancient language courses may be counted toward secondary field credit. All course work must be taken for a letter grade and must be passed with a grade of B- or better.

Students pursuing a secondary field in Archaeology are strongly encouraged to participate in an archaeological field school in the U.S. or abroad. Students who complete a Harvard-sponsored or a preapproved off-campus archaeological field school may count one course credit from that field school experience toward completion of the secondary field.

ADVISING RESOURCES AND EXPECTATIONS

For more information, students should contact anthrouc@fas.harvard.edu. Students interested in or intending to pursue a secondary field in Archaeology should first review their programs of study with the Standing Committee on Archaeology Coordinator by emailing sca@fas.harvard.edu before the beginning of their next-to-last semester.

Whether considering or having decided on a Secondary Field in Archaeology, students are strongly encouraged to use the Secondary Fields online tool (courses.my.harvard.edu/) to work out a proposed Plan of Study and to notify the secondary field advisor early on in the process.

Art, Film, and Visual Studies

The principal educational goal of the Department of Art, Film, and Visual Studies (AFVS) is to provide students in a liberal arts college with an opportunity to gain an understanding of visual quality and expression through both study and practice. The aim is to achieve an understanding of the structure and meaning of the visual arts and culture through practical and theoretical explorations of media such as drawing, film, painting, performance, photography, printmaking, sculpture, sound, video, and writing. In addition to offering a regular concentration in these areas, the department also offers students the opportunity to explore AFVS as a secondary field. Specifically, the secondary field offerings reflect the department's diversity by providing students with four distinct areas of focus. In each area a total of six courses are required; however, each area has its own set of requirements, and students may choose only one area when filing for a secondary field. Ordinarily, secondary field credit is only granted for courses taken in residence. To count courses from outside of AFVS, students must petition the department prior to taking the course.

REQUIREMENTS

Film/Video: 6 courses (24 credits) Film/Video:

Art, Film, and Visual Studies (AFVS) offers a secondary field in film/video production. Courses in film, video, and animation may be arranged in any combination to maximize each student's interests. This field is imagined to be of particular value as a complement to disciplines that include the study of culture—such as Anthropology or area studies—where the moving image can be used as a tool for observation and research. Specific requirements include the following:

1. Four AFVS courses in film or video making; at least one course should be at an introductory level and at least one should be at the intermediate level.
2. Two courses in the history or theory of the moving image offered in the AFVS Department.

Film and Visual Studies: 6 courses (24 credits)

Art, Film, and Visual Studies offers a secondary field in Film and Visual Studies for students wishing to explore the history and aesthetics of moving image media in conjunction with other disciplines in the arts and humanities.

Resolutely interdisciplinary in its impetus, this curricular area offers rigorous training in Film and Visual Studies with a blend of theoretical, analytical, and historical perspectives. It is designed to cultivate critical awareness and analytical understanding regarding the place of moving images within larger histories and their connections both to traditional and emerging arts, disciplines, and fields of endeavor. To this end, Film and Visual Studies draws on the unique strengths of AFVS and Faculty of Arts and Sciences (FAS) faculty, the Harvard Film Archive's vast holdings of films and documents, and the rich resources of the Carpenter Center for the Visual Arts and the Harvard Art Museums. Specific requirements include the following six courses:

1. Introductory courses: Two courses comprising AFVS 70: The Art of Film and one other

double-digit seminar or lecture course in Film and Visual Studies, or a predetermined, relevant General Education course. Students may petition to count an appropriate triple-digit course toward this requirement, per the discretion of the Director of Undergraduate Studies.
2. Four additional courses in Film and Visual Studies offered in the AFVS Department. One course outside of AFVS may also be approved to count toward the Film and Visual Studies secondary field. Each year a list of courses in other departments approved for concentration credit is published on the AFVS website; students pursuing a secondary field can consult this list to find an appropriate course to fulfill this requirement.

Studio Art: 6 courses (24 credits)

Six courses are required for a secondary field in Studio Art:

1. Four studio courses (of the student's choosing) in drawing, mixed media, painting, photography, printmaking, sculpture, and video/installation art; at least one course should be an introductory-level course, and one should be at the intermediate level.
2. Two lectures or seminars in art history or theory, ordinarily offered by the Department of Art, Film, and Visual Studies. (One art history or theory course offered in the Department of History of Art and Architecture may also be counted with AFVS Department approval.)

OTHER INFORMATION

Courses in the studio arts and in film/video production are, of necessity, small and intensive, and priority is given to concentrators. Additionally, some courses in Environmental Studies and Film and Visual Studies have an enrollment limit. All secondary field courses must be taken for a letter grade with the exception of a First-Year Seminar offered by an AFVS faculty member. There is no minimum grade for counting courses for the secondary field.

Students can review the AFVS secondary field requirements checklist on the AFVS Department website (https://afvs.fas.harvard.edu/) under the "Forms" section in the "Undergraduates" menu.

Harvard Summer School and study abroad courses taught by department faculty may count toward the secondary field. Students may petition the department to count, at most, one related study abroad or summer school course taught by non-department faculty by submitting a course requirement substitution form, available from the Manager of Academic Programs or on the department website at https://afvs.fas.harvard.edu/. Approval occurs after the course is completed and the syllabus and work are reviewed by the Director of Undergraduate Studies. It is therefore advisable to check with the Director of Undergraduate Studies before making plans. Up to one related cross-listed course may count toward the secondary field.

ADVISING RESOURCES AND EXPECTATIONS

Both the Director of Undergraduate Studies and the Manager of Academic Programs, Paula Soares (soares@fas.harvard.edu), advise students pursuing a secondary field in AFVS. Students are responsible for notifying secondary fields of their interest in the program, for tracking requirements, and for submitting a completed Secondary Field request via my.harvard.

To be added to the department's mailing list and to receive information about courses and events in the department, students should also inform the Manager of Academic Programs of their interest in the AFVS secondary field.

Astrophysics

The secondary field in Astrophysics builds the foundation from which students may consider some of the deepest questions of the physical universe. What was the state and composition of the universe at the moment of the Big Bang? What is the nature of the force that currently dominates the expansion of the universe? How do space and time behave in the vicinity of a black hole? How do galaxies form, and how do stars and planets form within those galaxies? Are there habitable worlds other than our own?

The goal of the secondary field in Astrophysics is to provide students with an understanding of the physical universe beyond the Earth that emphasizes the interplay between the remote observation of astrophysical phenomena and the construction and testing of mathematical models to interpret those observations. The heart of the secondary field consists of two courses, ASTRON 16 and ASTRON 17, which together provide a survey of astrophysics that is firmly rooted in single-variable calculus and first-year mechanics. These courses may be taken in either order; both courses include the hands-on use of various astronomical observatories located on the Harvard campus.

To encourage students to pursue the secondary field while maintaining a rich schedule of other academic interests and extracurricular activities, the requirements number only four courses including the prerequisite physics. The secondary field is intended to serve a broad audience; because there are no requirements other than single-variable calculus, any student can undertake the secondary field in Astrophysics, and it will benefit a wide range of careers including science education, public outreach, policy, and journalism. Many of the questions listed in the first paragraph lie at the interface of Astronomy with Physics, Earth and Planetary Sciences, Applied Mathematics, Computer Science, and Engineering Sciences; concentrators in those departments may wish to consider the secondary field in Astrophysics closely. The structure of the requirements below is the same as the foundation for the Astrophysics concentration, so that students who develop a strong interest in the field and wish to concentrate in it may do so easily.

REQUIREMENTS

Astrophysics: 4 courses (16 credits)

1. PHYSCI 12A, PHYSICS 15A, or PHYSICS 16, providing an introduction to mechanics. This serves as the corequisite for ASTRON 16 and ASTRON 17.
2. ASTRON 16, providing an introduction to stellar and planetary astronomy.
3. ASTRON 17, providing an introduction to galactic and extragalactic astronomy.
4. One additional course in Astronomy, either ASTRON 98, or any course in Astronomy at the 100-level.

OTHER INFORMATION

Together, ASTRON 16 and ASTRON 17 provide a complete introductory survey of astrophysics using single-variable calculus and first-year mechanics. These courses are not sequential and thus may be taken in either order.

Study abroad and summer courses taken at other institutions may be substituted for substantially equivalent Harvard courses with the permission of the Director of Undergraduate Studies.

No course counted for secondary field credit may be taken pass/fail.

ADVISING RESOURCES AND EXPECTATIONS

Students pursuing the secondary field in Astrophysics enjoy many of the benefits afforded concentrators in Astrophysics: They choose a faculty advisor, are encouraged to participate in all departmental events and activities, and have access to several on-campus observatories. Students are also encouraged to consider research in astrophysics conducted either during the semester or the summer. The Department of Astronomy (https://www.cfa.harvard.edu/ and https://astronomy.fas.harvard.edu/) is located within the Harvard-Smithsonian Center for Astrophysics (CfA) (http://www.cfa.harvard.edu), which is home to more than 300 scientists and thus offers significant opportunities for undergraduate research. Astronomers at the CfA make regular use of observatories located across the globe, and thus there are numerous opportunities for research-related travel for undergraduates.

Students who are considering the secondary field in Astrophysics are encouraged to contact the Director of Undergraduate Studies, Professor Charles Alcock, at calcock@cfa.harvard.edu and 617-495-7387.

Celtic Languages and Literatures

The Celtic languages now spoken mainly in Ireland, the British Isles, and Brittany were once spoken over much of Europe and in Asia Minor. Speakers of Celtic languages are passionate about the survival of their languages, and many people in Ireland, Wales, Scotland, and Brittany choose to live their lives in the Celtic languages native to their countries, despite the dominance of English or French. In addition to preserving a strong sense of cultural community, the Celtic languages are treasure troves of story, poetry, and song ranging from the medieval to the contemporary. The languages are fascinating in themselves, quite different in their syntax from the Germanic and Romance languages that underlie English, and they are extraordinarily rich in idiom. These languages offer a direct link to the literary traditions of early medieval Europe, while at the same time holding an important position in the growing cultural pride and economic vibrancy of their societies. The speakers of Celtic languages have an important place in the history of European culture, and the literatures and folklore of Ireland, Scotland, Wales, and Brittany constitute a hugely rewarding field of study. The Department of Celtic Languages and Literatures offers courses in the medieval as well as the modern Celtic languages, and in the written and oral traditions of Celtic-speaking peoples.

Classes in the Department of Celtic Languages and Literatures are small, and there is a strong sense of community among undergraduates, graduate students, and faculty. This sense of community is enhanced by social gatherings, talks, and an annual colloquium to which undergraduates are most welcome.

The department offers a secondary field that is flexible enough to cater to students with a broad interest in Celtic cultures or in Celtic folklore and mythology, and for those who are more interested in a particular Celtic language or literature.

Students who complete a secondary field in Celtic Languages and Literatures may expect not only to become familiar with the origins of the Celtic peoples and the growth of their cultural traditions, but also to understand better the foundations of ethnicity in any people who understand themselves as possessing a distinct identity; to develop a keen critical awareness of the nature and vitality of oral traditions in their vibrant interrelationships with literary traditions; and to be aware of the precarious state of many of the world’s 7,000 languages, and why it matters.

REQUIREMENTS

Celtic Languages and Literatures: 5 courses (20 credits)

Any General Education course and one First-Year Seminar offered by members of the Department of Celtic Languages and Literatures may count toward the secondary field. One Harvard Summer School course or study abroad course may be counted upon the approval of the department’s Secondary Field Coordinator. All other courses should be selected from the offerings of the Department of Celtic Languages and Literatures.

OTHER INFORMATION

With the exception of the First-Year Seminar, all courses must be taken for a letter grade, with a minimum grade of C.

ADVISING RESOURCES AND EXPECTATIONS

For more information on the secondary field, contact the Department Administrator, Mary Violette, at violette@fas.harvard.edu and 617-495-1206, or the Secondary Field Coordinator, Professor Natasha Sumner, at nsumner@fas.harvard.edu.

Chemistry

A secondary field in Chemistry gives students a well-rounded experience of the discipline. This secondary field is appropriate for anyone who has an inherent interest in the subject or would like to gain a deeper knowledge of science to use in their professional lives.

REQUIREMENTS

Chemistry: 6 courses (24 credits)

Six letter-graded courses in chemistry that include at least one upper-level course in chemistry. Upper-level, letter-graded courses in chemistry include CHEM 40, CHEM 60, and any 100- or 200-level chemistry course.

OTHER INFORMATION

Students completing a secondary field in Chemistry must earn a C- or better in each of these courses, with the exception of designated First-Year Seminars, which are graded SAT/UNS.

Most students interested in the secondary field will take four or five of the following introductory courses: LPS A, LS 1A, CHEM 10, PHYSCI 11, CHEM 17, CHEM 20, CHEM 27, and CHEM 30. However, students choosing to complete a secondary field in Chemistry will be free to choose any six courses in chemistry as long as one of these courses is an upper-level course.

One term of research for credit via the courses CHEM 91R, CHEM 98R, or CHEM 99R may be counted toward the secondary field requirements. These courses do not satisfy the upper-level course requirement.

The Harvard Summer School courses CHEM S-1 A, B; CHEM S-17; CHEM S-20 A, B; and CHEM S-101 can be used to complete secondary field requirements.

Any First-Year Seminar or General Education course offered by a member of the Department of Chemistry and Chemical Biology (for example, FS 22J) may be used to count toward a secondary field in Chemistry, if at least two upper-level courses in chemistry are included among the six required courses.

One course taken abroad may count toward a secondary field in Chemistry if successfully approved by petition to the Director of Undergraduate Studies.

The Sophomore Tutorial in Chemistry, offered in the spring term, is optional and cannot be taken for credit by any student. Secondary field students may participate in the sophomore tutorial regardless of class year.

ADVISING RESOURCES AND EXPECTATIONS

Students who notify the department of their intent to pursue a secondary field will be included

on the Chemistry concentrator email list and will be welcome at all undergraduate social and academic events, including the Sophomore Tutorial. Once a student has chosen a secondary field in Chemistry, the student should contact the Chemistry Director of Undergraduate Studies Office (chemistryDUS@fas.harvard.edu) for advising.

Classics

The Department of the Classics offers a secondary field in Classical Civilizations for students wishing to explore an interest in Greco-Roman antiquity and its reception in the medieval and modern periods.

The Classical Civilizations secondary field provides both a general introduction to the Greek and/or Roman world and the opportunity to pursue particular interests in greater depth.

REQUIREMENTS

Classics Civilizations: 5 courses (20 credits)

1. One semester of either CLS-STDY 97A or CLS-STDY 97B.
2. Four additional courses from among those listed under “Classics” in the course search in courses.my.harvard.edu (including cross-listed courses). Other courses may be counted with approval of the Director of Undergraduate Studies.

OTHER INFORMATION

No more than two courses in Modern Greek may count toward the secondary field in Classical Civilizations. Note: MODGRK A and MODGRK B are full-year courses and thus each count as two such courses. One course may be taken pass/fail.

ADVISING RESOURCES AND EXPECTATIONS

Students interested in pursuing a secondary field in Classical Civilizations should contact the Director of Undergraduate Studies at classicsDUS@fas.harvard.edu.

Comparative Literature

Comparative Literature offers a secondary field for students who wish to work across languages, cultures, and media in a comparative and interdisciplinary context.

REQUIREMENTS

Comparative Literature: 5 courses (20 credits)

1. COMPLIT 97 (sophomore tutorial) to be taken as early as possible in the student's program of study.
2. Two courses from offerings in Comparative Literature at the 100-level or above.
3. Two courses that examine:
    a. A literature other than English, with readings of primary texts in that language. This category can include courses from a national literature or area studies department. OR
    b. One course in category *a* above and one creative/studio course (e.g., creative writing, music composition, film making, etc.).

OTHER INFORMATION

All courses must be letter-graded and must be passed with a grade of B or above. First-Year Seminars may not be counted toward the fulfillment of the above requirements. However, students may count courses taken while studying abroad, as well as courses taken at the Harvard Summer School toward secondary field requirements. Students pursuing a secondary field in Comparative Literature will receive preferential access to Comparative Literature courses with limited enrollment.

ADVISING RESOURCES AND EXPECTATIONS

All students interested in pursuing a secondary field in Comparative Literature should contact the Director of Undergraduate Studies (DUS), Dr. Sandra Naddaff, at snaddaff@fas.harvard.edu or 617-495- 5650 as soon as possible to discuss their Plan of Study. Since only Comparative Literature students are allowed to enroll in COMPLIT 97, students pursuing a secondary field in Comparative Literature should contact the Director of Undergraduate Studies before the first meeting of the sophomore tutorial. The DUS will be responsible for advising these students, although the expectation will be that students working toward a secondary field in Comparative Literature will monitor their own progress toward fulfillment of the requirements.

Computer Science

Information technology and computation has had a profound impact on many aspects of society, health care, and the scientific disciplines. As such, a foundation of formal training in Computer Science can benefit undergraduate concentrators in many fields of the natural sciences, social sciences, and humanities. To provide this training, a secondary field in Computer Science requires that students with primary interests in other fields take four courses in Computer Science.

REQUIREMENTS

Computer Science: 4 courses (16 credits)

1. Four Harvard COMPSCI courses.
2. All four COMPSCI courses must be tagged “secondary.”
3. At least two courses must be tagged “advancedcs.”

The Computer Science website provides additional information on course tags.

OTHER INFORMATION

Only courses with a Harvard Computer Science course number may be counted for secondary field credit. In particular, no courses from other Harvard programs/departments/areas, no MIT courses, no study abroad courses, and no First-Year Seminars may be counted toward secondary requirements. Computer Science courses offered by the Harvard Summer School may be used for a Secondary Field in Computer Science only if they would count for concentration credit in Computer Science. A course from another Harvard program or department counts only if it also has an appropriate Harvard Computer Science course number (for example, a Statistics course that also has a Computer Science course number 1000 or greater). Only one course may double-count for a secondary field and concentration.

COMPSCI 50 will count for secondary credit if taken for a grade of SAT/UNS and the student achieves a grade of SAT, but all other courses must be taken for a letter grade, and the student must achieve a grade of C- or better in each of these courses. Students may not take COMPSCI 20, COMPSCI 32, or COMPSCI 50 for secondary field credit after more advanced course work as described in the Concentration Requirements.

ADVISING RESOURCES AND EXPECTATIONS

Questions concerning this secondary field should be addressed to the Directors and Assistant Director of Undergraduate Studies in Computer Science (cs-dus@seas.harvard.edu). The Directors and Assistant Director of Undergraduate Studies are available to help students choose Computer Science courses that best meet their interests and objectives. Transfer students who wish to use some of their course work in their prior institution toward secondary field credit should contact the Computer Science Directors and Assistant Director of Undergraduate Studies.

Data Analytics in Sociology

All social life is patterned. But studying these social patterns can be complicated. How are amorphous concepts like “poverty” or “health” operationalized? How can a community-level study ethically and accurately gather data on unhoused populations?

The Data Analytics in Sociology secondary field trains students from any concentration to effectively navigate the complexity of social research. Because studying social processes requires a broad range of approaches, we offer instruction in statistical modeling, in-depth interviewing, ethnographic observations, archival investigations, and computational analyses. Our program trains students to think carefully about every stage of research, from the development of a sociological question, to the definition and operationalization of social variables, to the process of ethically and accurately collecting data, to the analysis and interpretation of research findings, and ultimately, the communication of those findings to diverse audiences. The Harvard Sociology program also offers opportunities to gain hands-on research experience through course projects, research assistantships, community-engaged scholarship, and senior theses.

Today, a wide range of careers require expertise in social data analytics. Doctors are asked to conduct research on the social determinants of health. Consultants are asked to study the impacts of new human resource policies on employee productivity or well-being. Workers in nonprofit organizations are tasked with assessing community needs prior to designing programmatic interventions. And government employees must evaluate the environmental or social impacts of proposed legislation. The Data Analytics in Sociology secondary field allows students to gain proficiency in these useful sociological research skills while still concentrating in their primary field of interest. Moreover, by educating students on the complexities of studying social problems and requiring students to develop independent projects to address these problems, the secondary also helps individuals develop “softer” skills such as innovation, critical thinking, problem solving, adaptability, and powerful oral- and written-communication—skills that are central to most career opportunities.

REQUIREMENTS

Data Analytics in Sociology: 6 courses (24 credits)

1. SOCIOL 1000: Introduction to Sociology. (Students may petition to have this requirement satisfied with another course in the SOCIOL 1000–1089 range.)
2. SOCIOL 1156: Statistics for Social Sciences. (Students may petition to have this requirement satisfied with STAT 100, STAT 102, STAT 104, or STAT 139.)
3. SOCIOL 1128: Methods of Social Science Research.
4. Two methods electives.
5. One advanced-level sociology elective (SOCIOL 1100 or above) may also be a methods elective.

OTHER INFORMATION

Only the advanced-level sociology elective may be taken pass/fail or SAT/UNS. The introductory course, the statistics course, SOCIOL 1128, and the two methods electives must

be taken for letter grades. Letter-graded courses must be passed with a grade of C+ or higher in order to receive credit toward completion of the secondary field. Courses taken abroad will not be counted towards a secondary field.

Although junior tutorials are normally only open to concentrators, students enrolled in the Data Analytics in Sociology secondary field may enroll in junior tutorials for credit as electives. Special permission from the Director of Undergraduate Studies is required for secondary field students to enroll in junior tutorials.

ADVISING RESOURCES AND EXPECTATIONS

For information about the Data Analytics in Sociology secondary field, students should contact the Undergraduate Program Administrator. For advising, they should contact Dr. Emily Fairchild, Associate Director of Undergraduate Studies.

Contact information can be found at https://sociology.fas.harvard.edu/pages/advising.

Earth and Planetary Sciences

Almost every practical aspect of society—population, environment, economics, politics—is and will be increasingly impacted by our relationship with the Earth. Students with a natural curiosity about the Earth or another planet's dynamic systems should consider studying in the Department of Earth and Planetary Sciences (EPS).

The EPS secondary field is intended to allow students to sample broadly across the offerings or—for those who have sufficient preparation in physics, chemistry, and mathematics—to provide students a strong foundation in a subfield of Earth science (atmospheric and ocean science, energy and climate, environmental geoscience, geobiology, geochemistry, geology, planetary sciences, and solid earth geophysics). The EPS Department covers a wide range of pure and applied scientific topics, so consulting with a faculty advisor is required for secondary field students. Secondary field students are also required to attend departmental tutorials, an ongoing series of lectures by faculty scheduled periodically throughout the academic year. The tutorials expose concentrators and secondary fielders to the breadth of Earth and planetary sciences and provide a setting for students to get acquainted with one another and with members of the faculty.

REQUIREMENTS

Earth and Planetary Sciences: 5 courses (20 credits)

1. A total of five E-PSCI courses are required.
    a. A minimum of two foundational courses from either EPS-ESE 6, E-PSCI 10, GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, GENED 1167, and all 50-level EPS courses. Note: No more than one of these courses may be from EPS-ESE 6, E-PSCI 10, GENED 1018, GENED 1085, GENED 1094, GENED 1098, GENED 1137, GENED 1158, and GENED 1167.
    b. Three additional upper-level courses in E-PSCI.
2. Tutorial: Required, non-credit.

OTHER INFORMATION

First-Year Seminars do not count toward secondary field credit.

All courses must be taken for a letter grade to count toward secondary field credit, and normally C- is the minimum acceptable grade.

An important aspect of the EPS concentration is participation in field trips and/or summer and January field camps, supported by the department. These opportunities will be available to secondary field students on a space-available basis, after placement of concentrators.

ADVISING RESOURCES AND EXPECTATIONS

Students should submit an EPS form to become a secondary field student as early as

possible, but no later than the course enrollment deadline of their penultimate term. The department will then assign a faculty advisor. This form can be found at https://eps.harvard.edu/undergraduate-forms. The Academic Programs Manager will also provide guidance on course selection, as well as review student records to certify completion of requirements. Once the course requirements have been fulfilled, students will follow the Faculty of Arts and Sciences (FAS) procedures to confirm in my.harvard that requirements have been met.

The Department of Earth and Planetary Sciences encourages students who are pursuing a secondary field in EPS to become full department community members. Secondary field students are invited to all events and activities currently open to concentrators.

Students interested in pursuing a secondary field in Earth and Planetary Sciences should contact one of the following:

- Co-Head Tutor: Professor Roger Fu, Geo Museum 204B, rogerfu@fas.harvard.edu, 617-384-6991.
- Co-Head Tutor: Professor Ann Pearson, Geo Museum 362, apearson@eps.harvard.edu, 617-384-8392.
- Academic Programs Manager: Campbell Halligan, Hoffman Labs 402, campbellhalligan@fas.harvard.edu, 617-384-9760.

East Asian Studies

The East Asian Studies (EAS) secondary field allows students whose primary concentration is not EAS to obtain an in-depth knowledge of one or more aspects of the culture and societies of East Asia (China, Korea, Japan). Students will select, in consultation with an academic advisor, a coherent set of classes from the rich offerings of the Department of East Asian Languages and Civilizations (EALC) and other departments at Harvard that offer classes on East Asian topics.

Students are not required to focus on a specific area, but suggested paths within the secondary field in East Asian Studies include Modern and Contemporary East Asian Studies, Chinese Studies, Japanese Studies, Korean Studies, Chinese History, Japanese History, Korean History, Chinese Literature and Arts, Japanese Literature and Arts, Korean Literature and Arts, East Asian Film & Media Studies, and East Asian Buddhism.

REQUIREMENTS

East Asian Studies: 6 courses (24 credits)

1. EASTD 97AB: Introduction to East Asian Civilizations (sophomore tutorial, spring).
2. One historical survey course from the approved list, available at https://eas.fas.harvard.edu/historical-survey-courses.
3. At least one, but preferably two, 100-level courses offered by the Department of East Asian Languages and Civilizations. Note that 100-level language courses do not satisfy this requirement, but students may apply to substitute a 100-level class with an East Asia emphasis offered by another department at Harvard.
4. The remaining courses can be selected from any subjects related to East Asia to make a total of six courses for secondary field credit.
5. Note: Up to two classes in an East Asian language may count toward the required six courses. The secondary field does not, however, require any language courses.

OTHER INFORMATION

Courses for the secondary field may be offered by EALC or by other departments at Harvard, as long as the emphasis of the course is clearly on an East Asian subject. Courses offered in other departments that are taught by EALC faculty automatically count for credit for the secondary field, as do courses that are cross-listed in the Department of East Asian Languages and Civilizations course search in courses.my.harvard.edu. A current list of courses from across the University that are eligible for East Asian Studies credit can be found at https://eas.fas.harvard.edu/area-courses. Courses not on this list must be approved by the Director of Undergraduate Studies to receive concentration credit.

General Education courses on East Asia can be counted for secondary field credit. Relevant Harvard Summer School courses and study abroad courses (both Harvard and non-Harvard) may be counted with permission of the Director of Undergraduate Studies, after completing all relevant prerequisites through the Office of International Education to receive Harvard College credit.

All courses must be letter-graded, with the exception of one First-Year Seminar related to an East Asian subject and one course that may be taken pass/fail with special written permission from the Director of Undergraduate Studies. EASTD 97AB may not be taken pass/fail and cannot be substituted with another course.

Students who are primarily interested in enhancing their language skills in one of the East Asian languages—Chinese, Korean, Japanese, or Vietnamese—should consider a language citation. Information on language citations can be found in the "Language Citations" section of this handbook or by emailing eal@fas.harvard.edu.

ADVISING RESOURCES AND EXPECTATIONS

Those students interested in a secondary field in East Asian Studies should contact the EAS Undergraduate Office at eas@fas.harvard.edu or 617-495-8365.

Economics

Economics is a social science that covers a broad subject matter in seeking to understand the social world. An economic analysis begins from the premise that individuals have goals and that they pursue those goals as best they can. Economics studies the behavior of social systems—such as markets, corporations, legislatures, and families—as the outcome of interactions through institutions between goal-directed individuals. Ultimately, economists make recommendations that they believe will make people better off.

Traditionally, economics has focused on understanding prices, competitive markets, and the interactions between markets. While topics such as monopolies and antitrust, income inequality, economic growth, and the business cycle continue to be important areas of inquiry, the subject matter of economics has broadened. Today, economists address a remarkable variety of social science questions. Will school vouchers improve the quality of education? Do politicians manipulate the business cycle? What sort of legal regime best promotes economic development? Does religiosity affect economic growth? What can be done about grade inflation? Why do people procrastinate in saving for retirement—or in doing their homework?

Economics today is a scientific discipline. Bringing their particular perspective to social science questions, economists formulate theories and collect evidence to test these theories against alternative ideas. Doing economic research involves asking questions about the social world and addressing those questions with data and models, employing mathematical and statistical tools whenever possible to aid the analysis.

An undergraduate education in Economics focuses on learning to analyze the world in terms of trade-offs and incentives—that is, to think like an economist.

REQUIREMENTS

Economics: 6 courses (24 credits)

1. ECON 10A and ECON 10B: Principles of Economics (two courses). Students with an Economics AP score of 5, an A-level grade of A, or an IB score of 7, may choose to skip either/both parts of ECON 10. However, they must replace each semester of ECON 10 that is skipped with one elective course in Economics. Consult an economics concentration advisor for details.
2. One course from:
    a. ECON 1010A/ECON 1011A: Intermediate Microeconomic Theory.
    b. ECON 1010B/ECON 1011B: Intermediate Macroeconomic Theory.
    c. Note: These intermediate theory courses teach the analytical tools that economists use. The 1011-numbered courses assume a background in multivariate calculus whereas the 1010-numbered courses have a prerequisite of single-variable calculus. A minimum grade of B- is required.
3. Three courses from the Economics course catalog, available at http://courses.my.harvard.edu/.
4. Note: All Economics courses and cross-listed courses in the department are eligible except for ECON 910R: Supervised Reading and Research; ECON 970: Sophomore Tutorial; ECON 985 and ECON 990, the senior thesis seminars; and some graduate-level research workshops and seminars. In particular, taking both ECON 1010A/ECON

1011A and ECON 1010B/ECON 1011B meets requirement 2 above, as well as one of the three courses in requirement 3.

5. Note: In contrast to the requirements for students who are concentrating in Economics, there is no requirement to take economics courses that fulfill a writing requirement or that have intermediate theory as a prerequisite.

OTHER INFORMATION

All courses counting for secondary field credit must be taken for a letter grade.

Courses given in other Faculty of Arts and Sciences (FAS) departments or other Harvard faculties may not be used for credit in the secondary field unless they are explicitly cross-listed or jointly offered in the Economics course catalog on courses.my.harvard.edu. The only exception is that one of STAT 100, STAT 104, STAT 110, APMTH 101, or MATH 154 qualifies as one of the three courses under requirement 3.

Students may take either one approved Harvard Summer School class listed on the Economics Summer School webpage at http://economics.harvard.edu/summer-school or one approved study abroad course or one approved cross-registered course at MIT to meet a course requirement for the secondary field. Courses from study abroad and at MIT are approved at the department's discretion as outlined on the Economics Study Abroad webpage at http://economics.harvard.edu/study-abroad.

First-Year Seminars may not be used for credit in the secondary field.

Students pursuing a secondary field in Economics are not given preferential access to limited-enrollment courses.

Only one course may double-count toward both the concentration and secondary field. This is a Harvard College policy.

More details are available on the Economics Secondary Field webpage at https://economics.harvard.edu/secondary-field.

ADVISING RESOURCES AND EXPECTATIONS

Students may visit the concentration advisors in the Economics Undergraduate Advising Offices in Littauer 109–116 from 10 a.m. to 4 p.m., Monday–Friday, for advice about the program, course selection, and more. The Undergraduate Program Coordinator (econundergrad@fas.harvard.edu) is also available for general inquiries. One of the concentration advisors must sign the final form for secondary field credit. The secondary field form and more information are available on the Department's Secondary Field webpage at https://economics.harvard.edu/secondary-field.

Educational Studies

The Educational Studies secondary field offers students an opportunity to examine education from multiple disciplinary perspectives. Education is an intentional intervention in human development. For as long as we know, human beings have been interested in how to shape children into adults who understand cultural values and can contribute to the needs of the community. In modern societies, education is seen as a prime lever for a number of key (and sometimes conflicting) goals, such as increasing national economic competitiveness, supporting upward mobility, improving public health, increasing civic engagement, and achieving global understanding. In addition, defining features of contemporary life, such as the proliferation of digital technologies and global migration, have significant implications for education. As a result, questions about education are central to a number of academic disciplines, including psychology, sociology, economics and government. The Education Studies secondary field leverages this multidisciplinary interest in education and allows students to create a coherent program of study from courses offered across the University.

Students pursuing the secondary field may explore a broad overview including course work related to individual learning, schools as organizations, the role of education in society, and educational policy. Alternatively, students may choose to focus in depth on a particular aspect of education such as social stratification, literacy, childhood and adolescence, or policy. Students are encouraged to be in touch with the director of the secondary field for help developing a Plan of Study.

REQUIREMENTS

Educational Studies: 5 courses (20 credits)

1. One foundational course from an approved list of courses.
2. Four additional courses related to education from an approved list of courses (or approved through petition). Note: Three of the five courses must be offered by distinct academic units (departments or Schools). A list of approved courses in education is available at the Educational Studies secondary field website.
3. A capstone project related to education. This can include:
    a. Writing a senior thesis on a topic related to education.
    b. Taking a course on education that requires a significant research project.
    c. Writing a research paper related to education while enrolled in a supervised reading and research course.
    d. Working in a laboratory or as a research assistant on a study related to education.
    e. Completing an extracurricular project that involves significant learning and reflection.
4. Note: The capstone project must be approved by the director of the secondary field before the project is undertaken. It can be undertaken in one of the five courses satisfying requirements for the secondary field or in another course not counting toward the secondary field. The director of the secondary field can help identify and arrange opportunities for the capstone project.

OTHER INFORMATION

Students will be encouraged to declare their interest in the secondary field in Educational Studies during their junior year and may not declare after November 1 of their senior year.

Due to Faculty of Arts and Sciences (FAS) regulations, students may double-count only one course toward both their secondary field and their concentration.

ADVISING RESOURCES AND EXPECTATIONS

For additional information about the program, students may contact the program administrator at ed_secondary@gse.harvard.edu and view the Educational Studies secondary field website at https://edsecondary.fas.harvard.edu/.

Energy and Environment

The energy-environment challenge is a defining issue of our time, and one of Harvard's greatest contributions to meeting that challenge will be the education of a new generation of leaders in science, business, law, design, and public service. To this end, the Environmental Science and Public Policy (ESPP) program (http://www.espp.fas.harvard.edu/), in coordination with the Harvard University Center for the Environment (HUCE), is pleased to offer the secondary field in Energy and Environment (E&E). Through course work and a colloquium, students engaged in the E&E secondary field will increase their exposure to—and their literacy in—the interdisciplinary nature of issues related to Energy and the Environment.

In the context of the E&E secondary field, "energy" refers to the production, distribution, and use of energy by individuals and society for a variety of purposes. This includes the various technologies, policies, and challenges associated with meeting increasing global energy demands. "Environment" refers to the understanding of the relationships and balances of the natural and constructed world at multiple scales, including how anthropogenic activities and policies affect the relationships between energy demand, environmental quality, and climate change.

Students from a wide range of concentrations, including the humanities, are invited to participate in the program to explore how different disciplinary perspectives on energy and environment intersect and inform one another. For example, students concentrating in English may wish to increase their knowledge of the environment and energy in the context of environmental literature or history. Students studying global health may want to better understand the impacts of climate change on water resources, nutrition, and human health. Or students in the physical sciences may wish to expand their training by improving their understanding of climate dynamics and energy production to support their interest in materials science and energy storage. All participating students share exposure to the core issues related to climate change, the consequences of energy choices, and changes in our physical and biological environment, preparing them to make informed professional and personal decisions about some of the most pressing societal challenges of the 21st century.

REQUIREMENTS

Energy and Environment: 4 courses (16 credits) and colloquium participation

The E&E secondary field requires the successful completion of four courses, including one foundational course and three upper-level courses. Students must also participate in a program colloquium, as outlined below.

1. One foundational course that includes content related to both energy and environment from the following:
    a. GENED 1085: Energy Resources and the Environment.
    b. GENED 1094: Confronting Climate Change: A Foundation in Science, Technology and Policy.
    c. GENED 1137: The Challenge of Human Induced Climate Change: Transitioning to a Post Fossil Fuel Future.
    d. GENED 1158: Water and the Environment.
    e. ESE 6: Introduction to Environmental Science and Engineering.

f. EPS 50: The Fluid Earth: Oceans, Atmosphere, Climate, and Environment.

2. Three additional upper-level courses: At least one course must be chosen from each of two elective categories: Social Sciences and Humanities, and Natural Sciences and Engineering. The complete list of course options can be found on the Environmental Science and Public Policy website at http://espp.fas.harvard.edu.

OTHER INFORMATION

We encourage students to declare their engagement in the secondary field as early as possible (ideally by the course enrollment deadline of their sixth term) in order to become part of the larger community and to participate in community events and activities. Students may petition the ESPP Head Tutor, in advance, for the approval of any exceptions to the course options for the secondary field, including courses offered in study abroad programs, at the Harvard Summer School, or any of Harvard's other Schools. First-Year seminars do not count toward secondary field requirements. All courses counting toward the E&E secondary field must be taken for a letter grade. A grade of C or better is required for secondary field credit.

ADVISING RESOURCES AND EXPECTATIONS

The ESPP Head Tutor, Professor N. Michele Holbrook, Associate Director of Undergraduate Studies, Dr. Diana Sharpe, or Secondary Field Administrator, Lorraine Maffeo (espp@fas.harvard.edu), are available for advice about the secondary field.

English

The Department of English offers one secondary field for non-concentrators. It is designed to be flexible enough to accommodate every kind of interest in this broad field.

REQUIREMENTS

English: 6 courses (24 credits)

1. English 20: Literary Forms. This course introduces students to genre and to how genres respond to changes in the world.
2. Five electives: Five more courses taught by English Department faculty complete the requirements. Three of these courses are guided electives, courses on any subject that introduce students to the variety of writers and genres that make up the 1,300-year tradition of literature in English:
    a. One must primarily address texts written before 1700.
    b. One must primarily address texts written between 1700 and 1900.
    c. One must primarily address texts written between 1900 and 2000.
    d. Two courses are open electives and may be creative writing workshops.

OTHER INFORMATION

The six courses may be taken in any sequence. With the exception of First-Year Seminars taught by English Department faculty, each course must be taken for a letter grade, with a minimum grade of C-. The six required courses must be completed by the end of the senior year.

ADVISING RESOURCES AND EXPECTATIONS

Students pursuing a secondary field in English are urged to seek out members of the English Department faculty for advice regarding their specific course choices. For general information about the department, its faculty, and its courses, students should visit the department website at https://english.fas.harvard.edu/.

For more information on the secondary field and for advising, students should speak with the Undergraduate Program Assistant/Secondary Field Coordinator, Emily Miller.

Environmental Science and Public Policy

The Environmental Science and Public Policy (ESPP) secondary field (https://espp.fas.harvard.edu/) provides students with a multidisciplinary introduction to the complex environmental challenges confronting society today. These challenges require an understanding of underlying scientific and technical issues, as well as an appreciation for relevant economic, political, legal, historical, and ethical dimensions.

Students become well-versed in the broad, interconnected issues of environment and public policy through course work and a colloquium. Students choose courses in subjects spanning biology, chemistry, Earth and environmental sciences, economics, government, engineering, and mathematics, complementing their primary studies with courses that will provide balanced exposure to Environmental Science and Public Policy perspectives.

REQUIREMENTS

Environmental Science and Public Policy: 5 courses (20 credits) and colloquium participation

1. One foundational course from the following:
    a. E-PSCI 50: The Fluid Earth: Oceans, Atmosphere, Climate and Environment.
    b. ESE 6: Introduction to Environmental Science and Engineering.
    c. GENED 1085: Energy Resources and the Environment.
    d. GENED 1094: Confronting Climate Change: A Foundation in Science, Technology and Policy.
    e. GENED 1137: The Challenge of Human Induced Climate Change: Transitioning to a Post Fossil Fuel Future.
    f. GENED 1158: Water and the Environment.
2. Four upper-level courses: At least two courses must be chosen from each of two elective categories: (1) Social Sciences and Public Policy and (2) Natural Sciences and Engineering. The complete list of course options can be found on the ESPP website at https://espp.fas.harvard.edu/espp-secondary-field.

OTHER INFORMATION

We encourage students to declare their engagement in the secondary field as early as possible (ideally by the course enrollment deadline of their sixth term) in order to become part of the larger community and to participate in community events and activities. Students are required to complete an application form, found on the ESPP website.

Students may petition the ESPP Head Tutor in advance for the approval of any exceptions to the course options for the secondary field. With prior permission, substitutions with courses offered in study abroad programs, at the Harvard Summer School, or at any of Harvard's other Schools may with prior permission count toward the secondary field requirements.

First-Year Seminars do not count toward secondary field requirements. All courses counting toward the secondary field must be taken for a letter grade. A grade of C or better is required for secondary field credit.

ADVISING RESOURCES AND EXPECTATIONS

The ESPP Head Tutor, Professor N. Michele Holbrook, Associate Director of Undergraduate Studies, Dr. Diana Sharpe, or Lorraine Maffeo, Program Administrator (espp@fas.harvard.edu), are available for advice about the secondary field.

Ethnicity, Migration, Rights

The secondary field in Ethnicity, Migration, Rights (EMR) offers students an opportunity to pursue sustained, interdisciplinary study of ethnicity, migration, Indigeneity, and human rights, with special attention to Asian American, Latinx, Indigenous, and migration and border studies. There are two tracks that students can declare: (1) EMR and (2) Latinx/e ("Latino") Studies. While EMR houses many of its own curricular offerings, additional courses that count for EMR's secondary fields are taught by faculty from humanities and social science fields across the Faculty of Arts and Sciences (FAS) and other Harvard Schools.

Study in EMR allows students to explore our core areas from a variety of disciplinary and interdisciplinary perspectives. Students who decide to pursue the secondary field can choose from a wide range of courses under the guidance of the Administrative and Program Director and members of the EMR Faculty Standing Committee. Given the relevance of EMR topics to both local and global issues, the secondary field encourages and provides opportunities for interacting directly with local communities and working outside the traditional classroom.

REQUIREMENTS

Ethnicity, Migration, Rights Track: 5 courses (20 credits)

Five courses from the approved course list, which can be found in the course search in courses.my.harvard.edu and on the EMR website at http://emr.fas.harvard.edu/:

3. One portal course in EMR: Courses designated as portal courses are meant to give students an overview of one or more of the core EMR areas. On occasion, a student may be granted permission to use another course from the list as a portal course. Students wishing to discuss this option should do so with the Administrative and Program Director.
4. Four additional courses in EMR: Two of the four must be above the introductory level.
5. At least one course must have a transnational, comparative, or global focus.

Latino Studies Track: 5 courses (20 credits)

The goal of this secondary pathway is to support study of the experiences, cultures, and traditions of knowledge of Latinx/e communities in the United States with attention to history, language, demographics, legal rights, and immigration. The secondary field in EMR's Latinx/e Studies track requires five courses from the approved course list, which can be found in the course search in courses.my.harvard.edu and on the EMR website at http://emr.fas.harvard.edu/:

1. One portal course in Latinx/e Studies: Courses designated as portal courses are meant to give students an overview of one or more of the core areas. On occasion, a student may be granted permission to use another course from the list as a portal course. Students wishing to discuss this option should do so with the Administrative and Program Director.
2. Three elective courses in Latinx/e Studies: Two of these electives must be above the introductory level.
3. One comparative course: Comparative courses should consider study of ethnicity and

culture from another perspective, which may include the study of another ethnic group within the United States or another globally comparative framework.

Note: A maximum of two courses in Latin American Studies may be used to fulfill the requirements for the Latinx/e Studies track.

OTHER INFORMATION

Four of the five courses must be taken for a letter grade and passed with a B- or higher. One course, including approved First-Year Seminars, may be taken pass/fail or SAT/UNS.

Courses related to the fields of EMR from study abroad, Harvard Summer School, and other Harvard Schools may count toward the secondary field with approval by the Administrative and Program Director.

Harvard College policy states that only one course may be double-counted for concentration credit and secondary field credit. There is no limit to the number of courses that can be double-counted for secondary field credit and General Education credit.

Students should consult with the Administrative and Program Director for guidance in choosing appropriate courses or to request approval for course exceptions.

ADVISING RESOURCES AND EXPECTATIONS

Students considering the secondary field should consult with Administrative and Program Director, Eleanor Craig, at eleanor_craig@fas.harvard.edu about their plan of study prior to declaring in my.harvard. Students working toward a secondary field in EMR can reach out to members of the Faculty Advisory Committee for guidance on course path, extracurricular options, and other questions. Students should visit the EMR website (https://emr.fas.harvard.edu/) for a list of affiliated faculty members and course catalog archives.

European History, Politics, and Societies

The secondary field in European History, Politics, and Societies (EHPS) offers students the opportunity to pursue an interdisciplinary course of study focused on modern Europe, in particular its politics, economics, history, and social and cultural developments.

While the EHPS secondary rests mainly on courses from the social science disciplines, it also includes those considering Europe in a comparative context as well as courses covering a specific period or region of Europe. In addition, it provides for a humanistic inquiry of Europe, reflecting its diverse cultural and linguistic heritage through a broad array of courses from the humanities departments.

This interdisciplinary structure allows for multiple paths of research and specialization, and it accommodates a variety of approaches in a study of Europe. The secondary field is based at the Minda de Gunzburg Center for European Studies (CES), the locus of innovative research on European history and contemporary affairs. As members of the EHPS cohort, students also are integrated into CES programming such as lectures, conferences, seminar series, and other student activities.

REQUIREMENTS

European History, Politics, and Societies: 6 courses (24 credits)

1. A minimum of three courses must be in social science disciplines (anthropology, economics, government, history, sociology, or social studies).
2. The six courses must come from at least two different departments/disciplines.
3. A minimum of three courses must be regular departmental courses (i.e., not General Education courses or First-Year Seminars).
4. One course of relevant language study on an intermediate or advanced level may count toward the secondary field.

OTHER INFORMATION

For more information, visit the EHPS website of the Minda de Gunzburg Center for European Studies at https://ces.fas.harvard.edu/opportunitis/undergraduates/secondary-field-in-european-history-politics-and-societies-ehps. All courses must be taken for a letter grade and completed with a grade of B- or above, with the exception of First-Year Seminars, which may be applied toward the secondary field with a grade of SAT. Very frequently, students may petition the CES Program Manager to receive credit for courses that may be relevant to the program of study but are not listed as part of the approved courses, including one course of credit taken through Harvard's Summer School Study Abroad Programs.

ADVISING RESOURCES AND EXPECTATIONS

To declare an interest in pursuing the secondary field in European History, Politics, and Societies, students should register for the field in my.harvard as early as possible to take advantage of the rich program of lectures offered by the Minda de Gunzburg Center for

European Studies as well as internships, thesis workshop, and funding. Students considering this specialization should consult with the CES Program Manager, Albana Shehaj, at albana.shehaj@fas.harvard.edu to discuss a selection of courses and interests. For up-to-date information on advising in our program, students may see the Advising Programs Office website at https://advising.college.harvard.edu/academic-planning-for-students/concentrations-and-secondaries/
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Folklore and Mythology

> *Folklore is a body of traditional belief, custom, and expression, handed down largely by word of mouth and circulating chiefly outside of commercial and academic means of communication and instruction.*
>
> *Every group bound together by common interests and purposes, whether educated or uneducated, rural or urban, possesses a body of traditions which may be called its folklore. Into these traditions enter many elements, individual, popular, and even "literary," but all are absorbed and assimilated through repetition and variation into a pattern which has value and continuity for the group as a whole.*
>
> —Benjamin A. Botkin, 1938

Folklore and Mythology (F&M) as a discipline focuses on the study of society, past or present, through its cultural documents and artifacts—its folklore—and uses a variety of methodologies drawn from the humanities and social sciences to understand them. To concentrate on a society's folklore and mythology (on subnational as well as national levels) is to understand its traditional self-definition through its myths, epics, ballads, folktales, legends, beliefs, and other cultural phenomena, including music, song, and dance. Studying a group's folklore shows how it identifies itself in relation to other groups.

Inherently interdisciplinary, the study of Folklore and Mythology often draws resources from several disciplines, while maintaining its own methodological lens. Students wishing to meet the requirements for a secondary field in Folklore and Mythology must take GENED 1097: Tradition, Performance, and Culture, one of the F&M topical seminars in the field, and three other courses chosen from Folklore and Mythology and/or cross-listed courses in courses.my.harvard.edu and on the Folklore and Mythology website.

Note: To guarantee a focused and coherent program of study in Folklore and Mythology as a secondary field, interested students should make an appointment with the Head Tutor as soon as possible. Students who notify the Head Tutor early on of their intention to pursue a secondary field in Folklore and Mythology will also ensure that they are invited to special lectures, film showings, lunches, excursions, and receptions.

REQUIREMENTS

Folklore and Mythology: 5 courses (20 credits)

1. GENED 1097: Tradition, Performance, and Culture. This course explores major forms of folklore (for example, myths, legends, beliefs, rituals, festivals) as well as the theoretical approaches (for example, performance theory, the ethnography of communication) used to interpret cultural documents drawn from the world of traditional expression and ritualized behavior. (Mitchell).
2. One Folklore and Mythology seminar that examines a specific topic in the field.
3. Three courses from among those offered in Folklore and Mythology or cross-listed with Folklore and Mythology.

OTHER INFORMATION

With the exception of approved First-Year Seminars, all courses must be taken for a letter grade. Grades should be B- or above. Harvard Summer School courses and study abroad courses taught by department faculty may count toward the secondary field. Students may petition the program to count, at most, one study abroad course taught by non-department faculty by presenting the syllabus and papers from the course to the Head Tutor or Chair.

Secondary field students who have officially recorded their intention are often granted preferential access to limited-enrollment courses. Individual faculty members will determine the priority of enrollment.

ADVISING RESOURCES AND EXPECTATIONS

Students are encouraged to meet with the Head Tutor, Dr. Sarah Craycraft, reachable at craycraft@fas.harvard.edu. By doing so and by notifying the program of their intention to pursue a secondary field in Folklore and Mythology, they will not only receive advice on courses, but they also will be invited to concentration activities and events. Students may also contact Department Administrator Holly Hutchison at hhutchis@fas.harvard.edu for information.

Germanic and Scandinavian Studies

German is the second most spoken language in all of Europe, the most prevalent native language in the European Union, and the third most-taught foreign language worldwide. The rich cultural, intellectual, and scientific tradition of the German-speaking nations makes Germanic and Scandinavian Studies a popular secondary field for students concentrating in History of Art and Architecture, History of Science, Linguistics, Comparative Literature, Music, Philosophy, Psychology, Comparative Study of Religion, Social Studies, Sociology, and other language and literature fields. The role of the German-speaking nations in world history, their economic significance, and their crucial role in the politics and economics of the European Union give German particular relevance for students concentrating in History, Government, or Economics. Present-day Germany offers important perspectives on such issues as globalization and multiculturalism. For these reasons, students in any undergraduate concentration who have attained a good working knowledge of German may wish to explore German cultural and intellectual history in greater depth, while also achieving greater fluency in the language.

Spoken by some 25 million inhabitants of northern Europe, the Scandinavian languages are official national languages in five countries (Denmark, Finland, Iceland, Norway, and Sweden), as well as three autonomous regions (the Åland Islands, the Faroe Islands, and Greenland). Famed for the Icelandic sagas and other heroic legacies of the Viking Age, medieval Scandinavian literature is among the most renowned of the European Middle Ages, while modern Nordic culture boasts many world-class writers, artists, designers, and filmmakers—for example, Henrik Ibsen, August Strindberg, Edvard Munch, Alvar Aalto, Ingmar Bergman, and Lars von Trier. Known for their leadership in international development issues, peace negotiations, and sustainability initiatives, as well as their domestic social experiments, the Nordic countries often have held a prominent place on the modern world stage, and offer students excellent opportunities for cross-cultural perspectives and research.

The Department of Germanic Languages and Literatures offers courses in German, Nordic languages, and English on topics of cultural and historical interest. Important figures such as Marx, Freud, Nietzsche, and Kafka are the subject of regular lecture courses, as are such topics as the Vikings and the Nordic heroic period, the German colonial imagination, Nazi film, Nordic cinema, and Germanic folklore. Smaller, discussion-type courses cover the age of Goethe, 19th-century Realism, the relationship between Germany and the European Union, America in the German mind, German music, German and Scandinavian drama, and much more.

This secondary field is designed to be as flexible as possible so that individual students, with the help of the Director of Undergraduate Studies, can construct the most meaningful program for their needs.

REQUIREMENTS

Germanic and Scandinavian Studies: 5 courses (20 credits)

1. Courses should be selected from those listed and cross-listed under “Germanic Languages and Literatures” in the course search in my.harvard.
2. Two of the five courses must be at the 100-level or above.

3. Three of the five courses must be ones in which all texts are read in the original language.

OTHER INFORMATION

Up to two General Education courses regularly offered by faculty in the department may count toward the secondary field. However, only one course can count toward both General Education and the secondary field. First-Year Seminars taught by members of the department count toward the secondary field. As noted, courses should be selected from those listed and cross-listed under Germanic Languages and Literatures in the Courses of Instruction. Appropriate substitutions may be made with the permission of the Director of Undergraduate Studies (DUS).

In consultation with the DUS, all levels of less commonly taught Germanic and Nordic languages (for example, Swedish, Danish, Norwegian, Yiddish, Icelandic, or Finnish) may be counted toward the secondary field.

With the exception of one approved First-Year Seminar (which must receive the grade of SAT), all courses must be taken for a letter grade and cannot be taken pass/fail; a grade of B- or better is required for these courses to count toward the secondary field.

Harvard Summer School courses and study abroad courses may be counted upon approval of the Director of Undergraduate Studies.

ADVISING RESOURCES AND EXPECTATIONS

Students interested in pursuing a secondary field in Germanic and Scandinavian Studies should contact the Director of Undergraduate Studies for German or the Director of Undergraduate Studies for Scandinavian.

Global Health and Health Policy

The incidence and meaning of disease and injury, the quality and cost of health care services to prevent and treat those diseases and injuries, the variable access of citizens to those services, the role of government and politics in the provision and regulation of health care—these fundamental issues and many more are central concerns of health policy in the United States and abroad. Indeed, health care affects the life of every individual, whether through the financing of health insurance (both public and private), the treatment of illness, the care of the frail and elderly, the dissemination of information about the health risks of smoking and benefits of exercise and other behaviors that affect health, or the adoption of regulations to reduce human exposure to toxic chemicals in the environment.

A secondary field in Global Health and Health Policy (GHHP) could explore any of these topics within the United States or across the world, moving into such themes as accountability and governance—the role of the state versus transnational organizations and corporations in global health; the relevance and morality of global socioeconomic inequality in health; the risk of pandemic diseases and their economic and psychological impact on populations; the consequences of political change in a country's health; and the challenges resulting from complex emergencies and vulnerable populations in fragile states.

The natural sciences, the social sciences, and the humanities all contribute to the study of global health and health policy. Harvard offers many different perspectives and programs concerning health.

Students may explore all aspects of health care, health policy, and health science through many perspectives, approaches and subjects in the health domains that attract students with potentially quite different interests and that provide them with complementary forms of knowledge. Upon completion of the secondary field, GHHP students will know how to actively engage with complex themes from a variety of perspectives, conduct health-related research, and critically think about a spectrum of health issues, both domestic and global.

REQUIREMENTS

Global Health and Health Policy: 5 courses (20 credits)

1. One foundational course, chosen from the following options:
    a. GENED 1063: World Health: Challenges and Opportunities.
    b. GENED 1079: Why Is There No Cure for Health Care?
    c. GENED 1093: Who Lives, Who Dies, Who Cares? Reimagining Global Health.
    d. SOCIOL 1046: Life and Death by Design
2. Three additional courses, one course in three of the following eight categories:
    a. Social Sciences and Humanities:
        i. Economics of Health.
        ii. Ethics of Health.
        iii. Health and Demography.
        iv. Health, Culture, and Society.
        v. History and Practice of Medicine.
        vi. Politics of Health.

b. Sciences:
    i. Engineering Sciences and Statistics.
    ii. Science of Health and Disease.

   Note: A list of courses in each category is available at the GHHP website (http://ghhp.fas.harvard.edu/). Note that the eight categories are divided into two areas, Social Sciences and Humanities, and Sciences. Students are encouraged to take at least one course from both thematic areas.

3. One course to fulfill the research component of the secondary field in Global Health and Health Policy. The research must be on an approved topic. For information on the approval process and deadlines, students should consult the GHHP website at http://ghhp.fas.harvard.edu/. The research requirement may be fulfilled in one of four ways:
    a. Writing a senior thesis pertaining to global health or health policy in one's concentration. One term of the senior thesis tutorial will double-count for the concentration and secondary field.
    b. Adding a thesis chapter on the global health or health policy implications of a science thesis. One term of the senior thesis tutorial will double-count for the concentration and secondary field.
    c. Writing a research paper related to global health or health policy in GHHP 99: Research in Global Health and Health Policy.
    d. Writing a paper related to global health or health policy while enrolled in a supervised reading and research course (GHHP 91, or a 91R or 910R course in another department; prior approval is required).

OTHER INFORMATION

No more than one of the five courses may be non-letter-graded. (Exception: Two courses may be taken non-letter-graded if one is the required research component.) Due to FAS regulations, only one course may double-count for a secondary field and concentration, including double/joint concentrations.

ADVISING RESOURCES AND EXPECTATIONS

We encourage students to notify the program as soon as they have decided to pursue the secondary field in Global Health and Health Policy, so that we may keep them informed of important deadlines and policies, events, and research, internship, and employment opportunities.

For additional information and advice about the program and course selection, students may contact:

- Ryan Kim, Senior Program Coordinator, Global Health and Health Policy Undergraduate Program, at ryan_kim@harvard.edu.
- Debbie Whitney, Executive Director, Interfaculty Initiative in Health Policy, at deborah_whitney@harvard.edu.

Government

The Department of Government is an umbrella for a remarkable range of political subjects and approaches to studying them. The department is an umbrella, in part, because political science is not a unified discipline. It stands at the crossroads of history, law, economics, sociology, philosophy, and ethics. It borrows from these disciplines and constructs theories and methods of its own. Government Department faculty teach about China and statistical methods, civic virtue (and corruption), and the logic of congressional committee structures. Like our students, our research is inspired by many things: by the personal experience of participation; by moral outrage; by commitment to exploring a political problem; or by fascination with a model for explaining, measuring, or predicting political outcomes.

Against this background, a secondary field in Government is not one single thing. We encourage students with either specific or eclectic political interests to explore our courses and faculty. There are good reasons to range across areas, institutions, ages, and countries. For students with a focused interest, it may be best to assemble courses that cohere around a single subject or approach. For some students that may mean taking all their courses in a single subfield, such as American politics. Others with a focused interest may construct a program that includes courses from several subfields that are united by subject: perhaps Africa, or international political economy, or political ethics. Models of study for the secondary field are available on the department website.

REQUIREMENTS

Government: 5 courses (20 credits)

Students must take five courses in the Government Department:

- All courses must be taken for a letter grade and passed with a grade of B- or better, except for courses graded SAT/UNS (such as GOV 92R or a First-Year Seminar offered by a Government Department faculty member).
- Only one course grade SAT/UNS may be counted toward the secondary field.
- No courses taken pass/fail may count toward the secondary.
- No more than two foundational courses (GOV 10, GOV 20, GOV 30, and GOV 40) will be counted toward a secondary field; three courses must be numbered 50 or above.
- GOV 91R: Supervised Reading and Research cannot be used to fulfill Government secondary field requirements.
- Most courses outside the Government Department do not count for the secondary field. The only exceptions are listed at https://www.gov.harvard.edu/undergraduate/academics/secondary-field/. Students should note that this list is different from the list of courses available to concentrators for concentration credit. For instance, no Harvard Kennedy School courses can be used toward the secondary field requirement.

OTHER INFORMATION

Petitions of any kind for exceptions to Government secondary field requirements will not be accepted.

Ordinarily, only one Harvard Summer School Government course, taught on campus by a Harvard Government Department faculty member, can be counted toward the secondary field in Government. For more information about Harvard Summer School courses for Government credit, visit https://www.gov.harvard.edu/undergraduate/academics/summer-school-policy/.

Students should note that these secondary field requirements differ from those for Government primary concentrators.

Unlike the requirements for Government primary concentrators, all courses taken for the Government secondary field must be offered in the Government Department (i.e., have a "GOV" number). In addition, there are a small number of outside courses taught by Government Department faculty that may count toward the Government secondary field; the website https://www.gov.harvard.edu/undergraduate/academics/secondary-field/ has more information about the secondary field in Government.

The following courses are no longer offered but count for the secondary field if previously taken: FS 30V, FS 42R, FS 70U, FS 71H, FS 71W, HIST 14U, SOC-STD 98OA, SOC-STD 98OF.

ADVISING RESOURCES AND EXPECTATIONS

Advising for students pursuing a secondary field in Government is undertaken by the Undergraduate Program Office and the department's undergraduate advising staff. Interested students or those who have any questions or concerns regarding the secondary field should contact the Government Undergraduate Program Office at undergrad@gov.harvard.edu or 617-495-3249.

History

The History Department is pleased to offer a robust secondary field in History that encourages students in other concentrations to learn about the practice of history and to become historians. Students undertake an individualized plan of study to develop a base of historical knowledge and the essential skills of the field. The historical perspective and tools acquired through the secondary field will give students a richer appreciation for everything they experience in the College and beyond. History informs our understanding of literature, art, politics, and the world around us. While exposing us to the variety of human behavior and achievements of the past, the study of history also provides insights for the analysis of current issues, including questions of what may be fleeting and what may be enduring.

REQUIREMENTS

History: 5 courses (20 credits)

1. One seminar: Ordinarily taken in the junior or senior year, the seminar will serve as a capstone to the secondary field by providing faculty-led instruction in a small group and requiring students to follow the stages of a research project that reflect the principles of the department's tutorial program. A conference course or graduate seminar may be taken in lieu of an undergraduate seminar to meet this requirement.
2. Four additional courses in history: Students will be free to take any four courses in history to fulfill the bulk of the secondary field's course requirements. One of the four courses may be a historical related field course (by petition).

OTHER INFORMATION

All courses for the secondary field in History must be taken for a letter grade, except for First-Year Seminars (graded SAT/UNS) led by History Department faculty. A minimum letter grade of D- is required in all courses for the secondary field.

Two types of courses count automatically toward History secondary field requirements:

1. Courses listed under "History" in the course search in courses.my.harvard.edu (including cross-listed courses).
2. All courses taught by full members of the History Department faculty through the General Education and/or First-Year Seminar programs or through other departments.

The secondary field offers an opportunity to study a particular historical interest or to explore a range of eras, regions, and themes. There may be circumstances in which it would be appropriate to petition for a non-departmental course to count (known in History concentration parlance as a "related field"); students must consult the History undergraduate office about this possibility.

Students may also apply to do an independent study, or History 91R, with a member of the department; History 91R can be used to fulfill one of the three elective course requirements.

ADVISING RESOURCES AND EXPECTATIONS

To discuss whether a secondary field in History is the right fit, or for specific program questions, students should contact the Director of Undergraduate Studies at historydus@fas.harvard.edu or the Assistant DUS at cmheelan@fas.harvard.edu. For general inquiries, students should contact Staff Assistant Laura Johnson at lmjohns@fas.harvard.edu, or visit the undergraduate office in Robinson 100.

History of Art and Architecture

The Department of History of Art and Architecture at Harvard University offers the broadest range of courses in the discipline available in North America today. The faculty offer courses covering the diverse historical and cultural geographies of the world—as well as their points of intersection, dialogue, and exchange—in the fields of African, African-American, American, Ancient, architectural history and theory, Baroque and Rococo, Byzantine, Chinese, European 18th and 19th centuries, South Asian, Islamic, Japanese, Latin American/Pre-Columbian, Medieval, Modern, and contemporary photography, the Renaissance (Northern and Southern), and architectural history and theory. The scope of art and architecture studied is matched in variety both by approaches and methods of study.

The secondary field is structured to provide students with a balance between introductory and advanced courses of instruction and to promote understanding of the world's art traditions present and past. The secondary field offers students an opportunity to explore their interest in the history of art and architecture in the broadest of possible terms, or, equally, to pursue a focused academic interest for its own sake or because it complements their primary concentration. Courses of study are enhanced by direct access to the collections of the Harvard Art Museums, the Peabody Museum, the Harvard Museum of the Ancient Near East (HMANE), and the Houghton Library, among others.

REQUIREMENTS

History of Art and Architecture: 6 courses (24 credits)

- Three courses from the lower-level of department offerings, selected from the catalog range HAA 1 to HAA 89 (these may include First-Year Seminars and General Education courses offered by HAA faculty, and cross-listed courses).
- Three courses from the upper-level of department offerings, selected from the HAA 100–299 range. (Students wishing to enroll in a 200-level seminar must request the instructor's permission.)
- Of the six courses, a balance must be achieved chronologically before or after the year 1700 CE by a ratio of 2:4 or 4:2.
- No exceptions are offered to secondary field requirements; all six courses must be HAA courses or taught by HAA faculty.
- Note: There is no secondary field in architecture studies. Studio courses intended for architecture-track students (i.e., HAA 96A and HAA 96B, and HAA 92R) cannot be taken for secondary field credit. This also applies to courses at the Harvard Graduate School of Design and non-HAA courses.

OTHER INFORMATION

In addition to First-Year Seminars and General Education courses taught by History of Art and Architecture faculty, Harvard Summer School courses in the history of art and architecture may also count toward secondary field credit. Those courses credited for the secondary field in History of Art and Architecture must be led by faculty holding a teaching appointment in the History of Art and Architecture Department. There is no grade minimum for courses to count toward the secondary field, but, with the exception of First-Year Seminars, courses must be

taken for a letter grade. Students pursuing a secondary field will not be given preferential access to limited-enrollment courses, which in this concentration are generally undergraduate pro-seminars and seminars for graduate students. In limited-enrollment courses, instructors will decide whether a secondary field student is admitted to the course based on such factors as level of preparation, stated interest, and/or need.

ADVISING RESOURCES AND EXPECTATIONS

Students pursuing the secondary field in History of Art and Architecture are strongly advised to (1) contact their intended secondary field with a list of courses they plan to count toward the secondary field, (2) inform the department using the secondary fields web tool, and (3) seek academic advising from the Undergraduate Program Coordinator or Director of Undergraduate Studies before embarking upon the course of study.

Students should contact the Undergraduate Program Coordinator by email and meet to discuss their academic interests and objectives. The initial meeting could occur at any stage after the concentration choice has been made, but ideally will occur during the student's fourth or fifth semester. Academic advising and general mentoring in the course of secondary field study will also be provided by the Director of Undergraduate Studies and the Undergraduate Coordinator at the student's request. The Director of Undergraduate Studies is Professor Jennifer L. Roberts; the Undergraduate Coordinator is Marcus Mayo.

History of Science

The Department of the History of Science offers a secondary field in the History of Science, Technology, and Medicine. This field provides students concentrating in other departments the opportunity to take a coherent cluster of courses in the history of science, technology, and medicine. The program is designed first to give students a foundational sense of the field, then to permit them to do more-advanced work, including taking courses that will allow them to focus on particular interests and to undertake original research and other projects.

REQUIREMENTS

History of Science, Technology, and Medicine: 5 courses (20 credits)

1. HISTSCI 100: Knowing the World: Introduction to the History of Science.
2. Four elective courses in the History of Science .
    a. These course are ordinarily chosen from the 1000-level courses in the History of Science course search in courses.my.harvard.edu.
    b. 2000-level courses may be taken only with the permission of the instructor.
    c. One First-Year Seminar taught by a department faculty member may be counted as one of the four elective courses.
    d. Students will be permitted to take one (but no more) of their four elective courses outside of the department (cross-listed courses in the History of Science course search in courses.my.harvard.edu count in this category).

OTHER INFORMATION

With the exception of First-Year Seminars taught by department faculty members, all courses must be letter-graded. There is no minimum passing grade for courses to count toward the secondary field.

Decisions about whether courses from study abroad, Harvard Summer School, or other Harvard schools count for the secondary field will be made on a case-by-case basis by the Director of Undergraduate Studies or Manager of Student Programs.

ADVISING RESOURCES AND EXPECTATIONS

Secondary field advising is offered by Alice Belser, Manager of Student Programs, reachable at ajbelser@fas.harvard.edu, and by Professor Rebecca Lemov, Director of Undergraduate Studies, reachable at rlemov@fas.harvard.edu.

Human Evolutionary Biology

Human Evolutionary Biology (HEB) uses an evolutionary framework to investigate why humans are the way they are. In addition to providing a general foundation in human biology, HEB focuses on questions such as what selective forces acted on humans during their evolution; how genotypes and phenotypes are related; how environmental forces, such as infectious disease and climate, influenced human biology and evolution; how natural selection has affected social cognition and behavior; and what role culture has played in human evolution.

REQUIREMENTS

Human Evolutionary Biology: 5 courses (20 credits)

1. LS 1B
2. GENED 1027 or GENED 1056, plus three additional Human Evolutionary Biology courses, found at courses.my.harvard.edu.

OTHER INFORMATION

One First-Year Seminar may be counted for the secondary field in HEB if taught by an HEB faculty member. All courses must be taken for a letter grade, except relevant First-Year Seminars, which are graded SAT/UNS. Only courses for which a satisfactory grade is received will receive secondary field credit.

ADVISING RESOURCES AND EXPECTATIONS

Students interested in pursuing a secondary field in Human Evolutionary Biology should contact Dr. Andrew Yegian at ayegian@fas.harvard.edu for more information.

Integrative Biology

The faculty of the Department of Organismic and Evolutionary Biology (OEB) study biological systems at all levels from molecules to ecosystems, united by a shared foundation in evolutionary biology. Our department offers courses in a broad range of topics, including: anatomy, behavior, biomechanics, development, ecology, entomology, evolution, forestry, genetics, genomics, marine biology, microbiology, molecular evolution, mycology, paleontology, physiology, plant sciences, oceanography, systematics, and zoology.

The secondary field in Integrative Biology (IB) reflects this breadth. Students may have an interest in pursuing a secondary field of study in a particular subdiscipline or may prefer to sample broadly across the offerings of the department. Rather than draft a set of requirements for each possible field of study, the department has chosen a flexible set of requirements that should maximize students' freedom to craft their own programs in consultation with an academic advisor.

REQUIREMENTS

Integrative Biology: 5 courses (20 credits)

A secondary field in Integrative Biology requires the completion of five courses offered by members of the OEB Department (for a full listing, see https://masthead.fas.harvard.edu). All courses listed in the OEB course search on my.harvard.edu, including cross-listed courses and LS 1B and LS 2, will count toward the secondary field in Integrative Biology.

OTHER INFORMATION

All courses must be taken for a letter grade, with the exception of one approved First-Year Seminar. The grade minimum for a course to count toward the secondary field shall be C-.

Courses taught by members of the department at Harvard Summer School will count toward the secondary field. One First-Year Seminar or one course in General Education may count toward the secondary field (in each case, the course must be taught by a member of the Department of Organismic and Evolutionary Biology). One course taken while studying abroad may count toward the secondary field if approved in advance by the Head Tutor.

ADVISING RESOURCES AND EXPECTATIONS

Questions about the secondary field should be addressed to the IB concentration advisor Dr. Andrew Berry, reachable at berry@oeb.harvard.edu and 617-495-0684, or IB Head Tutor Dr. David Haig, reachable at dhaig@oeb.harvard.edu.

Linguistics

Linguistics at Harvard is counted among the humanities. Much research in linguistics, however, lies in the area of linguistic theory, which seeks to develop a scientific theory of language that accounts for interlanguage variation while uncovering the general laws and principles that govern all languages.

Such work resembles research in the social and behavioral sciences. Recently, advances in biology and neuroscience have led to the emergence of a kind of linguistic scholarship that closely parallels research in the life sciences. Thanks to its unique field—and methodology-straddling quality—Linguistics is able to offer three distinctively contoured secondary field pathways:

- Language History and Language Structure.
- Language and Linguistic Theory.
- Language, Mind and Brain.

REQUIREMENTS

Language History and Language Structure: 5 courses (20 credits)

The pathway in Language History and Language Structure is designed for students whose curiosity about linguistics is an outgrowth of their interest in specific languages or their "love of languages" in general. Such students may also have considered concentrating in or taking courses in an ancient or modern language field (classics, or Romance, Slavic, Near Eastern, or East Asian languages, etc.), or they may simply be looking for ways to learn more about the history and structure of English.

1. Two foundational courses, consisting of:
    a. LING 101: The Science of Language: An Introduction or LING 83: Language, Culture, and Cognition.
    b. A core Linguistics course to be chosen from among LING 102, LING 104, LING 105, LING 106, LING 107, LING 108, or a First-Year Seminar in Linguistics (34X: Language and Prehistory or 61Q: The Origins of Meaning).
2. Three more courses, chosen from among:
    a. LING 117R: Linguistic Field Methods or LING 107: Introduction to Indo-European or LING 108: Introduction to Historical Linguistics.
    b. A more-specialized course in historical linguistics:
        i. LING 118: Historical and Comparative Linguistics.
        ii. LING 168: Introduction to Germanic Linguistics.
        iii. LING 176: History and Pre-History of the Japanese Language.
        iv. GREEK 134: The Language of Homer.
    e. A more-specialized course in descriptive linguistics:
        i. LING 171: Structure of Chinese.
        ii. LING 174: Tense and Aspect in Japanese.
        iii. SLAVIC 126A: Structure of Modern Russian.

Language and Linguistic Theory: 5 courses (20 credits)

The pathway in Language and Linguistic Theory is designed for students whose love of languages is less important to them than their love of Language (with a capital *L*). Such students may have been attracted to linguistics from a variety of fields—a foreign language, English, Anthropology, Mathematics, Computer Science, and even Physics. What unites them is an interest in the common formal and representational system that underlies all human languages.

1. Two foundational courses:
    a. LING 101: The Science of Language: An Introduction or LING 83: Language, Culture, and Cognition.
    b. A core Linguistics course to be chosen from among LING 102, LING 104, LING 105, LING 106, or a First-Year Seminar in Linguistics (for example, 34X: Language and Prehistory or 39X: Human, Animal and Artificial Languages or 61Q: The Origins of Meaning).
2. Three more-advanced courses, chosen from among:
    a. LING 102: Sentence Structure.
    b. LING 104: Word Structure.
    c. LING 105: Sounds of Language.
    d. LING 106: Knowledge of Meaning.
    e. LING 107: Introduction to Indo-European.
    f. LING 108: Introduction to Historical Linguistics.
    g. Any more-advanced course in syntax, morphology, phonetics/phonology, semantics, acquisition, language processing, or computational linguistics.

Language, Mind and Brain: 5 courses (20 credits)

The pathway in Language, Mind and Brain was created for students with an interest in the areas of inquiry addressed by Harvard's Mind Brain Behavior Initiative. Such students will be less interested in language-particular facts than those in the other two groups; they will be correspondingly more interested in the evolution of language, the linguistic abilities of nonhuman primates, the mechanisms used by the brain to access and store linguistic information, and similar questions.

1. Two foundational courses, consisting of:
    a. One of the introductory courses: LING 101: The Science of Language: An Introduction or LING 83: Language, Culture, and Cognition.
    b. A core Linguistics course to be chosen from among LING 102, LING 104, LING 105, LING 106, or a First-Year Seminar in Linguistics (for example, 39X: Human, Animal and Artificial Languages or 61Q: The Origins of Meaning).
2. Three more courses, chosen from among the following:
    a. LING 102: Sentence Structure.
    b. LING 111: Language Acquisition.
    c. LING 130: Psycholinguistics.
    d. LING 132: Psychosemantics.
    e. LING 146: Syntax and Processing.
    f. Or any similar course approved by the Head Tutor.
    g. Or any Linguistics-related MBB course, for example:
        i. MCB 80 or NEURO 80: Neurobiology of Behavior.
        ii. COMPSCI 187: Computational Linguistics.
        iii. PHIL 147: Philosophy of Language.
        iv. Or an MBB interdisciplinary seminar.

OTHER INFORMATION

Subject to the Head Tutor's approval, Linguistics summer school courses and Linguistics study abroad courses will be allowed to count toward the secondary field requirements. One course may be taken pass/fail toward the course requirements; this may be, but need not be, one of the designated First-Year Seminars.

ADVISING RESOURCES AND EXPECTATIONS

The primary advisor and contact person for the secondary fields in Linguistics is the Head Tutor, who can be contacted at lingaht@fas.harvard.edu.

Mathematical Sciences

The secondary field in Mathematical Sciences is jointly sponsored by the Mathematics Department and the Applied Mathematics concentration.

REQUIREMENTS

Mathematical Sciences: 4 courses (16 credits)

Four courses in either Mathematics, Applied Mathematics, or Statistics, of which at most two can be in Statistics. The Mathematics and Applied Mathematics courses must be numbered 104 or higher; and Statistics courses must be numbered 110 or higher.

OTHER INFORMATION

Courses must be taken for a letter grade and cannot be taken pass/fail. Only courses with a grade of C- or above can be counted.

Students who study abroad or take courses within Harvard Summer School can count course credits toward the secondary field in Mathematical Sciences by petitioning for such course to be counted as the equivalent to an approved Harvard course.

Note that courses in other departments that are cross-listed in the course catalog under Mathematics, Applied Mathematics, or Statistics will count toward secondary field.

ADVISING RESOURCES AND EXPECTATIONS

If students have questions about course selection, they should contact the Director of Undergraduate Studies for Mathematics, Cliff Taubes, at mailto:chtaubes@math.harvard.edu or the Applied Math Advising Team at am-advising@seas.harvard.edu.

Medieval Studies

The *Middle Ages* is the name given to a thousand-year period of European, Eurasian, and African history and culture spanning the period between Antiquity (circa 1000 BCE to 500 CE) and Modernity (circa 1600 CE onward). Those who defined themselves as “modern” came to view the medieval period condescendingly, associating it with basic themes and images such as heroism and chivalry, “feudal” society, and religious fervor. All these stereotypes say far more about “modernity” than they do about a period whose innovations are essential parts of Western as well as global culture as we know it today. Learning about the vast and varied period known as the Middle Ages offers a unique and valuable perspective on modern history and culture. It also allows students to see the many different ways in which human societies function, invent, create, believe, and interact. From the viewpoint of its cultural descendants in the New World as well as the Old, the Middle Ages is both “us” and “not us”—at once part of our collective heritage and something very, very different.

The secondary field in Medieval Studies examines the Middle Ages from many different angles and through many different disciplinary perspectives. It draws on the wealth of medieval teaching and scholarship at Harvard, where there are faculty medievalists in at least 20 departments, programs, and Schools. The secondary field consists of one foundational course in any discipline, plus four courses that expose students to the wide range of disciplines that make up Medieval Studies. While some of these courses teach or require specialist skills, most are intended to be accessible to any interested student, whatever their concentration or field of specialization.

LEARNING OBJECTIVES

To understand and be able to explain how the societies of Eurasia and Africa during the millennium from circa 400 to 1600 CE functioned, invented, created, believed, and interacted with one another, and how those societies have been understood (and mis-understood) in more recent times.

REQUIREMENTS

Medieval Studies: 5 courses (20 credits)

1. One foundational course chosen from among any of the courses listed on the program’s website at https://medieval.fas.harvard.edu/.
2. Three courses among those listed on the program's website or in the Medieval Studies course search in courses.my.harvard.edu. These courses should cover three of the four core disciplinary areas of Arts, History, Literature & Language, and Thought & Religion. Each of these advanced courses must be offered by a different department, except for Medieval Studies itself (i.e., all three courses can have a Medieval Studies number). Students are encouraged to take at least one Medieval Studies–numbered course (for example, MEDVLSTD 106, MEDVLSTD 107, MEDVLSTD 111, MEDVLSTD 117, and MEDVLSTD 119).
3. One elective course at any level, chosen from any of the offerings listed on the program’s website (https://medieval.fas.harvard.edu/); this course may include a First-Year Seminar dealing substantially with the medieval period.

OTHER INFORMATION

All five courses must be taken for a letter grade and passed with a B- or better, except for approved First-Year Seminars, which are graded SAT/UNS.

Courses offered through the Harvard Summer School and course credits gained through study abroad programs will only be accepted for secondary field credit if they are on medieval topics and taught by members of the Medieval Studies faculty (for example, SCAND S-150: Study Abroad in Scandinavia). Normally, only one such course should be used to fulfill the requirements of the secondary field. Any inquiries about such courses should be addressed to the Director of Undergraduate Studies (DUS) of Medieval Studies, Sean Gilsdorf.

Courses offered in Harvard Schools other than the Faculty of Arts and Sciences (FAS) must be jointly offered in FAS to count toward the secondary field in Medieval Studies.

Courses counting for a secondary field in Medieval Studies are updated periodically. If students find other courses that could count, they should contact the Medieval Studies program at medieval@fas.harvard.edu.

ADVISING RESOURCES AND EXPECTATIONS

For more information on the secondary field or for advice on how to devise a program within the field, students should contact the Director of Undergraduate Studies, Sean Gilsdorf, at mailto:gilsdorf@fas.harvard.edu and 617-496-5857.

Microbial Sciences

Microbial Sciences is an interdisciplinary approach to studying the impact of microbes at scales from global ecosystems down to single-celled microenvironments. The academic program emphasizes the joint study of species diversity, metabolic function, geochemical impact, and medical and pharmaceutical applications of microbial sciences. Faculty affiliated with the Microbial Sciences Initiative (MSI) include members from the departments of Molecular and Cellular Biology, Organismic and Evolutionary Biology, Earth and Planetary Sciences, Chemistry and Chemical Biology, the School of Engineering and Applied Sciences, Harvard Medical School, Harvard School of Public Health, and the Forsyth Institute.

The MSI secondary field is intended to provide a strong foundation in interdisciplinary Microbial Sciences to students who have sufficient preparation in other natural sciences, mathematics, or engineering. In particular, the Microbial Sciences curriculum is intended to (1) be interdisciplinary, (2) not be specifically biomedical, and (3) incorporate elements from physical sciences as well as life sciences. An important aspect of this secondary field is the laboratory component, which provides hands-on experiential learning to all students.

REQUIREMENTS

Microbial Sciences: 5 courses (20 credits)

1. Two Microbial Sciences cornerstone courses. All secondary field students will take MICROBI 210: A Microbial Planet and LS 100R: Experimental Research in Life Sciences. Other research project courses, such as those numbered 91R or 99R, may be allowed to substitute for LS 100R if they have the appropriate microbial emphasis. No substitutions will be accepted for MICROBI 210.
2. One introductory course. All secondary field students will take one approved introductory course below the 100-level. The eligible courses will be selected from departmental offerings in the Faculty of Arts and Sciences (FAS) that contain material relevant to providing a foundation in microbial sciences. Examples of such courses can be found on the MSI website at https://msi.harvard.edu/harvard-undergraduate-secondary.
3. Two additional Microbial Sciences courses at the 100-level or above. These are available across a variety of departments. A list of such courses is found on the MSI website at https://msi.harvard.edu/harvard-undergraduate-secondary.
4. MSI tutorial: Non-credit. Students are strongly encouraged, but not required, to attend additional MSI programming, including weekly chalk talks, monthly seminars, and the annual symposium. If conducting research, students are also invited to apply for the MSI Summer Undergraduate Fellowship, which (if awarded) provides a stipend to support the student conducting research with an MSI faculty affiliate over a 10-week summer period.

OTHER INFORMATION

All courses must be taken for a letter grade in order to count toward secondary field credit, and normally C is the minimum acceptable grade. The only exception is approved First-Year Seminars, which are graded SAT/UNS.

Of the one introductory course and two additional Microbial Sciences courses, two must be significantly outside the student's primary area of concentration, providing each student substantial interdisciplinary experience.

Some courses for Microbial Sciences credit may have hidden prerequisites. Students should plan appropriately, as a prerequisite cannot be counted for Microbial Sciences credit unless it satisfies requirement 2 above.

Students may receive credit for LS 100R twice. Students electing to do this may count one semester toward the Microbial Sciences secondary field and one toward their concentration, or they may count the second semester as one of their two 100-level electives in the secondary field. A single semester of LS 100R may not be double-counted.

Courses from study abroad or Harvard Summer School could count toward secondary field credit if approved by the MSI Steering Committee prior to the student's enrollment in these courses. The student must petition the MSI Steering Committee in the semester prior to their intended enrollment in such courses and must provide a syllabus or detailed course summary to the committee. A petition to retroactively consider substituting one relevant First-Year Seminar for one of the two 100-level elective courses also will be considered.

ADVISING RESOURCES AND EXPECTATIONS

Students will submit an application to MSI for the secondary field no later than the course enrollment due date of their penultimate term. This application is available on the MSI website at https://msi.harvard.edu/harvard-undergraduate-secondary.

Students are encouraged to be active participants in the MSI community. Secondary field students will be invited to all MSI events and activities. Undergraduate participation will provide opportunities to become acquainted with graduate students, postdocs, and members of the faculty.

Students interested in pursuing a secondary field in Microbial Sciences should contact MSI leadership by email at MSI@fas.harvard.edu.

Mind Brain Behavior

Mind Brain Behavior (MBB) introduces students to the interdisciplinary study of the mind, the brain, and behavior. As a secondary field, it offers students the opportunity to confront the significant findings that have arisen from the traditional disciplines in the MBB area of inquiry and emphasizes the intellectual innovations that stem from crossing traditional disciplinary lines. Students learn how past and current researchers have brought the perspectives of neuroscience into dialogue with those of other natural sciences, the social sciences, and the humanities, and they develop the habits of interdisciplinary thinking themselves. In particular, the secondary field provides opportunities to learn about computational, neurobiological, evolutionary, psychological, linguistic, philosophical, and historical approaches and their interactions.

These goals reflect the state of knowledge about mind, brain, and behavior—knowledge that is growing exponentially. The traditional disciplines have proven remarkably successful at expanding this knowledge and have been enhanced by interdisciplinary links that have foregrounded new technologies and theories. MBB has brought together a diverse group of faculty members from Harvard's different Schools and disciplines, and students may take courses from them, work in their laboratories and on their research projects, and hear them speak at MBB events.

REQUIREMENTS

Mind Brain Behavior: 5 courses (20 credits)

1. PSY 1: Introduction to Psychological Science (formerly Science of Living Systems [SLS]: 20). Recommended in the first year.
2. NEURO 80: Neurobiology of Behavior, also listed as MCB 80. Recommended sophomore year.
3. Interdisciplinary seminar, selected from a list that varies each year (see https://mbb.harvard.edu/seminars). Recommended junior year.
4. Two Mind Brain Behavior courses selected from a list that varies each year (see https://mbb.harvard.edu/electives).

OTHER INFORMATION

All courses must be taken for a letter grade. Students are also encouraged to attend the MBB junior symposium, and they are welcome to join the student organization Harvard Society for Mind, Brain, and Behavior (HSMBB).

ADVISING RESOURCES AND EXPECTATIONS

Students considering a secondary field in MBB should familiarize themselves with the MBB website, https://mbb.harvard.edu/. Students should also introduce themselves by emailing Education Program Coordinator Shawn Harriman at shawn_harriman@harvard.edu as early as possible to allow MBB to keep them informed of important policies, events, and opportunities. Shawn is also happy to answer general questions about Mind Brain Behavior and its secondary field.

Molecular and Cellular Biology

The secondary field in Molecular and Cellular Biology (MCB) is intended for students with an interest in the life sciences, particularly in the study of biological processes based on the investigation of molecules and their interactions in the context of cells and tissues. The cell is the fundamental unit of all living things and is therefore an ideal framework for integrating one's understanding of the structure and chemistry of macromolecules with their higher-order organization and behavior in a living context.

Students pursuing the MCB secondary field gain a solid foundation by completing a set of three courses within introductory life sciences courses and intermediate courses in the MCB Department. To deepen their understanding of the discipline, students will then enroll in two additional MCB courses of their choosing. The choice of these courses, which should be made with the guidance of a concentration advisor, will allow students to explore specific sub-fields in MCB, such as biochemistry, microbiology, immunology, virology, neurobiology, and molecular medicine. Students are also encouraged to become involved in research. The secondary field is designed for students who desire a broad yet rigorous introduction to the field and may be appropriate for students with diverse career and academic interests, including (but certainly not limited to) applied mathematics, statistics, computer science, economics, government, health policy, business, and journalism.

REQUIREMENTS

Molecular and Cellular Biology: 5 courses (20 credits)

1. Three or four introductory or intermediate courses as follows:
    a. One or two integrated introductory courses in the life sciences:
        i. LS 1A: Chemistry, Molecular Biology, and Cell Biology (or LPS A).
        ii. LS 1B: Genetics, Genomics, and Evolution.
    b. One or two intermediate courses in molecular and cellular biology: MCB 60, MCB 63, MCB 64, MCB 65, MCB 66, MCB 68, or MCB 80.
2. Complete the remainder of requirements from advanced courses in molecular and cellular biology.
    a. Courses in MCB at the 100-level or above.
    b. One of these courses can be a research course (MCB 91 or MCB 100/LS 100).
3. Notes:
    a. LS 1A and LS 1B (or LS 50AB), as well as MCB 60, are foundational courses highly recommended for all students.
    b. Students should consult with the concentration advisors for advice on their selections of MCB courses at the 100-level or above.
    c. Research courses are encouraged for students interested in integrating a research experience into their Plan of Study.
    d. Students who take LS 50AB will be credited for LS 1A, LS 1B, and a research course. They can thus fulfill the secondary field requirements by completing two intermediate courses, or one intermediate course and one MCB 100-level course.

OTHER INFORMATION

To count for credit toward the secondary field, the five courses must be taken for a letter grade. First-Year Seminars will not count toward the secondary field. Students working in a research laboratory as part of a study abroad program can petition to have that research experience count as an advanced course toward the secondary field, and some Harvard Summer School Courses can count for credit toward the secondary field with preapproval. Students should contact the MCB concentration advisors, Dr. Dominic Mao (dominicmao@fas.harvard.edu) and Dr. Monique Brewster (mbrewst@g.harvard.edu), for more information on counting Harvard Summer School courses and research conducted as part of a study abroad program for the secondary field in MCB. Students pursuing a secondary field in MCB will not be given preferential access to limited-enrollment courses. We do not anticipate that courses required for the secondary field will be overenrolled.

The MCB secondary field is not open to students concentrating in any life science concentration such as Chemical and Physical Biology, Human Developmental and Regenerative Biology, or Neurobiology, etc. given similarities in the content and skills developed within these concentrations and current policy with respect to counting courses for concentration and secondary fields.

ADVISING RESOURCES AND EXPECTATIONS

For additional information, students interested in pursuing the secondary field in Molecular and Cellular Biology may contact the MCB concentration advisors, Dr. Dominic Mao (dominicmao@fas.harvard.edu) and Dr. Monique Brewster (mbrewst@g.harvard.edu). Students intending to pursue the MCB secondary field should declare on my.harvard.edu, and they are encouraged to meet with the MCB concentration advisors to confirm that the courses they have taken count for credit toward the MCB secondary field.

Music

The Secondary Field in Music equips students with a practical and critical understanding of music by exploring a wide variety of musical styles, genres, and traditions. A wide range of courses are available in music theory, composition, historical musicology, and ethnomusicology, as well as creatively focused courses that offer opportunities for music performance, composition, and improvisation. These courses reflect the specialties of our academic faculty; diaspora studies and migration, opera, jazz, music and politics, early music, musical theater, music and media, improvisation, hip-hop, music in film, American and European modernism, music and ecology, music and language, new music of the 21st century, and the musical traditions of Africa, Latin America, and Asia.

Department of Music courses provide an academic focus that supports the intellectual development of musicians, while also incorporating creative opportunities for music performance, composition, and improvisation. Students are free to explore the field by selecting a variety of courses that best reflect their interests and aptitudes.

REQUIREMENTS

Music: 5 courses (20 credits)

Any five courses selected from among the courses offered in Music (including General Education courses and First-Year Seminars), with the requirements noted below:

1. At least one course is required from each of the three course categories (12 credits):
    a. History, Culture, Society
    b. Music Theory
    c. Creating Music
2. Electives: Two courses (8 credits total):
    a. All Department of Music courses satisfy concentration elective requirements. In addition:
        I. One First-Year Seminar taught by Department of Music faculty can count.
        II. Gen Ed courses taught by a Department of Music faculty member can count.
        III. Multiple introductory-level courses will be eligible only by approval from the DUS.
3. Courses counting for Secondary credit may not normally be taken pass/fail, other than one First-Year Seminar (graded SAT/UNSAT).
4. Harvard courses taught outside the Department of Music, taken abroad, or in Harvard's Summer School may count towards a Secondary but require approval from the DUS.
5. Students participating in the dual programs of study with Berklee College of Music or New England Conservatory should contact the DUS regarding the possibility of transfer credits satisfying the requirements for a Secondary.

OTHER INFORMATION

The Department of Music welcomes all students with an interest in pursuing musical studies. For further information, students should contact the Director of Undergraduate (DUS) or the Undergraduate Program Coordinator (UPC) by scheduling an appointment using the Department of Music website at https://music.fas.harvard.edu/academics/undergraduate-study-in-music-information-for-current-students.

ADVISING RESOURCES AND EXPECTATIONS

Advising in the Department of Music is carried out by the DUS with support from the UPC. The DUS has overall responsibility for the academic progress of undergraduates and is available by appointment to review programs of study. Students interested in declaring a Secondary in Music are required to schedule an advising appointment with either the DUS or the UPC prior to completing a Secondary Field request in my.harvard. Students should work with advising resources to develop a strategy for fulfillment of academic requirements.

More information on undergraduate advising in the Department of Music can be found by visiting the Department of Music website at https://music.fas.harvard.edu/academics/undergraduate-study-in-music-information-for-current-students. Students may schedule advising sessions with either DUS or the UPC.

Near Eastern Languages and Civilizations

Interest in the Near/Middle East and its cultures will likely grow as the region continues to play a key role in contemporary international affairs. Knowledge of the Near/Middle East's languages, histories, and culture is urgently needed for an understanding of current events and the discourses that envelop them. For students wanting to pursue a limited number of targeted courses as an introduction to the region, the Near Eastern Languages and Civilizations (NELC) Department offers four secondary field pathways:

- The Middle East in Antiquity.
- Histories and Cultures of Muslim Societies (Islamic Studies).
- Jewish Studies.
- Modern Middle Eastern Studies.

REQUIREMENTS

Each of the four pathways requires five courses, which must be approved by the Director of Undergraduate Studies of the Department of Near Eastern Languages and Civilizations, or the advisor designated for the field by the department.

The Middle East in Antiquity: 5 courses (20 credits)

The NELC secondary field pathway The Middle East in Antiquity focuses on the rich and diverse history of the civilizations of the Ancient Near East, which witnessed the first complex societies and the first major developments in social and political organization, literacy, technology, religious institutions, and many other arenas, whose consequences remained a critical force in subsequent Middle Eastern and world history. The goal of this pathway is to give students an articulate acquaintance with the history and culture of the principal civilizations of the Ancient Near East, and to provide instruction in how such history and culture can be reconstructed through the critical analysis and synthesis of linguistic, textual, artistic, and archaeological evidence.

Harvard is an ideal place to pursue this field given the richness of its resources in libraries (Widener, History of Art, Tozzer, Law, Andover-Harvard), museums (Semitic, Peabody, and Sackler), and faculty (NELC, but also Anthropology, History of Art and Architecture, Linguistics, and the Harvard Divinity School).

1. At least two gateway courses, found at https://nelc.fas.harvard.edu/gateway-courses.
2. Three additional courses in the area of the Middle East in Antiquity, at least two of which must be at the 100-level or above, approved by the Director of Undergraduate Studies (DUS) of NELC or their designee. The electives allow the students to pursue study of one or several of the civilizations and arenas that are introduced in the two gateway courses.
3. Qualified students are encouraged to consider taking their elective courses in languages important to the study of the ancient Near East (for example, Classical Hebrew, Aramaic, Akkadian, and Egyptian, either as language or as literature courses). However, no more than two of these courses may be courses whose primary focus is language instruction.

Histories and Cultures of Muslim Societies (Islamic Studies): 5 courses (20 credits)

The goal of this secondary field pathway is to provide basic exposure to the literary, philosophical, and religious traditions of the Islamic world from the rise of Islam to the present day. The language areas covered are Arabic, Persian, Turkish, and Urdu. The program in Histories and Cultures of Muslim Societies is structured to allow students flexibility in their approach to the field, and students are encouraged to incorporate disciplinary perspectives currently available in the Harvard curriculum (for example, in Anthropology, Comparative Literature, Philosophy, Politics, Religious Studies, and Sociology).

1. At least two gateway courses, found at https://nelc.fas.harvard.edu/gateway-courses.
2. Three additional courses in Histories and Cultures of Muslim Societies (Islamic Studies), at least two of which must be at the 100-level or above. Students are free to pick from any three courses in Histories and Cultures of Muslim Societies (Islamic Studies) offered in NELC or elsewhere; these courses must be approved by the DUS or their designee.
3. Qualified students are encouraged to consider taking their elective courses in languages important to the study of the Muslim world (for example, Arabic, Persian, Swahili, Turkish, or Urdu, either as language or literature courses). However, no more than two of these courses may be courses whose primary focus is language instruction.

Jewish Studies: 5 courses (20 credits)

The goal of this secondary field pathway is to provide a basic exposure to fundamental elements of the history, literature, religious thought, and legal institutions of Jewish civilization. As in other areas of undergraduate liberal arts education, and even more so in a secondary field of five courses, our goal is not to impart comprehensive knowledge of an entire academic field, but rather to ensure that students will have a basic framework for asking questions and tools for seeking answers. A combination of a historical survey focusing heavily on the premodern experiences of the Jews, with a course about modern Jewish history or literature and additional courses in different specific areas provide secondary field students with an exposure to Jewish culture through the ages, equipping them with a basic familiarity with Jewish culture, history, and literature.

1. Two gateway courses found at https.//nelc.fas.harvard.edu/gateway-courses.
2. Three additional courses (12 credits) in Jewish Studies, at least two of which must be at the 100-level or above. These courses can be offered in NELC or elsewhere, but must be approved by the Director of Undergraduate Studies or their designee.
3. Qualified students are encouraged to consider taking their elective courses in languages important to the study of Jewish cultures (for example, Hebrew, Yiddish, or Aramaic, either as language or literature courses). However, no more than two of these courses may be courses whose primary focus is language instruction.

Modern Middle Eastern Studies: 5 courses (20 credits)

This secondary field pathway provides Harvard undergraduates whose concentration is outside the field of Near Eastern Languages and Civilizations the opportunity to engage in foundational study of the cultures, history, and politics of modern Middle Eastern societies. It encourages such study through a combination of courses in the humanities and interpretive social sciences.

The requirements are designed with sufficient flexibility so that students may pursue the field as an introduction to the region as a whole, or as a more narrowly focused exploration of a

particular country or theme, depending on their interests. The five courses must, however, follow these simple guidelines:

1. MODMDEST 100 (formerly NEC 100): Approaches to Middle Eastern Studies. All students must enroll in this course, which serves as the gateway course to the secondary field.
2. Four additional courses related to the study of Middle Eastern societies, at least two of which must be at the 100-level or above. These courses are to be approved by the DUS or their designee and may be chosen from those offered in NELC or elsewhere, including the Program in General Education. For a list of possible courses, students should consult the NELC website.
3. Qualified students are strongly encouraged to consider taking some of these elective courses in languages important to the study of the Middle East (for example, Arabic, Hebrew, Persian, or Turkish, either as language or literature courses). However, no more than two of these courses maybe courses whose primary focus is language instruction.
4. All courses must be taken for a letter grade and must be completed with a grade of B- or above, with the exception of approved First-Year Seminars, which may be applied toward the field with a grade of SAT. Credit for courses from Harvard Summer School and other Harvard faculties may be granted upon petition. Study abroad in the region is encouraged, and one course of study abroad credit may be applied toward the field with prior approval of the Middle Eastern Studies academic advisor.

OTHER INFORMATION

One course taken abroad that has been approved for Harvard College credit (either over the summer, a regular term, or academic year; the Director of Undergraduate Studies or their designee will advise students on approved programs) may count toward the requirements, as may a First-Year Seminar. Other than First-Year Seminars, all courses must be letter-graded.

Courses taken in other departments that fit into the intellectual focus of the chosen NELC pathway may also be counted.

ADVISING RESOURCES AND EXPECTATIONS

For more information, students should contact the Acting Director of Undergraduate Studies, Christina Maranci, at cmaranci@fas.harvard.edu, (Fall 2022) or the Director of Undergraduate Studies, Gojko Barjamovic, at barjamovic@fas.harvard.edu (Spring 2023).

Neuroscience

Neuroscience, the study of the nervous system, is a field that investigates the biological mechanisms of behavior and how the brain processes information. To develop a comprehensive understanding, we study the nervous system at every level from the macroscopic (behavior and cognition) to the microscopic (cells and molecules). Thus, the study of neuroscience provides both a broad scientific training and a deep understanding of the biology of the nervous system.

The Neuroscience secondary curriculum begins with a fundamental course requirement that reflects the diversity of approaches in neuroscience: biological, cognitive, and quantitative. Students also take an introductory Neurobiology course (NEURO 80), which lays out the body of knowledge in the field. Next, students choose a foundational course in a subfield of Neuroscience ranging from molecules to animal behavior. Finally, in advanced elective courses, students explore specific areas of neuroscience more deeply based on their interests. The department now lists over 40 advanced courses on a range of topics: cells and circuits, physiology, learning and memory, cognitive science, development, genetics, and disease and therapeutics.

REQUIREMENTS

Neuroscience: 5 courses (20 credits)

1. One of the following courses:
    a. LS 1A or LPS A.
    b. A computer science course (for example, COMPSCI 1, COMPSCI 32, COMPSCI 50, APMTH 10, Science 5).
    c. A math course at the level of MATH 1A or above.
    d. An additional advanced course in neuroscience (as described in note 4 below).
2. NEURO 80: Neurobiology of Behavior.
3. One foundational course chosen from the following:
    a. NEURO 57: Animal Behavior.
    b. NEURO 105: Systems Neuroscience.
    c. NEURO 115: Cellular Basis of Neuronal Function.
    d. NEURO 120: Computational Neuroscience.
    e. NEURO 125: Molecular Basis of Behavior.
4. Two advanced courses in neuroscience. These courses must be chosen from a list of approved courses maintained on the concentration website at https://www.mcb.harvard.edu/undergraduate/neuroscience/neuro-courses/. Courses listed as Mind Brain Behavior (MBB) electives do not count toward the secondary field in Neuroscience.

OTHER INFORMATION

Students must take NEURO 80 (formerly MCB 80) before enrolling in the advanced Neuroscience courses. (Neuroscience tutorials designated at the level of NEURO 101 are considered advanced Neuroscience courses.) Ordinarily, only one tutorial course may be

counted toward the secondary field. Students enrolling in LS 100 must complete the Neuroscience project and may only take the course once for secondary field credit.

All courses in the secondary field must be taken for a letter grade, and students must earn a grade of C- or better in each course. First-Year Seminars may not be included for credit. Ordinarily, Harvard Summer School courses may not count toward secondary field credit. Courses taken through study abroad programs may be counted for credit in the secondary field by petition. Courses taken at other Harvard faculties (for example, Harvard Medical School) may count for the secondary field by petition or if the course is one of the approved advanced Neuroscience courses.

ADVISING RESOURCES AND EXPECTATIONS

Prior to completing the required courses, students are welcome to meet with the concentration advisors as needed, and students are encouraged to meet with them upon completing the introductory courses in order to select appropriate advanced courses. After completing the requirements for the secondary field, students are required to meet with one of the concentration advisors to confirm that the courses they have taken count for credit toward the Neuroscience secondary field.

Questions about the secondary field in Neuroscience should be addressed to Dr. Laura Magnotti, the Neuroscience concentration advisor, in BioLabs Room 1082C, 16 Divinity Avenue, and reachable at magnotti@fas.harvard.edu and 617-496-2432. The final form for secondary field credit may be signed by Dr. Laura Magnotti, Dr. Ryan Draft, reachable at draft@fas.harvard.edu and 617-496-9908, or Dr. Kristina Penikis, reachable at kpenikis@fas.harvard.edu.

Philosophy

Philosophy studies many of humanity's fundamental questions: How should we live, what kind of society should we strive toward, what are the limits of human knowledge? What is truth? Justice? Beauty?

These questions are central to our lives, because in much of what we do, we at least implicitly assume answers to them.

Philosophy seeks to reflect on these questions and to answer them in a systematic, explicit, and rigorous way—relying on careful argumentation and drawing from outside fields as diverse as economics, literature, religion, law, mathematics, the physical sciences, and psychology. And while most of the tradition of philosophy is Western, we seek to connect with non-Western traditions like Islam and Buddhism, as well.

Philosophy doesn't just operate at this most abstract of planes. We often investigate more specific issues in our classes.

- What is race, and what does justice require when it comes to race?
- What is gender?
- What are the ethical issues raised by technology in society?
- When and why is punishment justified?
- How should we interpret quantum mechanics?
- How does language play into the constitution of ourselves and our society?
- In what sense are various kinds of facts, like natural and social facts, objective?
- Is the mind best thought of as a computer?
- What are the ethical challenges of climate change?

Philosophical questions are everywhere. If you find yourself drawn to them, studying philosophy in college is likely to be the best opportunity in your life to deeply engage with them. In fact, many concentrators find their way into Philosophy from other disciplines, where they encounter interdisciplinary or foundational questions that can only be addressed through philosophical reflection. And given the small size of the Philosophy Department, concentrators have the rare opportunity to closely engage with dedicated faculty at the top of their fields.

Whether they take just a course or two or end up concentrating in Philosophy, students find studying philosophy to be among the most rewarding intellectual experiences of their college careers. The department offers a rich array of classes to choose from, and students develop their own responses to the philosophical problems that attract them in conjunction with their study of philosophical writing. The department's introductory courses help students to develop their reading, writing, and reasoning skills while acquainting them with broad surveys of major areas and historical periods. The department's more advanced courses focus on more specific topics and allow students to explore their interests in the context of the broad foundation they acquired in the introductory courses.

Harvard Philosophy concentrators have gone on to pursue diverse and fulfilling careers in law, finance and consulting, business, internet start-ups, medicine, journalism, the arts, nonprofit work, education, and academia. The skills that Philosophy teaches students will always be in high demand: the ability to think and write clearly, to bring to light unnoticed presuppositions, to explain complex ideas clearly, to tease out connections and implications,

to see things in a broader context, and to challenge orthodoxy. In short, Philosophy gives students skills that can be applied to any line of work.

The secondary field in Philosophy is designed to offer students both a general introduction to philosophical skills and a more focused exploration of some particular domain of philosophy. The secondary pathways listed below make reference to different areas of Philosophy. Students can find a complete list of which courses count toward each of these areas on the Philosophy Department website at https://philosophy.fas.harvard.edu/concentration.

We offer four different pathways, all of which will appear as "Philosophy" on the transcript:

- General Philosophy.
- Value Theory.
- Contemporary Metaphysics and Epistemology.
- History of Philosophy.

Each pathway consists of six courses (24 credits): (1) a recommended introductory-level course, (2) a tutorial, and (3) four additional courses, one of which can be a related course outside the department. In all cases, the structure is designed to ensure that students have a basic introduction to the subject matter and methodology of philosophy; an intensive discussion-based tutorial in which they have close contact with the instructor and work intensively on their writing; and a selection of upper-level courses that develop the student's skills in the area of their interest.

REQUIREMENTS

General Philosophy: 6 courses (24 credits)

The General Philosophy pathway reflects a selection of courses from across the discipline:

1. PHIL 97: Tutorial I.
2. Three courses covering three of the four areas, as categorized on the Philosophy Department website:
    a. History of Philosophy.
    b. Contemporary, Moral, and Political Philosophy and Aesthetics.
    c. Contemporary Metaphysics and Epistemology, broadly construed.
    d. Logic.
3. One other course in philosophy. An introductory course in the Department (numbered below 91) is preferred, but in consultation with the Director of Undergraduate Studies, students may elect to forego taking an introductory course.
4. One other philosophy course.

Value Theory: 6 courses (24 credits)

The Value Theory pathway focuses on an examination of historical and contemporary theories about the basis and content of such moral and political concepts as the good, obligation, justice, equality, rights, and freedom. This examination also includes issues in aesthetics.

1. PHIL 97: Tutorial I.
2. Three courses in contemporary moral and political philosophy and aesthetics, as categorized on the Philosophy Department website.
3. One other course in philosophy. An introductory course in the department in moral and

political philosophy or aesthetics (numbered below 91) is preferred, but in consultation with the Director of Undergraduate Studies, students may elect to forego taking an introductory course.
4. One other philosophy course.

Contemporary Metaphysics and Epistemology: 6 courses (24 credits)

This pathway examines issues in metaphysics and epistemology, broadly construed, so as to also include the philosophy of language, science, and mind.

1. PHIL 97: Tutorial I.
2. One course in logic.
3. Two courses in metaphysics and epistemology, broadly construed, as categorized on the Philosophy Department website.
4. One other course in philosophy. An introductory course in the department in metaphysics and epistemology, broadly construed (numbered below 91) is preferred, but in consultation with the Director of Undergraduate Studies, students may elect to forego taking an introductory course.
5. One other philosophy course.

History of Philosophy: 6 courses (24 credits)

This pathway is for students interested in a close study of the elements of the history of philosophy.

1. PHIL 97: Tutorial I.
2. Three courses in the history of philosophy, as categorized on the Philosophy Department website.
3. One other course in philosophy. An introductory course in the department in the history of philosophy (numbered below 91) is preferred, but in consultation with the Director of Undergraduate Studies, students may elect to forego taking an introductory course.
4. One other philosophy course.

OTHER INFORMATION

All courses must be taken for a letter grade, and students must earn a C or higher for the course to count toward the secondary field. No more than two courses may be at the introductory level (numbered below 97). Typically, all courses but one will be taken in the Philosophy Department. Approval for “related” courses must be obtained from the Director of Undergraduate Studies.

ADVISING RESOURCES AND EXPECTATIONS

The Director of Undergraduate Studies, Ned Hall (ehall@fas.havard.edu), is available for advice about the program and course selection. The Undergraduate Coordinator, Michael Ricca (michael_ricca@harvard.edu), is also available for information about the program. All students interested in a secondary field are expected to register their interest with the department early on and to have an initial advising conversation with the Director of Undergraduate Studies.

Physics

The goal of the Physics secondary field is to provide students with a quantitative introduction to the workings of the physical world, including the mind-bending but increasingly technologically important mysteries of quantum mechanics. The hierarchical structure of the field of Physics makes it difficult for secondary field students to explore with the breadth and depth required for further work in physics; but the applications of Newtonian mechanics, electricity and magnetism, and waves/optics are so ubiquitous and important, and the concepts of special relativity and quantum mechanics so strange and wonderful, that these courses are far more than simply “consumption” of knowledge. They are designed to transform the way students understand and interact with the physical world.

REQUIREMENTS

Physics: 4 courses (16 credits)

1. One course in electricity and magnetism. An introduction to electricity and magnetism, at the level of PHYSICS 15B, PHYSCI 12B, APPHY 50B, or higher.
2. One course in wave phenomena and/or optics. An introduction to the physics and mathematics of wave phenomena from coupled oscillators to physical optics at the level of PHYSICS 15C or higher.
3. One course in quantum mechanics. A serious introduction to quantum mechanics at the level of PHYSICS 143A or higher, including wave and matrix mechanics, Dirac notation, the operator treatment of angular momentum, the hydrogen atom, and time-independent perturbation theory.
4. One additional Physics course at the 100-level or higher exploring an important field in Physics. For this purpose, Applied Physics courses, and other 100-level courses that count as Physics courses for the Physics concentration may also be applied to the secondary field. Suggested courses include PHYSICS 181, PHYSICS 125, PHYSICS 143B, and PHYSICS 195.

OTHER INFORMATION

Physics courses taken at other institutions may be substituted for substantially equivalent Harvard courses with the permission of the Director of Undergraduate Studies.

Students who substitute more-advanced courses for PHYSICS 15B and/or PHYSICS 15C must complete the lab component of these courses on a pass/fail basis. See the Associate Director of Undergraduate Studies for further information.

No more than one course may be taken pass/fail.

A mathematics background at least at the level of MATH 21A and MATH 21B is the prerequisite for many of the courses in this program.

The prerequisite for the course in electricity and magnetism (PHYSICS 15B, PHYSCI 12B, APPHY 50B) is a mechanics course (PHYSICS 15A, PHYSICS 16, PHYSICS 19, PHYSCI12A, APPHY50A) or the permission of the Director or Associate Director of

Undergraduate Studies.

ADVISING RESOURCES AND EXPECTATIONS

Secondary field students should meet with the Associate Director of Undergraduate Studies, to make sure that they can satisfy the secondary field requirements.

Students will be included with Physics and Chemistry & Physics concentrators in appropriate department meetings and social events if they are making satisfactory progress. Upon completion of the secondary field requirements, the Associate Director of Undergraduate Studies will review and approve the secondary field, confirming that the requirements have been met.

We encourage students interested in Physics as a secondary field to submit their secondary field course plan to the department as soon as possible after they have chosen a primary concentration. We will make every effort to encourage students interested in the secondary field to contact us for advising conversations in their first year.

Psychology

Psychology, as a science of the mind, connects naturally to other fields in the humanities, social sciences, and life sciences. Completion of a secondary field in Psychology can serve as a complement to other concentrations or allow students to explore an independent interest in psychology. The secondary field provides a basic foundation in psychology and its research methods while also permitting a general overview of the field, or a more focused exploration of one subfield or several subfields of Psychology, including experimental psychopathology, social psychology, cognition/brain/behavior, and developmental psychology.

REQUIREMENTS

Psychology: 6 courses (24 credits)

All courses must be taken for a letter grade unless that option is not available.

1. An introductory course: PSY 1: Introduction to Psychological Science (formerly SLS 20), or an approved substitute:
    a. PSY S-1, offered in the Harvard Summer School.
    b. It may be possible to substitute a Psychology AP score of 5 or an IB score of 7, in which case an extra advanced course will be required. Students should contact the Psychology Undergraduate Office at psychology@wjh.harvard.edu to learn more.
2. A statistics course: PSY 1900 or STAT 100, STAT 102, or STAT 104, passed with a grade of C- or higher. Petitions to substitute other quantitative methods courses taken as part of a student's concentration will be considered on a case-by-case basis and are approved only if there is substantial overlap in content with PSY 1900. These petitions should be submitted as early as possible, ideally before enrolling in the alternate course. (Note that Harvard Summer School courses or study abroad courses cannot fulfill this requirement.)
3. A foundational course: At least one foundational course from: PSY 11, PSY 14, PSY 15, PSY 16, PSY 18, SLS 15, NEURO 80 (formerly MCB 80), or MCB 81. (Note that Harvard Summer School courses or study abroad courses cannot fulfill this requirement.)
4. Advanced courses: Three advanced courses in Psychology of the student's choosing, which reflect the student's area(s) of interest, including most courses listed under Psychology in a course search in courses.my.harvard.edu, with the following conditions:
    a. Any of the following courses that are not taken to meet the foundational course requirement may count as advanced courses: PSY 11, PSY 14, PSY 15, PSY 16, PSY 18, SLS 15, NEURO 80 (formerly MCB 80), and MCB 81 (NEURO 80/MCB 80 and MCB 81 may not both be taken).
    b. Only one lab course (from a list on the concentration website at https://undergrad.psychology.fas.harvard.edu/lab-courses) or PSY 910R may count toward this requirement.
    c. Psychology courses that will not meet this requirement are marked in the course description found in courses.my.harvard.edu as not counting toward concentration course credit.
    d. Only one First-Year Seminar, which must be taught by a regular Harvard

Psychology Department faculty member and listed as an approved departmental advanced course at https://undergrad.psychology.fas.harvard.edu/departmental-advanced-courses may count toward this requirement. First-Year Seminars not on the approved list may not count for the secondary field.

5. Additional information:
    a. Psychology counts only a very small number of courses that are from other departments, specifically only counting those that are cross-listed as being in the Psychology Department in a course search in http://courses.my.harvard.edu/ and listed on the Psychology undergraduate website under Departmental Advanced Courses at https://undergrad.psychology.fas.harvard.edu/advanced-courses.
    b. Regarding courses from other departments, students completing the secondary field may not count any of the "expedited non-departmental courses" that are only approved to count as advanced courses for concentrators (see list for courses that do not count at https://undergrad.psychology.fas.harvard.edu/non-departmental-advanced-courses). Students should note that petitions for advanced course credit will not be accepted for the secondary field.
    c. Harvard Summer School Psychology courses may only count toward this requirement if taught by regular Harvard Psychology Department faculty and listed on the concentration website at https://undergrad.psychology.fas.harvard.edu/departmental-advanced-courses as an approved departmental course. No other summer school courses may count.
    d. Courses taken during study abroad may not count for the secondary field unless they are offered through the Harvard Summer School and are on the list of approved departmental advanced courses at https://undergrad.psychology.fas.harvard.edu/departmental-advanced-courses.

OTHER INFORMATION

Students are encouraged to take PSY 1: Introduction to Psychological Science (formerly SLS 20: Psychological Science) as early as possible. Ideally, PSY 1900 or STAT 100, STAT 102, or STAT 104 should be taken before advanced courses, because the courses provide grounding in the analytic tools central to psychology as a science. Foundational courses should be taken after taking PSY 1: Introduction to Psychological Science but prior to any other advanced courses, because these courses provide a solid foundation required in upper-level courses and are often prerequisites for these courses.

All courses must be taken for a letter grade unless that option is not available, and PSY 1900 or STAT 100, STAT 102, or STAT 104 must be passed with a grade of C- or higher.

Enrollment in Psychology advanced courses is often limited, and students pursuing a secondary field in Psychology will ordinarily not be given preferential access to limited-enrollment courses.

ADVISING RESOURCES AND EXPECTATIONS

Students should notify the Psychology Department as early as possible of their intent to pursue a secondary field so that they will be informed of department policies and deadlines. The College deadline for declaring a secondary field in my.harvard is in the student's final term.

Students should review the frequently asked questions on the Psychology Department secondary field website at https://undergrad.psychology.fas.harvard.edu/secondary-field as early as possible to be aware of specific guidelines that apply to the secondary field requirements. General information requests and questions can be sent to the Psychology Undergraduate Office at psychology@wjh.harvard.edu.

Students requiring additional advice about the program or wishing to check on the department's walk-in hours, can find such information posted online at https://undergrad.psychology.fas.harvard.edu/declaring-psychology.

Comparative Study of Religion

Recent global and national political events reinforce the fact that the study of religions is vital to understanding the world. Central problems in a wide range of fields—economics, government, sociology, ethics, history, and many others—can be adequately addressed only by taking religion into account. Competency in religious studies indicates the ability to think critically and with historical and cultural learning about the complicated place of religious motivation, memory, and ritual meaning in national and international affairs. Such skills have become one marker of an educated person who is appropriately prepared for the responsibilities and pleasures of democratic citizenship and leadership.

The Committee on the Study of Religion offers courses on religious traditions from around the world and across history, from ancient to contemporary periods. We also offer a wide range of approaches to the study of religion, including ethnographic studies of contemporary communities, philosophy of religion, historical studies, and close examination of classic texts from major religious traditions.

Additionally, courses from other departments can sometimes count for credit toward a secondary field.

Students have the option of focusing their course work on a particular religious tradition (such as Judaism, Buddhism, Christianity, or Islam), historical complex (such as Religion in the Modern West or South Asian Religion), or approved thematic approaches (such as Religion and Social Science; Religion, Gender, and Sexuality; or Religion and the Arts). Alternatively, students may take a broader approach by selecting six courses (at least two of which must be comparative or methodological) from the approved List of Undergraduate Courses in the Study of Religion and in consultation with the Director of Undergraduate Studies.

REQUIREMENTS

Comparative Study of Religion: 6 courses (24 credits)

1. Two general, methodological, or comparative courses. At least one of these must be an approved introductory or comparative course, or the sophomore tutorial (RELIGION 97).
2. Four other courses approved by the Director of Undergraduate Studies.

OTHER INFORMATION

Students may count one non-letter-graded course taken at Harvard for secondary field credit. Courses from study abroad, Harvard Summer School, or other Harvard Schools may be counted toward the secondary field, with the advance approval of the Director of Undergraduate Studies. The decision whether to grant students pursuing a secondary field in Religion preference in access to seminars will be left to individual professors.

ADVISING RESOURCES AND EXPECTATIONS

Students interested in pursuing a secondary field in the Comparative Study of Religion should consult the secondary field advisor in the Study of Religion, the Director of Undergraduate Studies Courtney Bickel Lamberth, at lamberth@fas.harvard.edu.

Romance Languages and Literatures

Undergraduates who choose a secondary field in Romance Languages and Literatures (RLL) discover the literatures, cultures, and critical approaches of societies worldwide where French, Italian, Portuguese, Spanish, and Catalan are spoken. RLL offers language courses from the beginning to advanced levels, as well as opportunities for accelerated work and study abroad. The heart of the secondary field consists of courses about literature and society taught in French, Italian, Portuguese, and Spanish. Faculty also offer advanced courses in English on special topics that involve more than one language tradition. These courses are listed as Romance Studies and count toward the secondary field.

RLL offers the secondary field in four major areas of study (there is no secondary field in the Romance Studies track):

1. French
2. Italian
3. Portuguese
4. Spanish

Each of these areas of studies requires five courses (20 credits). The requirements for the four areas are similar, except that in Italian and Portuguese, two advanced language courses may count toward the secondary field. This difference takes into account the fact that students in Italian and Portuguese are more likely to have started their language study in college.

While RLL requires certain levels of courses, the department does not impose any thematic limits within each special field. Students may focus on a particular period, genre, or cultural issue, or they may explore a variety of areas their field. They may also fulfill one of the requirements for the secondary field with one course in a related field offered in another program or department (for example, a course on the history of Latin America or on Italian Renaissance art).

REQUIREMENTS

French: 5 courses (20 credits)

1. A maximum of one French course at the 40- to 60-level.
2. A maximum of two French courses at the 70- to 80-level.
3. At least two French courses at the 100-level or above. One of these two courses may be replaced by a Romance Studies course.
4. At least three courses must be taught in French.

Students who plan to pursue a secondary field in French are required to meet at least once by the beginning of the spring semester of junior year to discuss their choice of courses with the Undergraduate Advisor in French, Professor Annabel Kim (annabel_kim@fas.harvard.edu).

Italian: 5 courses (20 credits)

1. A maximum of two Italian courses at the 40- to 60-level.
2. At least three Italian courses at the 70-level or above, at least two of which must be at

the 100-level or above. One of these three courses can be replaced by a Romance Studies course.
3. At least three courses must be taught in Italian.

Students who plan to pursue a secondary field in Italian are required to meet at least once by the beginning of the spring semester of junior year to discuss their choice of courses with the Undergraduate Advisor in Italian, Professor Ambrogio Camozzi Pistoja (acpistoja@fas.harvard.edu).

Portuguese: 5 courses (20 credits)

1. A maximum of two Portuguese courses at the 40- to 60-level.
2. At least three Portuguese courses at the 70-level or above, at least two of which must be at the 100-level or above. One of these three courses may be replaced by a Romance Studies course.
3. At least three courses must be taught in Portuguese.

Students who plan to pursue a secondary field in Portuguese are required to meet at least once by the beginning of the spring semester of junior year to discuss their choice of courses with the Undergraduate Advisor in Portuguese, Professor Josiah Blackmore (jblackmore@fas.harvard.edu).

Spanish: 5 courses (20 credits)

1. A maximum of one Spanish course at the 40- to 60-level.
2. A maximum of two Spanish courses at the 70- to 80-level.
3. At least two Spanish courses at the 100-level or above. One of these two courses may be replaced by a Romance Studies course.
4. At least three courses must be taught in Spanish.

Students who plan to pursue a secondary field in Spanish are required to meet at least once by the beginning of the spring semester of junior year to discuss their choice of courses with the Undergraduate Advisor in Spanish, Dr. María Luisa Parra (parra@fas.harvard.edu).

OTHER INFORMATION

Secondary field students can take any RLL course offered in their chosen track (from levels 40 to 200) except for the senior tutorial (99). Students in Italian and Portuguese may enroll in 91R: Supervised Reading and Research, as needed.

All courses must be taken for a letter grade, with the exception of an approved First-Year Seminar. Of the five required courses, one may be in a related field offered in another department; two courses may be taken abroad when approved by both the Office of International Education and RLL for Harvard and concentration credit. Courses may also be taken at the Harvard Summer School. Students will need their RLL advisor's permission for these three options.

ADVISING EXPECTATIONS FOR SECONDARY FIELD STUDENTS

Students who plan to pursue a secondary field in Romance Languages and Literatures are required to meet at least once for an advising session with the Undergraduate Advisor in their

track by the beginning of the spring semester of junior year. The Undergraduate Advisor, Director of Undergraduate Studies, or the Undergraduate Program Coordinator must approve the final application for secondary field credit.

For more information, students may also contact the Undergraduate Program Coordinator, Cathy Downey, at cdowney@fas.harvard.edu.

Russia, Eastern Europe, and Central Asia

The secondary field in Regional Studies: Russia, Eastern Europe, and Central Asia (REECA) offers students the opportunity to pursue interdisciplinary work on the history and society of this world region. The field requirements are based on the premise that when studying society and culture, the integration of various academic disciplines allows insights unobtainable within the confines of a single discipline. While the field may integrate the study of language, literature, and culture, the primary emphasis here is on the social sciences, including history.

REQUIREMENTS

Russia, Eastern Europe, and Central Asia: 5 courses (20 credits)

1. A minimum of three courses (12 credits) must be in the social sciences (for example, Anthropology, Economics, Government, History).
2. A minimum of three courses (12 credits) must be regular departmental courses (i.e., not General Education courses or First-Year Seminars).
3. The five courses must be distributed across at least two different disciplines or departments.
4. One course (four credits) of relevant language study may count toward the secondary field. For Russian, students may count any course at the level of RUSS 103 or higher. For non-Russian languages of the region, students who complete at least one full year (eight credits) of study may count four credits toward the secondary field.

OTHER INFORMATION

To browse region-related courses that may be eligible for secondary field credit, enter “reeca” in the course search field on courses.my.harvard.edu.

All courses must be taken for a letter grade and must be completed with a grade of B- or above, with the exception of First-Year Seminars, which may be applied toward the secondary field with a grade of SAT. Credit for courses from Harvard Summer School and other Harvard faculties may be granted upon petition. Study abroad is encouraged, and four units of study abroad credit may be applied toward the secondary field, with prior approval of the REECA academic advisor. Students should note that the Davis Center cannot guarantee students pursuing a secondary field preferential access to limited-enrollment courses.

ADVISING RESOURCES AND EXPECTATIONS

Email the REECA Coordinator at reeca@fas.harvard.edu for advising on the program and course selection, as well as for referrals to individual faculty as needed. Students are also encouraged to sign up for the Davis Center mailing list to stay abreast of co-curricular activities related to the region.

Slavic Languages and Literatures

The Department of Slavic Languages and Literatures provides a broad array of courses in the languages, literatures, and cultures of Russia, Ukraine, Poland, the Czech Republic, Bosnia, Croatia, and Serbia. For a secondary field, we offer two options: Central European Studies and Russian Studies. Both require students to take five related courses and offer ample scope for interdisciplinary and comparative work. We offer students the chance to work closely with Slavic faculty to develop a program of study suited to their own interests, rather than just an accumulation of five loosely related courses. For this reason, we ask that interested students notify the Director of Undergraduate Studies as soon as possible so that they can begin work on their program of study.

REQUIREMENTS

Central European Studies: 5 courses (20 credits)

1. At least three courses in Central European literature and culture (broadly speaking, Ukrainian, Polish, Czech, or Bosnian-Croatian-Serbian) in the Slavic Department.
2. Up to two thematically relevant courses offered by departments such as History, German, Government, Literature, Jewish Studies/Near Eastern Languages and Civilizations (NELC), Social Studies, and Visual and Environmental Studies (VES) with the approval of the Slavic Department's Director of Undergraduate Studies.
3. One language course in Ukrainian, Polish, Czech, or Bosnian-Serbian-Croatian may be counted instead of one of the courses in item 2.

Russian Studies: 5 courses (20 credits)

1. At least three courses in Russian literature and culture from the Slavic Department, including at least one survey course in Russian literature.
2. Up to two thematically relevant courses offered by departments such as History, German, Government, Literature, Jewish Studies/NELC, Social Studies, and Art, Film, and Visual Studies (AFVS) with the approval of the Slavic Department's Director of Undergraduate Studies.
3. One language course in Russian may be counted instead of one of the thematically relevant courses in item 2.

OTHER INFORMATION

All courses (except for First-Year Seminars) must be letter-graded. Any number of relevant General Education courses, as well as one First-Year Seminar may be counted, with the approval of the Director of Undergraduate Studies. Students may use Harvard-approved study abroad credit to count for up to two courses toward the secondary field; they should consult with the Director of Undergraduate Studies before going abroad to make sure their proposed courses will be eligible for their secondary field program. Students are required to take a minimum of two 100-level courses.

ADVISING RESOURCES AND EXPECTATIONS

All students interested in pursuing a secondary field from the Slavic Department should contact the Director of Undergraduate Studies (DUS) at SlavicDUS@fas.harvard.edu as soon as possible to discuss their program of study. The DUS will serve as the primary advisor for students in the secondary field, although students are also welcome to consult with other Slavic faculty, and the expectation is that students monitor their own progress toward fulfillment of the requirements.

Sociology

All social life is patterned. By studying these patterns, sociologists help us better understand—and influence—social outcomes. Students may wish to supplement their primary field of instruction with a secondary in sociology to learn how their central interests intersect with social patterns. For example, students in the environmental sciences may wish to study patterns of social inequality and poverty to better understand why environmental disasters affect some communities more harshly than others, or students pursuing a career in business or finance may wish to better understand how social patterns of race or gender shape inclusivity and productivity in the workplace.

REQUIREMENTS

Sociology: 6 courses (24 credits)

1. SOCIOL 1000: Introduction to Sociology. (Students may petition to have this requirement satisfied with another course in the SOCIOL 1000–1089 range).
2. SOCIOL 97: Tutorial in Social Theory, an introduction to sociological theory and the social construction of knowledge.
3. SOCIOL 1128: Methods of Social Science Research, a basic introduction to methods.
4. Three concentration electives, one of which must be an advanced-level course (SOCIOL 1100 or above).

OTHER INFORMATION

One of the three concentration electives may be taken pass/fail or SAT/UNS; SOCIOL 97, and SOCIOL1128 must be taken for letter grades. Letter-graded courses must be passed with a grade of C+ or higher in order to receive credit toward completion of the secondary field. Courses taken abroad will not be counted towards a secondary field.

Although junior tutorials are normally only open to concentrators, secondary field students may be allowed to enroll in junior tutorials for credit as electives. Special permission from the Director of Undergraduate Studies is required for secondary field students to enroll in junior tutorials.

ADVISING RESOURCES AND EXPECTATIONS

For information about the secondary field, students should contact the Undergraduate Program Administrator. For advising, they should contact Dr. Emily Fairchild, Associate Director of Undergraduate Studies.

Contact information can be found at https://sociology.fas.harvard.edu/pages/advising.

South Asian Studies

The secondary field in South Asian Languages, Literatures, and Cultures or South Asian Studies requires five courses.

REQUIREMENTS

South Asian Languages, Literatures, and Cultures or South Asian Studies: 5 courses (20 credits)

1. Up to two courses at any level in a South Asian language, and up to one additional language course on special topics taught by faculty in the Department of South Asian Studies. Note: The secondary field does not require any language courses.
2. One 100-level non-language course in South Asian Studies. This requirement may be satisfied by a departmental course or a course with a South Asia emphasis offered in another department, with the approval of the Director of Undergraduate Studies.
3. Additional non-language courses in South Asian Studies to complete a total of five courses. These courses may include departmental offerings and courses with a South Asia emphasis offered in other departments or as General Education courses, with the approval of the Director of Undergraduate Studies.
4. Note: Courses may not be double-counted toward a secondary field in South Asian Studies and a language citation in a South Asian language.

OTHER INFORMATION

Study abroad programs of a summer, a semester, or a year may be approved for credit toward the secondary field. First-Year Seminars may be counted for the secondary field. Other courses for the secondary field should be letter-graded.

ADVISING RESOURCES

The Director of Undergraduate Studies, Parimal Patil, reachable at ppatill@fas.harvard.edu and 617-496-2468, is available for advising and information.

Statistics

The secondary field in Statistics gives a foundation in probability and statistics, with possible applications to a wide variety of fields where there is randomness, uncertainty, or data.

REQUIREMENTS

Statistics: 4 courses (16 credits)

1. STAT 110: Introduction to Probability.
2. STAT 111: Introduction to Theoretical Statistics.
3. Two additional courses in Statistics, with course numbers of at least 100 or above. Only one Statistics course numbered between 100 and 107 (inclusive) can be counted for concentration credit.
4. COMPSCI 109A, COMPSCI 109B, COMPSCI 181 (or MIT 6.036 or MIT 6.390), APCOMP 209A, APCOMP 209B, and MCB 112 can also be counted toward this requirement.

OTHER INFORMATION

All courses must be letter-graded. Harvard Summer School courses and study abroad courses do not ordinarily count toward the requirements. A minimum grade of C- is required in all secondary field courses.

Calculus (at the level of MATH 1B), and for some courses multivariable calculus and/or linear algebra (at the levels of MATH 21A and MATH 21B, respectively), is a prerequisite for many Statistics courses numbered 110 and above.

ADVISING RESOURCES AND EXPECTATIONS

Interested students should contact mailto:the Undergraduate Program Administrator, Lorna Blocksma, at lblocksma@fas.harvard.edu. Further information is available on the Statistics concentration webpage at http://statistics.fas.harvard.edu/pages/undergraduate-statistics-general-information.

Theater, Dance & Media

Theater, Dance & Media (TDM) at Harvard includes the study and practice of theater, dance, and media (media is taught primarily insofar as it relates to the performing arts). The goal of this secondary field is to encourage and make possible a mix of studio training and text-based academic course work. Many departments and degree programs offer courses centered on theater, dance, and media, and these courses represent a variety of approaches and emphases on the study of the history and aesthetics of these performing arts. Students electing a secondary field in Theater, Dance & Media are urged to choose complementary offerings that make a coherent unit of their combined scholarly and practical studies.

REQUIREMENTS

Theater, Dance & Media: 5 courses (20 credits)

1. At least two practice-based or studio courses (acting, directing, dance, choreography, dramaturgy, design, etc.), most of which are offered under TDM in courses.my.harvard.edu.
2. At least two courses focused on critical and scholarly approaches from either the courses sponsored by TDM or from cross-listed courses.
3. One additional course from either course list.

OTHER INFORMATION

Pass/fail: With the exception of approved First-Year Seminars, all courses must be taken for a letter grade. Grades should be B- or above.

Summer school/study abroad: Students may petition the Committee on Degrees in Theater, Dance and Media to have Harvard Summer School courses or study abroad courses count toward the secondary field by submitting full descriptions of these courses to the Director of Undergraduate Studies (DUS) of TDM for approval.

Limited-enrollment courses: Secondary field students will not be granted preferential access to limited-enrollment courses. Individual faculty members will determine the priority of enrollment.

ADVISING RESOURCES AND EXPECTATIONS

Students pursuing a secondary field in TDM are urged to seek out faculty members of the Committee on Degrees in Theater, Dance and Media for advice on their specific course choices.

For more information on the secondary field and for advising, students should visit the TDM website (https://tdm.fas.harvard.edu/) or email tdm@fas.harvard.edu.

Translation Studies

The secondary field in Translation Studies offers students the opportunity to undertake a sustained study of the theory and practice of translation. More than simply examining how meaning is transferred from one language to another, Translation Studies opens up a space to examine linguistic encounter and exchange across languages, as well as across multiple cultures and disciplines. Students who pursue a secondary field in Translation Studies will root their translation work within language study, but they will be able to expand their engagement with the art and craft of translation to encompass questions raised by different genres, media, and disciplinary questions and practices.

Housed in the Department of Comparative Literature, the secondary field in Translation Studies allows students to deepen their interaction with a non-English language, to take courses across departments that consider a range of theoretical issues raised by the process of translation (for example, problems of language and style, issues of power dynamics in the uneven global landscape, and strategies for re-inscribing elements of a non-English text within an American or Anglophone context), and to engage in a capstone translation project.

Students who pursue a secondary field in Translation Studies must be sufficiently proficient in a non-English language to translate a non-English work into English. This proficiency can be demonstrated through (1) the completion of one upper-level language course or (2) an hourlong translation exam administered by the Department of Comparative Literature. If a student wishes to work in a non-English language not offered at Harvard, every effort will be made to find local resources to support the interest.

The secondary field in Translation Studies will likely be of particular interest to students concentrating in the humanities; however, the participation of students from outside of the humanities who are interested in translation and intercultural communication is strongly encouraged as well.

REQUIREMENTS

Translation Studies: 5 courses (20 credits)

1. One to two foundational courses offered in the Department of Comparative Literature on the history and/or theory of translation or the transnational intersection of languages and literatures (for example, COMPLIT 108: Translating World Literature, COMPLIT 109: On Translation, COMPLIT 264: Thinking and Writing Transculturally, and COMPLIT 281: Rhetoric, Imitation, Translation).
2. One to two upper-level language courses focusing on translation into and/or from a non-English language.
3. One to two courses that consider translational issues from a variety of subjects or disciplines (for example, COMPSCI 287R: Deep Learning for NLP, First-Year Seminar 36G: The Creative Work of Translating, SP 150: Migration and Border Crossing in Film and Photography, and TDM 147L: The Process of Inter-Media and Choreographic Exchange).
4. One capstone project involving the translation of a non-English work into English, with critical commentary and introduction. Students may either participate in a four-credit semester-long workshop led by members of the Comparative Literature faculty in which

they will develop their project and present their work in progress or in one of the translation courses offered in Comparative Literature that does not fulfill another requirement.

5. In addition to the required course work, students pursuing a secondary field in Translation Studies will be encouraged to participate in various local co-curricular seminars, workshops, and presentations addressing issues in the field (for example, the Rethinking Translation Seminar at the Mahindra Humanities Center, the Boston University lecture series on translation, and Woodberry Poetry room events).

OTHER INFORMATION

All courses, with the exception of First-Year Seminars, which are graded SAT/UNS, must be taken for a letter grade and passed with a B- or better. Students pursuing a secondary field in Translation Studies may take one First-Year Seminar for credit.

Harvard-approved study abroad courses taken either during term time or through a Harvard Summer School study abroad program may count toward the secondary field in Translational Studies with approval from the Director of Undergraduate Studies.

Students may double-count one course for concentration credit and for secondary field credit.

ADVISING RESOURCES AND EXPECTATIONS

The Director of Undergraduate Studies (DUS), Dr. Sandra Naddaff (snaddaff@fas.harvard.edu), will oversee the secondary field in Translation Studies, and students are encouraged to consult her for advice and information. They should also consult the Translation Studies link on the Comparative Literature Department website, which lists relevant courses and other information and events of interest.

Students should declare a secondary field in Translation Studies through the “My Program” section of my.harvard.edu as soon as possible, but no later than the course registration deadline of the first semester of senior year. All students pursuing a secondary field in Translation Studies should meet with the DUS in the semester before graduation to ensure that they are on track to fulfill the necessary requirements.

Studies of Women, Gender, and Sexuality

The study of gender and sexuality has long constituted a vibrant and engaging arena for interdisciplinary work and intellectual inquiry. At the heart of this field is the assertion that gender and sexuality are fundamental categories of social organization and power that are inseparable from race, ethnicity, class, nationality, and other categories of difference.

The concentration in Studies of Women, Gender, and Sexuality (WGS) brings together a wide range of academic fields in the humanities, social sciences, and sciences (including history, literature, visual studies, anthropology, sociology, ethnic studies, political science, psychology, and biology, to name just a few). As an interdisciplinary field of study, WGS pays close attention to how social norms have changed over time and how they vary across cultures. The concentration also actively investigates the ways in which ideas about gender and sexuality have shaped public policy, civil rights, health care, religion, education, and the law, as well as the depiction of gendered embodiment in art, literature, and the popular media. WGS courses are characterized by a strong commitment to critical thinking, as well as by a spirit of open and sustained intellectual inquiry. Students take one foundation course in the history, methodology, or theory of gender and sexuality studies. The flexibility of the four remaining course requirements allows students to sample from the rich course offerings in WGS while developing core areas of interest.

REQUIREMENTS

Studies of Women, Gender, and Sexuality: 5 courses (20 credits)

1. One of the following courses: WOMGEN 1200: Historical Approaches or WOMGEN 1210: Theories of Gender and Sexuality.
2. Four other courses drawn from WGS offerings or from the list of courses that count for concentration credit.

OTHER INFORMATION

Students may petition to have one course from another department count toward the secondary field. Petition forms are available in the WGS office.

Students may petition to have a First-Year Seminar, a course from study abroad, or a course from Harvard Summer School count for the secondary field. If the First-Year Seminar or the Summer School course is taught by a faculty member with an appointment in WGS, the course counts as a “WGS course.” If the course is not taught by a WGS faculty member, it counts as the student’s one non-WGS course; the remaining courses must be drawn from WGS course offerings.

No more than one course can be taken pass/fail or SAT/UNS. There is no grade minimum (as long as it is a passing grade) for the courses taken for secondary field credit.

Students pursuing a secondary field in WGS receive preferential access to limited-enrollment courses. Concentrators are admitted first, but secondary field students are the next preferred group.

ADVISING RESOURCES AND EXPECTATIONS

Students who are considering a secondary field in Studies of Women, Gender, and Sexuality should meet with the Director of Undergraduate Studies, Caroline Light, reachable at clight@fas.harvard.edu and 617-495-1964, or the Associate Director of Undergraduate Studies, Linda Schlossberg, reachable at schloss@fas.harvard.edu and 617-496-9853, as soon as possible. Students should also inform the program using the Secondary Fields Web Tool in order to receive preferential access to limited-enrollment courses. Secondary field students are required to have an advising meeting with the Director or Assistant Director of Undergraduate Studies by the end of their junior year to discuss their Plan of Study.

Students should note that they are responsible for observing the Registrar's deadlines for filing secondary field forms in order to receive institutional acknowledgment of their completion of a secondary field. Students should consult the calendar at https://registrar.fas.harvard.edu/topic/calendar to determine appropriate deadlines.

CERTIFICATE FOR CIVIC ENGAGEMENT

CERTIFICATE FOR CIVIC ENGAGEMENT

The Certificate for Civic Engagement supports and recognizes students who integrate academic study with sustained public service to become more informed, engaged, and effective citizens. Students combine coursework that includes rigorous analysis of social issues and practices designed to address them with direct involvement in community groups and/or policy and advocacy organizations. They are encouraged to relate what they learn in these different settings to their personal commitments and professional goals after graduation.

The certificate is awarded to students who have completed all three required elements: (1) 12 credits (generally 3 courses) from an approved list, including at least one course designated as an engaged scholarship course; (2) a practicum involving direct service, policy and/or advocacy work totaling at least three-hundred hours; (3) a capstone retreat that brings certificate participants together to reflect on what they have learned across their coursework and practicum and consider how they will build on their learning as engaged citizens after graduation.

Further information about the Certificate for Civic Engagement can be found on the website for the Office of Undergraduate Education (OUE) at https://oue.fas.harvard.edu.

LANGUAGE CITATIONS

LANGUAGE CITATIONS

Advanced training in a language is a valuable component of a liberal arts education; it allows students to employ another language in cultural exchange, research, and work. To foster such training, many of the “language and literature” and “language and civilization” departments offer programs in which undergraduates may earn a citation in a modern or ancient language. Those languages in which citations are offered and the specific requirements for each are listed below. The award of a language citation will be noted on the transcript at the time degrees are voted and will be included in the Commencement program. Students will also receive printed citations along with their diplomas.

Each language citation program consists of four courses (4 credits per course or equivalent) of language instruction beyond the first-year level and/or courses taught primarily in the language. At least two of these courses must be at the third-year level or beyond. Appropriate courses taken in approved programs of study out of residence for which the student receives Harvard degree credit may be counted toward a citation. Courses that satisfy the requirements for a citation may also be counted toward the distribution requirement, secondary field, and/or concentration requirements, as appropriate.

Students must complete all courses to count toward the citation with letter grades of B- or better. Regardless of the level at which a student enters a language program at Harvard, all citations require the completion of four courses (4 credits per course or equivalent) taken at Harvard or counted for Harvard degree credit. Language courses that meet these criteria but are bracketed on the transcript may be counted toward a language citation. Some programs require that courses be taken in a particular sequence; students should consult the relevant language advisors for more information.

Students who plan to satisfy the requirements for a language citation must complete a (https://registrar.fas.harvard.edu/files/fas-registrar/files/flc_e-signature_3.pdf) with the Head Tutor or Director of Undergraduate Studies of the relevant department and file this form with the Registrar no later than the deadline for degree applications in their final term in the College. Students are encouraged to file their intentions to satisfy the requirements for a language citation as early as the declaration of a concentration so that they may benefit from advising by the department that will provide the recognition. Students will benefit from planning ahead and taking courses in consecutive terms, so as not to lose ground between language courses; this is especially important at the early stages of language study. Students planning their courses around study undertaken while abroad must consult with relevant advisors and obtain pre-approval of all courses they hope to count toward the citation, as such courses must be taken for Harvard degree credit. Those students who later decide not to complete the requirements for a language citation are asked to complete a new Plan of Study indicating this fact in order to inform the relevant department and the Registrar.

Concentrators, including joint concentrators, in African and African American Studies, the Classics, East Asian Studies, Germanic Languages and Literatures, Near Eastern Languages and Civilizations, Romance Languages and Literatures, Slavic Languages and Literatures, or South Asian Studies, whose concentration work is built on a particular language or set of languages, are not also eligible for citations in those languages.

Afrikaans

A citation in Afrikaans requires the equivalent of four courses in Afrikaans above the introductory level, including the following: AFRIKAANS BA, AFRIKAANS BB, AFRIKAANS 101AR, and AFRIKAANS 101BR.

Other advanced courses in Afrikaans taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Afrikaans) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

American Sign Language (ASL)

A citation in ASL requires four courses: LING 73C, LING 73D, LING 90A, and LING 90B. Language courses at or above this level of ASL taken out of residence for Harvard degree credit may be substituted for these courses only after assessment via consultation with the ASL Language Coordinators.

Amharic

A citation in Amharic requires the equivalent of four courses in Amharic above the introductory level, including the following: AMHARIC BA, AMHARIC BB, AMHARIC 101AR, and AMHARIC 101BR.

Other advanced courses in Amharic taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Amharic) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last at least six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Classical Arabic

A citation in Classical Arabic requires four of the following courses: ARABIC BA, ARABIC 130A, ARABIC 130B, ARABIC 140, ARABIC 141, ARABIC 160R, ARABIC 240R, ARABIC 245R, and ARABIC 248R.

Other courses taught primarily in Arabic or courses taken out of residence for Harvard degree credit may be substituted for the above courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Modern Standard Arabic

A citation in Modern Standard Arabic requires four of the following courses, including at least two from the third-year level or beyond:

1. Second-year level: ARABIC 110 and ARABIC BB.
2. Third-year level or beyond: ARABIC 131A, ARABIC 131B, ARABIC 241A, and ARABIC 241B.

Other courses taught primarily in Arabic or courses taken out of residence for Harvard degree credit may be substituted for the above courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Egyptian Arabic

A citation in Egyptian Arabic requires the equivalent of four courses in Egyptian Arabic above the introductory level, the courses include the following: EGYPTIAN ARABIC BA, EGYPTIAN ARABIC BB, EGYPTIAN ARABIC 101AR, and EGYPTIAN ARABIC 101BR.

Other advanced courses in Egyptian Arabic taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Egyptian Arabic) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Sudanese Arabic

A citation in Sudanese Arabic requires the equivalent of four courses in Sudanese Arabic above the introductory level, including the following: SUDANESE ARABIC BA, SUDANESE ARABIC BB, SUDANESE ARABIC 101AR, and SUDANESE ARABIC 101BR.

Other advanced courses in Sudanese Arabic taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Sudanese Arabic) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Armenian

A citation in Armenian requires the following four courses: ARMEN BA, ARMEN BB, ARMEN CA, and ARMEN CB.

Courses taken out of residence for Harvard degree credit may be substituted for two of these four courses with permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Bosnian, Croatian, and Serbian (BCS)

A citation in Bosnian, Croatian, and Serbian requires four courses beyond the elementary level (beyond the A-level courses BCS AA-AB). Typically, the citation consists of two semesters of Intermediate BCS (BCS BA-BB) and two semesters of Advanced BCS (BCS CR).

Courses taken out of residence (language study abroad) for Harvard degree credit or SLAVIC 91R (if conducted in BCS) may be substituted for these courses with the permission of the Director of the Slavic Language Program or the Director of Undergraduate Studies for the Slavic Languages and Literatures concentration.

Catalan

Catalan may not be offered every year. Consult the Director of Language Programs in Romance Languages and Literatures for information regarding a citation in Catalan.

Chinese

A citation in Chinese requires four courses beyond the first-year level. Students choose courses from the following list; at least two must be at the third-year level or beyond:

1. Second-year level: CHNSE 120A, CHNSE 120B, and CHNSE 123XB.
2. Third-year level or beyond: CHNSE 130A, CHNSE 130B, CHNSE 130XA, CHNSE 130XB, CHNSE 140A, CHNSE 140B, CHNSE 140XA, CHNSE 140XB, CHNSE 150A, CHNSE 150B, CHNSE 163, CHNSE 166R, CHNSE 168R, and CHNSE 187.

Note that CHNSE BA, CHNSE BB, and CHNSE BX do not count for a language citation.

Other courses taught primarily in Mandarin Chinese or language courses taken out of residence for Harvard degree credit may be substituted for the above courses only after assessment via a Chinese placement test and with the permission of the East Asian Language Coordinator (eal@fas.harvard.edu).

Students who plan to satisfy the requirements for a language citation in Chinese must submit a petition via my.harvard to be reviewed and approved by the language Program Manager, and reachable at eal@fas.harvard.edu.

Literary Chinese

CHNSE 106A, CHNSE 106B, CHNSE 107A, and CHNSE 107B.

More-advanced courses taken out of residence for Harvard degree credit may be substituted for these courses with the permission of the East Asian Language Coordinator (eal@fas.harvard.edu).

Students who plan to satisfy the requirements for a language citation in Literary Chinese must submit a petition via my.harvard to be reviewed and approved by the language Program Manager, and reachable at eal@fas.harvard.edu.

Czech

A citation in Czech requires four courses beyond the elementary level (beyond the A-level courses CZCH AA-AB). Typically, the citation consists of two semesters of Intermediate Czech (CZCH BA-BB) and two semesters of Advanced Czech (CZCH CR). CZCH 112: Readings in Czech Literature and Culture also counts toward the language citation.

Courses taken out of residence (language study abroad, including the Harvard Summer Program in Prague) for Harvard degree credit or SLAVIC 91R (if conducted in Czech) may be substituted for these courses with the permission of the Director of the Slavic Language Program or the Director of Undergraduate Studies for the Slavic Languages and Literatures concentration.

Danish

A citation in Danish requires two courses beyond beginning Danish (SCAND 90RA-C) and two further courses conducted in Danish. These courses may consist of any tutorial in Danish, Supervised Reading and Research conducted in Danish (SCAND 91R), or courses taken out of residence for Harvard degree credit and approved by the Director of Undergraduate Studies in Scandinavian.

Finnish

A citation in Finnish requires two courses beyond beginning Finnish (SCAND 90RA-C) and two further courses conducted in Finnish. These courses may consist of any tutorial in Finnish, Supervised Reading and Research conducted on Finnish (SCAND 91R), or courses taken out of residence for Harvard degree credit and approved by the Director of Undergraduate Studies in Scandinavian.

French

A citation in French requires four of the following courses: FRENCH 20, FRENCH 30, FRENCH 40, FRENCH 50, and/or any French course at levels 60 or 79, 80, 100, or 200 conducted in French. Note: Courses numbered 20–50 must be taken in numerical order; courses 60–200 may be taken in any order.

Other courses taught primarily in French or a maximum of two courses taken out of residence and approved for Harvard degree credit (i.e., study abroad) may be substituted for the above required courses with the permission of the undergraduate advisor in French or the Director of Language Programs for Romance Languages and Literatures.

Students who plan to satisfy the requirements for a language citation in French must complete a Language Citation Study Plan by fall of their senior year and submit it to Katherine Killough, Language Program Coordinator in Romance Languages and Literatures, Boylston Hall 436, reachable at killough@fas.harvard.edu and 617-495-2524.

German

A citation in German requires four courses from the following: GERMAN 20A, GERMAN 20B, any 60-level German course, GERMAN 101, GERMAN 102, and any 100-level or 200-level

course conducted in German. GERMAN 20AB earns eight credits. Other courses taught primarily in German or courses taken out of residence for Harvard degree credit may be substituted for the above courses with the permission of the Director of Undergraduate Studies in German.

Gikuyu

A citation in Gikuyu requires the equivalent of four courses in Gikuyu above the introductory level selected from among the following: GIKUYU BA, GIKUYU BB, GIKUYU 101AR, and GIKUYU 101BR.

Other advanced courses in Gikuyu taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Gikuyu) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Greek

A citation in Greek requires four courses chosen from the following: GREEK 3 and any 10 or 100-level Greek course, including those in Byzantine Greek. At least two of the courses must be 100-level.

Other advanced courses or courses taken out of residence for Harvard degree credit may be substituted for one or more of the above with the permission of the Senior Preceptor in Ancient Greek and Classical Latin, Dr. Ivy Livingston (livings@fas.harvard.edu).

Modern Greek

A citation in Modern Greek requires four courses (or equivalent) chosen from the following: MODGRK BA, MODGRK BB, MODGRK 10, MODGRK 100, or any other 100-level course in which the reading is done in Modern Greek. Two of these courses must be at the 100-level.

Other advanced courses or courses taken out of residence for Harvard degree credit may be substituted for one or more of the above with the permission of Professor Panagiotis Roilos (roilos@fas.harvard.edu).

Gullah

A citation in Gullah requires the equivalent of four courses in Gullah above the introductory level, including the following: GULLAH BA, GULLAH BB, GULLAH 101AR, and GULLAH 101BR.

Other advanced courses in Gullah taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Gullah) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Classical Hebrew

A citation in Classical Hebrew requires four of the following courses: CLAS-HEB 120A, CLAS-HEB 120B, CLAS-HEB 130AR, CLAS-HEB 130BR, HEBREW 150A, HEBREW 150B, HEBREW 153, HEBREW 165, HEBREW 168, HEBREW 171, HEBREW 174, and HEBREW 176.

More-advanced courses or courses taken out of residence for Harvard degree credit may be substituted for these courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Modern Hebrew

A citation in Modern Hebrew requires four of the following courses: MOD-HEB 120A, MOD-HEB 120B, MOD-HEB 130R, MOD-HEB 131R, and NEC 91R if focused on contemporary Israeli literature and culture and conducted in modern Hebrew at the third-year level or beyond.

Courses taken out of residence for Harvard degree credit may be substituted for two of these four courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Hindi-Urdu

A citation in Hindi-Urdu requires the equivalent of four terms selected from among the following courses: HIND-URD 102 (a full course), HIND-URD 103A, HIND-URD 103B, HIND-URD 104, HIND-URD 105R, and HIND-URD 106.

Courses taken out of residence for Harvard degree credit or other advanced courses may be substituted with the permission of the Director of Undergraduate Studies for South Asian Studies.

Icelandic

A citation in Icelandic requires two courses beyond beginning Icelandic (SCAND 90R A-C) and two further courses conducted in Icelandic. These courses may consist of any tutorial in Icelandic, Supervised Reading and Research conducted on Icelandic (SCAND 91R), or courses taken out of residence for Harvard degree credit and approved by the Director of Undergraduate Studies in Scandinavian.

Igbo

A citation in Igbo requires the equivalent of four courses in Igbo above the introductory level, including the following: IGBO BA, IGBO BB, IGBO 101AR, and IGBO 101BR.

Other advanced Igbo courses taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Igbo) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American

Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Italian

A citation in Italian requires four of the following courses: ITAL 20, ITAL 30, ITAL 40, ITAL 50, and/or any Italian course at levels 60, 70, 80, 100, or 200 conducted in Italian. (Note: Courses numbered 20–50 must be taken in numerical order; courses numbered 60–200 may be taken in any order.)

Other courses taught primarily in Italian or a maximum of two courses taken out of residence and approved for Harvard credit (i.e., study abroad courses) may be substituted for the above courses with the permission of the undergraduate advisor in Italian or the Director of Language Programs for Romance Languages and Literatures.

Students who plan to satisfy the requirements for a language citation in Italian must complete a Language Citation Study Plan by fall of their senior year and submit it to Katherine Killough, Language Program Coordinator in Romance Languages and Literatures, Boylston Hall 436, reachable at killough@fas.harvard.edu and 617-495-2524.

Japanese

A citation in Japanese requires four courses from the following: JAPAN 120A, JAPAN 120B, JAPAN 130A, JAPAN 130B, JAPAN 140A, JAPAN 140B, JAPAN 150A, and JAPAN 150B.

Language courses taken out of residence for Harvard degree credit may be substituted for these courses only after assessment via a Japanese placement test and with the permission of the East Asian Language Coordinator (eal@fas.harvard.edu).

Students who plan to satisfy the requirements for a language citation in Japanese must submit a petition via my.harvard to be reviewed and approved by the language Program Manager, reachable at eal@fas.harvard.edu.

Kinyarwanda

A citation in Kinyarwanda requires the equivalent of four courses in Kinyarwanda above the introductory level, including the following: KINYARWANDA BA, KINYARWANDA BB, KINYARWANDA 101AR, and KINYARWANDA 101BR.

Other advanced courses in Kinyarwanda taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Kinyarwanda) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the class.

Korean

A citation in Korean requires four courses from the following: KOREAN 120A, KOREAN 120B, KOREAN 123XB, KOREAN 130A, KOREAN 130B, KOREAN 130XA, KOREAN 140A,

KOREAN 140B, KOREAN 150A, and KOREAN 150B.

Language courses taken out of residence for Harvard degree credit may be substituted for these courses only after assessment via a Korean placement test and with the permission of the East Asian Language Coordinator (eal@fas.harvard.edu).

Students who plan to satisfy the requirements for a language citation in Korean must submit a petition via my.harvard to be reviewed and approved by the language Program Manager, reachable at eal@fas.harvard.edu.

Latin

A citation in Latin requires four courses chosen from the following: LATIN 3 and any 10 or 100-level Latin course, including those in Medieval Latin. At least two of the courses must be 100-level.

Other advanced courses or courses taken out of residence for Harvard degree credit may be substituted for one or more of the above courses with the permission of the Preceptor in Ancient Greek and Classical Latin, Dr. Ivy Livingston (livings@fas.harvard.edu).

Norwegian

A citation in Norwegian requires two courses beyond beginning Norwegian (SCAND 90RA-C) and two further courses conducted in Norwegian. These courses may consist of any tutorial in Norwegian, Supervised Reading and Research conducted on Norwegian (SCAND 91R), or courses taken out of residence for Harvard degree credit and approved by the Director of Undergraduate Studies in Scandinavian.

Persian

A citation in Persian requires PERSIAN 120A, PERSIAN 120B, PERSIAN 140AR, and PERSIAN 140BR.

More-advanced courses or courses taken out of residence for Harvard degree credit may be substituted for these courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Polish

A citation in Polish requires four courses beyond the elementary level (beyond the A-level courses PLSH AA and PLSH AB). Typically, the citation consists of two semesters of Intermediate Polish (PLSH BA and PLSH BB) and two semesters of Advanced Polish (PLSH CR).

Courses taken out of residence (language study abroad) for Harvard degree credit or SLAVIC 91R (if conducted in Polish) may be substituted for these courses with the permission of the Director of the Slavic Language Program or the Director of Undergraduate Studies for the Slavic Languages and Literatures concentration.

Portuguese

A citation in Portuguese requires four of the following courses: PORTUG 20, PORTUG 30, PORTUG 40, PORTUG 50, and/or any Portuguese course at levels 60, 70, 80, 100, or 200 conducted in Portuguese. (Note: Courses numbered 20–50 must be taken in numerical order; courses numbered 60–200 may be taken in any order.)

Other courses taught primarily in Portuguese or a maximum of two courses taken out of residence and approved for Harvard credit (i.e., study abroad courses) may be substituted for the above courses with the permission of the undergraduate advisor in Portuguese or the Director of Language Programs for RLL.

Students who plan to satisfy the requirements for a language citation in Portuguese must complete a Language Citation Study Plan by fall of their senior year and submit it to Katherine Killough, Language Program Coordinator in Romance Languages and Literatures, Boylston Hall 436, reachable at killough@fas.harvard.edu and 617-495-2524.

Russian

A citation in Russian requires four courses beyond the RUSS A-level courses selected from among the following: RUSS BA, RUSS BB, RUSS BTA, RUSS BTB, or RUSS BAB (the equivalent of two semesters), RUSS 101, RUSS 103, RUSS 102, or any advanced Russian language course (RUSS 111, RUSS 112, RUSS 113, RUSS 114, RUSS 115, SLAVIC 117).

Other courses taken out of residence (language study abroad, including the Harvard Summer Program in Tbilisi) for Harvard degree credit or SLAVIC 91R (if conducted in Russian) may be substituted for these courses with the permission of the Director of the Slavic Language Program or the Director of Undergraduate Studies for the Slavic Languages and Literatures concentration.

Sanskrit

A citation in Sanskrit requires SANSKRIT 102AR, SANSKRIT 102BR, and any two courses in Sanskrit beyond SANSKRIT 102BR.

Courses taken out of residence for Harvard degree credit or SANSKRIT 91R may be substituted for these courses with the permission of the Director of Undergraduate Studies for South Asian Studies.

Somali

A citation in Somali requires the equivalent of four courses in Somali above the introductory level, including the following: SOMALI BA, SOMALI BB, SOMALI 101AR, and SOMALI 101BR.

Other advanced courses in Somali taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Somali) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Spanish

A citation in Spanish requires four of the following courses: SPANSH 20, SPANSH 30, SPANSH 40, SPANSH 50, and/or any Spanish course at levels 60, 70, 80, 100, or 200 conducted in Spanish. (Note: Courses numbered 20–50 must be taken in numerical order; courses numbered 60–200 may be taken in any order.)

Other courses taught primarily in Spanish or a maximum of two courses taken out of residence and approved for Harvard credit (i.e., study abroad courses) may be substituted for the above courses with the permission of the undergraduate advisor in Spanish or the Director of Language Programs for the Department of Romance Languages and Literatures.

Students who plan to satisfy the requirements for a language citation in Spanish must complete a Language Citation Study Plan by fall of their senior year and submit it to Katherine Killough, Language Program Coordinator in Romance Languages and Literatures, Boylston Hall 436, reachable at killough@fas.harvard.edu and 617-495-2524.

Swahili

A citation in Swahili requires the equivalent of four courses in Swahili above the introductory level: SWAHILI BA, SWAHILI BB, SWAHILI 101AR, and SWAHILI 101BR.

Other advanced courses in Swahili taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Swahili) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Swedish

A citation in Swedish requires four courses beyond the first-year level, including SWEDISH 20 and two courses in Swedish language and culture at the third-year level or above. These courses may consist of any tutorial or 100- level course conducted in Swedish, Supervised Reading and Research courses conducted in Swedish (SCAND 91R), or courses taken out of residence for Harvard degree credit and approved by the Director of Undergraduate Studies in Scandinavian.

Tamil

A citation in Tamil requires TAM 102A, TAM 102B, and any two courses beyond TAM 102B.

Courses taken out of residence for Harvard degree credit or other advanced courses may be substituted with the permission of the Director of Undergraduate Studies for South Asian Studies.

Classical Tibetan

A citation in Classical Tibetan requires TIBET 102A, TIBET 102B, and any two 200-level courses in Tibetan.

Courses taken out of residence for Harvard degree credit or other advanced courses may be substituted with the permission of the Director of Undergraduate Studies for South Asian Studies.

Tigrinya

A citation in Tigrinya requires the equivalent of four courses in Tigrinya above the introductory level, including the following: TIGRINYA BA, TIGRINYA BB, TIGRINYA 101AR, and TIGRINYA 101BR.

Other advanced courses in Tigrinya taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Tigrinya) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Turkish

A citation in Turkish requires four of the following courses: TURKISH 120A, TURKISH 120B, TURKISH 130A, TURKISH 130B, and TURKISH 149.

More-advanced courses or courses taken out of residence for Harvard degree credit may be substituted for these courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Twi

A citation in Twi requires the equivalent of four courses in Twi above the introductory level: TWI BA, TWI BB, TWI 101AR, and TWI 101BR.

Other advanced courses in Twi taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Twi) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Ukrainian

A citation in Ukrainian requires four courses beyond the elementary level (beyond the A-level courses UKRA AA and UKRA AB). Typically, the citation consists of two semesters of Intermediate Ukrainian (UKRA BR) and two semesters of Advanced Ukrainian (UKRA CR).

Courses taken out of residence (language study abroad) for Harvard degree credit or SLAVIC

91R (if conducted in Ukrainian) may be substituted for these courses with the permission of the Director of the Slavic Language Program or the Director of Undergraduate Studies for the Slavic Languages and Literatures concentration.

Urdu (see Hindi-Urdu)

Uyghur

A citation in Uyghur requires four courses from the following: Uyghur 120a, 120b, 130a, 130b, 300.

More advanced courses or language courses taken out of residence for Harvard degree credit may be substituted for these courses only after assessment via a Uyghur placement test and with the permission of the East Asian Language Program Manager (eal@fas.harvard.edu). Please email Gülnar Eziz (geziz@fas.harvard.edu) if you would like to arrange a placement exam.

Students who plan to satisfy the requirements for a language citation in Uyghur must submit a petition via my.harvard, to be reviewed and approved by the Language Program Manager.

Vietnamese

A citation in Vietnamese requires four courses from the following: VIETNAM 120A, VIETNAM 120B, VIETNAM 130A, 1 VIETNAM 30B, VIETNAM 140, and VIETNAM 140B.

Language courses taken out of residence for Harvard degree credit may be substituted for these courses only after assessment via a Vietnamese placement test and with the permission of the East Asian Language Coordinator (eal@fas.harvard.edu).

Students who plan to satisfy the requirements for a language citation in Vietnamese must submit a petition via my.harvard to be reviewed and approved by the language Program Manager, reachable at eal@fas.harvard.edu.

Wolof

A citation in Wolof requires the equivalent of four courses in Wolof above the introductory level, including the following: WOLOF BA, WOLOF BB, WOLOF 101AR, and WOLOF 101BR.

Other advanced courses in Wolof taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Wolof) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Yiddish

A citation in Yiddish requires the equivalent of four terms selected from among the following:

YIDDISH B, YIDDISH CA, YIDDISH CB, YIDDISH 102R, YIDDISH 103R, YIDDISH 105, YIDDISH 200R, YIDDISH 202R, and YIDDISH 204.

Other courses taught primarily in Yiddish or courses taken out of residence for Harvard degree credit may be substituted for the above courses with the permission of the Director of Undergraduate Studies for the Near Eastern Languages and Civilizations concentration.

Yoruba

A citation in Yoruba requires the equivalent of four courses in Yoruba above the introductory level, including the following: YORUBA BA, YORUBA BB, YORUBA 101AR, and YORUBA 101BR.

Other advanced courses in Yoruba taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Yoruba) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.

Zulu

A citation in Zulu requires the equivalent of four courses in Zulu above the introductory level, including the following: ZULU BA, ZULU BB, ZULU 101AR, and ZULU 101BR.

Other advanced Zulu courses taken out of residence for Harvard degree credit or AFRAMER 91R (if conducted in Zulu) may be substituted for these courses with permission of the Director of the African Language Program for the Department of African and African American Studies. In the case of summer study, the course must last six weeks or consist of at least 50 class hours; in addition, students must submit some graded written work done for the course.